Partial Permanent Solution Statement with Conditions

For The Southern Portion (Bentley Development) of the Former New England Log Homes Site
100 Bridge Street, Great Barrington, Massachusetts
MassDEP Release Tracking No. 1-0682
Tier I Permit #548535

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Prepared for:

Community Development Corporation of South Berkshire
PO Box 733
Great Barrington, Massachusetts 01230

August 18, 2026

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EXECUTIVE SUMMARY

On behalf of the Community Development Corporation of South Berkshire (CDCSB), Pinchin LLC (formerly Ransom Consulting, LLC [Ransom]) has prepared this Partial Permanent Solution Statement with Conditions (Partial PSSC) for the southern portion of the former New England Log Homes (NELH) property located at 100 Bridge Street in Great Barrington, Massachusetts, which was redeveloped as the Bentley Apartments in 2021. The original approximately 8-acre Disposal Site, located southwest of the intersection of Bridge Street and Bentley Road and north of the Town of Great Barrington Wastewater Treatment Plant (WWTP), is identified as 100 Bridge Street and was formerly occupied by the NELH factory. Soil and/or groundwater are impacted primarily by dioxins/furans and pentachlorophenol (PCP), with secondary impacts in soil from metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). The Disposal Site was assigned Release Tracking Number (RTN) 1-0682 by the Massachusetts Department of Environmental Protection (MassDEP) in January 1990. In 2021, the original 8-acre Disposal Site boundary was expanded to include the southerly abutting 3.12-acre WWTP property located at 100 Bentley Road after dioxins/furans were identified in shallow soils obtained from that property.

In 2026, Pinchin completed risk characterizations for the developed portion of the Site (i.e., Lot 3 [the Bentley Apartments] and the southern portion of Lot 4 encompassing the Southern Berm and Southern Stormwater Retention Area) and for the WWTP property. Both areas meet the criteria for concluding that a Permanent Solution has been achieved. Concentrations of dioxins/furans in soil at the WWTP Property approach background; therefore, no Conditions are required to maintain a condition of No Significant Risk (NSR) and a Partial Permanent Solution Statement (Partial PSS) (without Conditions) was prepared for the WWTP Property under separate cover. A condition of NSR also exists for Lot 3 and the southern portions of Lot 4; however, because contaminated soil remains at depth or was relocated beneath an Engineered Barrier, a Notice of Activity and Use Limitation (AUL) is required to maintain the condition of NSR.

This Partial PSSC applies to the developed southern portion of the Disposal Site which includes all of Lot 3 (i.e., the Bentley Apartments parcel) and abutting portions of Lot 4 (i.e., the Southern Berm and southern Stormwater Retention Area), encompassing 171,433 square feet (3.94 acres), herein after referenced as the Partial PSSC Site. The northern undeveloped portion of the Disposal Site (i.e. Lots 1 and 2 and the remaining portions of Lot 4) require additional remediation which is expected to be performed in conjunction with future redevelopment.

In May 2019, a Phase IV Remedy Implementation Plan (RIP) – Revision 5 (Phase IV RIP) was submitted to MassDEP which described the proposed remediation plan; the approach was approved by MassDEP and implemented at the Site. Minor revisions were subsequently made to the RIP in response to

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comments from the MassDEP and site conditions as observed during remediation. The remediation goal as outlined by the Phase IV RIP was the achievement of a condition of NSR relative to potential exposures to soil. Implementation of the Phase IV RIP began on October 8, 2019 and continued intermittently through December 10, 2020 in conjunction with redevelopment of Lots 3 and 4. Remediation activities were conducted by D.R. Billings, Inc. (Billings) of Lanesboro, Massachusetts under Ransom's observation and in accordance with the approved Phase IV RIP and subsequent submittals to MassDEP. Impacted soils were relocated to the proposed redevelopment areas to soil berms located along the southern and eastern property boundaries, and extensive grading was performed to achieve the final site grades required by the redevelopment plan. Soil fill was brought onto the Partial PSSC Site to raise site grades by as much as approximately 7 feet for construction of the Bentley Apartment buildings. An Engineered Barrier was constructed over the southern berm in June 2020.

Following the redevelopment activities, Ransom contracted with O'Reilly, Talbot & Okun (OTO) to complete a Substantial Hazard Evaluation (SHE) for Lots 3 and 4 based on existing site conditions. OTO concluded that a condition of No Substantial Hazard and No Significant Risk existed at Lots 3 and 4. Post-development groundwater concentrations were not available; however, based on groundwater sampling completed in 2019, the concentrations of PCP in groundwater within the northern portions of Lots 3 and 4 slightly exceeded the GW-1 Standard of 1 microgram per liter (µg/l). Lots 3 and 4 did not meet the criteria to support the finding that a Permanent Solution had been achieved but did meet the criteria for a Temporary Solution. Therefore, Ransom prepared a Partial Temporary Solution Statement (Partial TSS) for all of Lots 3 and 4 in March 2021. The Partial TSS included requirements for additional groundwater monitoring on Lots 3 and 4 to determine if and when that portion of the Disposal Site met the criteria for supporting the finding that a Permanent Solution had been achieved.

Following submittal of the Partial TSS, Ransom collected quarterly groundwater samples from wells on Lots 3 and 4 from June 2021 through March 2022. The quarterly samples indicated that contaminant concentrations in groundwater were less than the GW-1 Standards at Lot 3 and at the southern portion of Lot 4 which encompasses the Southern Berm and the Southern Stormwater Retention Area. Additional samples collected in September 2025 confirmed that contaminant concentrations in groundwater remained less than the GW-1 Standards at Lot 3 and at the southern portion of Lot 4. Therefore, Pinchin contracted with OTO to complete a Method 3 Risk Characterization using the current soil and groundwater data to assess the risks within the portion of the Disposal Site which encompasses Lot 3, the Southern Berm, and the Southern Stormwater Retention Area (i.e., the Partial PSSC Site). The Method 3 Risk Characterization is based on both current and foreseeable future uses of the Partial PSSC Site and the surrounding environment. Based the results of the Method 3, OTO drew the following conclusions:

- A condition of NSR exists for soil exposure to current residents and lesser-exposed construction workers and trespassers with the use of fill, barriers, and the placement of a

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Notice of AUL to restrict direct contact exposure in specified areas of the Bentley Apartments, Southern Berm, and Stormwater Retention Area;

- A condition of NSR exists for groundwater within the Partial PSSC Site;
- A condition of NSR exists for public welfare and safety; and
- A condition of NSR for the environment exists for the aquatic environment relative to the potential for groundwater to discharge into the Housatonic River from the Partial PSSC Site.

Based on OTO's conclusions, it is Pinchin's opinion that the Partial PSSC Site has achieved a Condition of NSR. The implementation of a Notice of AUL is necessary to maintain this condition. Therefore, a Notice of AUL was recorded at the Berkshire County Registry of Deeds on _____ (Book ____, Page ___). With the recording of the Notice of AUL, it is Pinchin's opinion that the requirements of a Partial Permanent Solution have been met at the Partial PSSC Site and additional response actions are not warranted within this area.

The Notice of AUL identifies the conditions which must be maintained at the Site. Those conditions are focused on preventing exposure to contaminants remaining beneath the Engineered Barrier, existing structures, and/or at depth at the Partial PSSC Site. Site visits will be conducted on at least an annual basis to confirm the conditions of the Notice of AUL are being maintained.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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1.0 INTRODUCTION AND SCOPE

On behalf of the Community Development Corporation of South Berkshire (CDCSB), Pinchin, LLC (Pinchin, formerly Ransom Consulting, LLC [Ransom]) has prepared this Partial Permanent Solution Statement with Conditions (Partial PSSC) for the southern portion of the former New England Log Homes (NELH) property located at 100 Bridge Street in Great Barrington, Massachusetts, which was redeveloped as the Bentley Apartments in 2021. The original approximately 8-acre Disposal Site, located southwest of the intersection of Bridge Street and Bentley Road and north of the Town of Great Barrington Wastewater Treatment Plant (WWTP), is identified as 100 Bridge Street and was formerly occupied by the NELH factory. Soil and/or groundwater are impacted primarily by dioxins/furans and pentachlorophenol (PCP), with secondary impacts in soil from metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). The Disposal Site was assigned Release Tracking Number (RTN) 1-0682 by the Massachusetts Department of Environmental Protection (MassDEP) in January 1990. In 2021, the original 8-acre Disposal Site boundary was expanded to include the southerly abutting 3.12-acre WWTP property located at 100 Bentley Road after dioxins/furans were identified in shallow soils obtained from that property. Refer to the Site Location Map provided as Figure 1 for the location of the expanded 11.12-acre Disposal Site (Site) shown on an excerpt of a United Stated Geological Services (USGS) map.

In 2026, Pinchin completed risk characterizations for the developed portion of the Site (i.e., Lot 3 [i.e., the Bentley Apartments] and the southern portion of Lot 4 encompassing the Southern Berm and Southern Stormwater Retention Area) and for the WWTP property. Both areas meet the criteria for concluding that a Permanent Solution has been achieved. Concentrations of dioxins/furans in soil at the WWTP Property approach background; therefore, no Conditions are required to maintain a condition of No Significant Risk (NSR) and a Partial PSS (without Conditions) was prepared for the WWTP Property under separate cover. A condition of NSR also exists for Lot 3 and the southern portions of Lot 4; however, because contaminated soil remains at depth or was relocated beneath an Engineered Barrier, a Notice of Activity and Use Limitation (AUL) is required to maintain the condition of NSR. Refer to Figure 2 for a Site Plan with the Lot layout and developed areas.

This Partial PSSC applies to the developed southern portion of the Disposal Site which includes all of Lot 3 (i.e., the Bentley Apartments parcel) and abutting portions of Lot 4 (i.e., the Southern Berm and southern Stormwater Retention Area), encompassing 171,433 square feet (3.94 acres), herein after referenced as the Partial PSSC Site. The northern undeveloped portion of the Disposal Site (i.e. Lots 1 and 2 and the remaining portions of Lot 4) require additional remediation which is expected to be performed in conjunction with future redevelopment. The Disposal Site boundary, the WWTP Partial PSS

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Site, Lots 1 through 4, and the Partial PSSC Site boundary to which this Partial PSSC applies are shown on Figure 2.

This Partial PSSC was prepared in accordance with 310 CMR 40.1056 of the Massachusetts Contingency Plan (MCP). A Permanent and Temporary Solution Statement (BWSC 104) is being submitted concurrently with this report via MassDEP's eDEP online electronic filing system.

2.0 SITE LOCATION AND DEVELOPMENT

2.1 Site/Partial PSSC Site Locations

The Disposal Site is an approximately 11-acre parcel located at 100 Bridge Street and 100 Bentley Road, just southeast of downtown Great Barrington. The Site is bounded by the Housatonic River to the west, Bridge Street and Bentley Road to the north and east, respectively, and undeveloped wooded land to the south. The areas to the north and east are primarily residential; the central commercial district is nearby, northwest of the Site and to the west of the Housatonic River. Properties around the Site are serviced by public water and there are no known private water supply wells on or within 500 feet of the Site; however, the Site is located within the Zone II of the Town of Sheffield public water supply. The Site is also located in the 100-year flood plain for the Housatonic River as designated by the Federal Emergency Management Agency (FEMA). A copy of MassDEP's Priority Resource Map is included as Appendix A.

The Partial PSSC Site is located at the southern end of the former NELH property. It is bounded by the Housatonic River to the west, Bentley Road to the east, the WWTP to the south, and the undeveloped portion of the Site (i.e. Lots 1, 2, and the northern portion of Lot 4) to the north. This Partial PSSC applies to the approximately 3.94-acre portion of the Site currently developed as the Bentley Apartments and includes the Southern Berm and the southern Stormwater Retention Area; specifically, the Partial PSSC Site is comprised of Lot 3 and the abutting southern portions of Lot 4. Refer to Figure 2 for the Area subject to this Partial PSSC.

2.2 Prior Usage and Environmental History

The Site was first developed in 1894 with a manufacturing plant for bedspreads and cotton goods. The main factory building was located in the northwest quadrant of the Site. The linens operations ceased in 1963, and the Site remained vacant until 1971. Petroleum use at the Site likely began with the Site's first industrial development. Gasoline and diesel fuel were stored in aboveground storage tanks (ASTs) in a concrete containment structure located east of the former main building along Bentley Road; No. 2 heating fuel was stored in several ASTs located within the main building and in a 1,000-gallon underground storage tank (UST) located outside of the east side of the main building.

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From 1971 through 1993, NELH occupied the property and manufactured log homes. NELH used several types of wood preservatives including PCP (which was one of the most widely used biocides in the U.S. prior to 1987), zinc naphthenate, and copper arsenate. Finished wood products were submersed in three “dip-tanks” containing wood preservative; the dip tanks were located on the east and west sides of the main building and by the southeast corner of the main building. Prior to use in the dip tanks, the preservatives were stored in 55-gallon drums and ASTs in the main building. Mineral spirits, also stored inside in 55-gallon drums, were used to remove residues of pitch and tar from equipment during the production of wood products.

Finished, treated wood products were stockpiled outside in unpaved areas, particularly in the southern portion of the Site, but also in the east and north along Bentley and Bridge Streets, respectively. Notably, there was an approximately 12,000-square-foot area located in the southwest corner of the Site where treated wood waste was buried to a depth of up to 14 feet below the ground surface (bgs).

In 2001, the main building was significantly damaged by fire with greater than 50 percent of the building having burned to the ground. Soot from the fire was deposited on the ground surface across the Site, and fire debris was present in the central portion until the remaining buildings were demolished and most of the debris was removed in 2012. Some debris piles were left at the Site, including piles of wood waste, metal, concrete, and brick intermixed with surface soils. The debris piles were later screened to remove the soil and relocated to the southern end of the Site during the site preparation activities conducted in 2014.

For assessment purposes, the Site was divided into four areas of concern (AOCs) based on the historical operations (see Figure 3).

AOC	Location	Primary Environmental Concerns from Former Operations
Area A	Southern site area	Wood-preservative residues from storage of wood in open areas, bulky waste piles. Based on previous testing, it appears that only final wood products were treated with preservatives.
Area B	West of main building	Dip tank, wood-preservative residues, vertical ASTs.
Area C	Main building	Minor wood-preservative residues, machine activities, fuel oil ASTs.
Area D	East of main building	Wood-preservative residues from storage of treated wood in open areas, dip tank, fuel oil UST, diesel and gasoline ASTs.

A Historical Site Plan showing the assessment areas, former structures, and contaminant source areas at the NELH portion of the Site are shown on Figure 3, along with the current Lot boundaries.

Soil remediation was completed at Lots 3 and 4 and at the portions of Lots 1 and 2 within 50 feet of Lot 3. However, the concentrations of PCP in groundwater in the central portion of the Site exceeded the

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Method 1 GW-1 groundwater standard and the Massachusetts Maximum Contaminant Level (MMCL) of 1 microgram per liter (µg/l) applicable to the Site. Based on the 2019 groundwater sampling completed prior to the implementation of the Phase IV Remedy Implementation Plan – Revision 5 (Phase IV RIP-Rev 5), the southernmost limit of the plume extended onto the northernmost portion of Lot 3, precluding the achievement of a Permanent Solution; however, the conditions to support a Temporary Solution were met at that time. The extent of the inferred groundwater contaminant plume and the boundary for the area subject to the Partial Temporary Solution Statement with Conditions (Partial TSSC) are shown on Figure 4.

2.3 Current Site Layout

The CDCSB purchased the Site with the intent of redeveloping this Brownfield site into a sustainable, mixed-use development with mixed-income housing opportunities, retail and commercial space, and open-space public gathering places. Remediation of Site soils was performed concurrently with the construction of:

- Three multi-unit apartment buildings providing 45 units of affordable rental housing (the Bentley Apartments) on Lot 3 in the southern portion of the Site;
- A landscaped berm with an Engineered Barrier (Southern Berm) along the southern boundary on the southern portion of Lot 4; and
- A stormwater control basin in the southwest corner of Lot 4 at the southern end of the western property boundary (Southern Stormwater Retention Area).

The remaining portion of Lot 4 along the western Site boundary was brought to finished grade during the remediation activities and is proposed for development into a Riverfront Park with walking paths and landscaping. The current development status of the Site is shown on Figure 5.

Redevelopment of Lots 1 and 2 is pending, along with the final remediation of that portion of the Site. Lot 1 along Bentley Road will be improved with a landscaped berm constructed from relocated surface soils and covered by an Engineered Barrier (Eastern Berm currently in progress). CDCSB has been pursuing development options for Lot 2. Although some commercial options showed some initial promise, CDCSB has been unable to obtain commitments from outside developers. Therefore, to move forward with the final remediation and development of the remainder of the Site, CDCSB intends to pursue funding for the construction of additional affordable housing at the Site.

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3.0 SITE INVESTIGATION HISTORY

3.1 Synopsis

Numerous investigations were performed to evaluate soil and/or groundwater at the Site for evidence of a release of oil and/or hazardous materials (OHM). Soil samples collected at the Site have been analyzed for dioxins/furans, petroleum hydrocarbons, volatile organic compounds (VOCs), semi-VOCs (SVOCs), and/or various metals beginning in 1988 and continuing through September 2025.

3.2 Contaminants of Concern

3.2.1 Soil

Based on the analytical results gathered to date, dioxins/furans are the primary contaminant of concern (COC) for soil at the Site, with secondary impacts from PCP, extractable petroleum hydrocarbons (EPH), PAHs, and metals (i.e., arsenic, lead, thallium, and zinc). Volatile petroleum hydrocarbons (VPH), VOCs, and metals other than arsenic, lead, thallium, and zinc were eliminated as COCs from the Site. EPH impacts are limited to soil at Lot 2, outside of the Partial PSSC Site. The pre-remediation characterization data for soils was summarized on Figures 3 through 6 presented in the Phase IV RIP-Rev 5; copies of those figures are provided in Appendix B. Note that the pre-remediation concentrations of dioxins/furans were calculated using Toxicity Equivalency Factors (TEFs) recommended by MassDEP at that time. As discussed in Section 5.2, the previous TEFs have been superseded with ones recommended by MassDEP in 2025. Note that the current TEFs result in lower dioxin/furan Toxicity Equivalency Quotients (TEQs) than those previously recommended by MassDEP.

3.2.2 Groundwater

The primary groundwater contaminant is PCP, which was detected in groundwater samples collected in 2019 from temporary wells TW501 through TW411 at concentrations of up to 6,500 µg/l in the vicinity of the former eastern dip tank. The PCP “plume” primarily extends to the west from the central portion of Lot 2 towards the Housatonic River. The PCP concentration in the sample collected from the western-most well (MW507) in 2019 was 120 µg/l. The PCP concentrations in groundwater were 1.1 and 1.3 µg/l, respectively, by the former southern dip tank (TW503a) and the northeastern corner of the Disposal Site along Bridge Street (TW510). Pinchin concludes that the source of PCP in groundwater is related to the wood preservatives contained in the former dip tanks and on-site storage of treated wood over exposed soils. Precipitation through areas of PCP-impacted soil has allowed PCP to be transported vertically to the groundwater, and the PCP contaminant plume has moved to the west with groundwater flow.

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3.2.3 Surface Water

In March 2019, Ransom collected three surface water samples from the Housatonic River to assess possible impacts to surface water impacts from the inferred discharge of groundwater containing PCP to the river. Refer to Figure 4 in Appendix B for the locations of the surface water samples. The samples were collected from the following locations and submitted for analysis of PCP by United States Environmental Protection Agency (U.S. EPA) Method 8270C:

- Upstream: In the Housatonic River upstream from the Bridge Street Bridge;
- Discharge Point: In the Housatonic River just southwest of the former chimney location; and
- Downstream: In the Housatonic River west of the property boundary between the Site and the adjacent wastewater treatment plant.

PCP was not detected in the surface water samples at concentrations above the laboratory reporting limits (0.47-0.52 µg/l). The laboratory chemical analysis report was included in the Phase IV RIP-Rev 5.

3.2.4 Sediment

In March 2019, Ransom collected three river sediment samples from the Housatonic River to assess possible impacts to river sediment from the inferred discharge of groundwater containing PCP to the river. Refer to Figure 4 in Appendix B for the locations of the sediment samples. Samples were collected from the following locations and submitted for analysis of PCP by U.S. EPA Method 8270C:

- Upstream: In the Housatonic River near the bank, upstream from the Bridge Street Bridge;
- Discharge Point: In the Housatonic River near the bank, just southwest of the former chimney location; and
- Downstream: In the Housatonic River near the bank, west of the property boundary between the Site and the adjacent wastewater treatment plant.

PCP was not detected in the three sediment samples at concentrations above the laboratory reporting limit of 0.8 milligrams per kilogram (mg/kg). The laboratory chemical analysis report was included in the Phase IV RIP-Rev 5.

3.3 Completed Response Actions

3.3.1 Proposed In-Situ Bioremediation

In March 2011, Ransom submitted the initial Phase IV RIP which presumed that a physical barrier would be constructed over the entire Site prior to the start of construction. In August 2013, the CDCSB

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submitted a Revised Phase IV RIP to conduct *in-situ* bioremediation at the Site in lieu of the generalized capping proposed in the Phase IV RIP submitted to MassDEP in March 2011.

In spring/early summer 2014, the Site was cleared, grubbed, and ripped in preparation for bioremediation. Soil amendments (compost, agricultural lime, and urea nitrogen) were applied between June 25 and July 3, 2014, and a bioremediation "Factor" was applied to surface soils across the Site on July 7, 2014. The upper 18 to 20 inches of soil were subsequently tilled using farming equipment to incorporate the "Factor" into the soils and provide aeration. Tilling continued into October 2014. In late fall 2014, the area was seeded to provide stabilization over the winter months. In May 2015, MassDEP suspended additional bioremediation at the Site pending documentation of success related to the process. Despite arguments that bioremediation processes were occurring, in August 2015, MassDEP terminated further bioremediation efforts. Additional field investigations or related response actions were not performed at the Site following MassDEP's termination of the bioremediation program.

3.3.2 Use of Protective Barriers to Prevent Exposure to OHM-Impacted Soil

On February 12, 2016, the CDCSB met with MassDEP to discuss the next steps at the Site. Because the *in-situ* bioremediation strategy had been terminated by MassDEP, CDCSB proposed to eliminate exposure to contaminated soils with the construction of a variety of "cap-like" structures integrated into the proposed redevelopment of the Site, followed by the placement of a Notice of AUL at the Site. The proposed "cap-like" structures included building foundations and parking lots.

On September 14, 2016, the CDCSB submitted Phase IV RIP – Revision 2 to MassDEP. The objective of the proposed remediation plan was to achieve a Partial Permanent Solution in areas of the Site outside of the PCP groundwater "plume" (historically identified beneath the central portion of the Site). The remediation plan for the Site was simple in concept; namely, to prevent exposures to dioxins/furans-contaminated soils in surface soils at the Site by excavating and removing them from the area or by isolating them under the structures proposed as part of redevelopment of the Site. However, because the Site is subject to restrictions regarding flood storage capacity, maintaining the existing site elevations would require the use of on-site uncontaminated soil as cover material and the relocation of contaminated soil to deeper elevations.

On November 1, 2016, MassDEP issued their response to the proposed Phase IV RIP. MassDEP concluded that relocating contaminated soil below the current elevations would expand the existing "disposal site," and therefore, was not acceptable under the Response Action Performance Standard at 310 CMR 40.0191(2) provided in the MCP.

On January 3 and June 30, 2017, the CDCSB submitted Phase IV RIP – Revisions 3 and 4, respectively, following discussions with MassDEP regarding an alternate remediation strategy. The remediation plan

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presented in Phase IV RIP Revisions 3 and 4 was again based on the concept of preventing exposures to dioxins/furans-contaminated soils by removing them from an area and isolating them under a barrier. The Phase IV RIP – Revisions 3 and 4 provided a remediation strategy focused only on the initial phase of development of the Site (i.e., construction of multi-family housing on Lot 3 and development of green space along the riverfront Lots 3 and 4). It included a temporary 1-foot soil cap over what was termed the Future Development Area in the northern half of the Site to prevent exposure to contaminated soil remaining at the Site, and a Notice of AUL to maintain the temporary cap until the rest of the Site redevelopment could proceed.

After submittal of the Phase IV RIP – Revision 4, the CDCSB continued to pursue alternative development scenarios to facilitate funding for the project; consequently, the development plan was revised again in 2018. A Phase IV RIP – Revision 5 was submitted on May 22, 2019 to describe the remediation plan that was ultimately approved by MassDEP and implemented at the Site. Minor revisions were subsequently made to the RIP in response to comments from the MassDEP and site conditions during remediation.

Implementation of the Phase IV RIP began on October 8, 2019 and continued intermittently through December 10, 2020 in conjunction with redevelopment of Lots 3 and 4. Remediation activities were conducted by D.R. Billings, Inc. (Billings) of Lanesboro, Massachusetts under Ransom's observation and in accordance with the approved Phase IV RIP and subsequent submittals to the MassDEP. Impacted soils within the development area were relocated to soil berms located along the southern and eastern property boundaries, and extensive grading was performed to achieve the final site grades required by the redevelopment plan. Post-remediation sampling assessed the concentrations of dioxins/furans in soil remaining within the development area. Soil fill was then brought onto the Partial PSSC Site to raise site grades by as much as approximately 7 feet for construction of the Bentley Apartment buildings. An Engineered Barrier was constructed over the southern berm in June 2020.

3.3.3 Partial Temporary Solution

Following the redevelopment activities, Ransom contracted with O'Reilly, Talbot & Okun (OTO) to complete a Substantial Hazard Evaluation (SHE) for Lots 3 and 4 based on the existing conditions. OTO concluded that a condition of No Substantial Hazard and No Significant Risk existed at Lots 3 and 4. Post-development groundwater concentrations were not available; however, based on groundwater sampling completed in 2019, the concentrations of PCP in groundwater within the northern portions of Lots 3 and 4 slightly exceeded the GW-1 Standard of 1 µg/l. Lots 3 and 4 did not meet the criteria to support the finding that a Permanent Solution had been achieved but did meet the criteria for a Temporary Solution. Therefore, Ransom prepared a Partial TSS for all of Lots 3 and 4 in March 2021. The Partial TSS included requirements for additional groundwater monitoring on Lots 3 and 4 to

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determine if and when that portion of the Disposal Site met the criteria supporting the finding that a Permanent Solution had been achieved. The remediation activities leading to the Partial Permanent Solution are summarized in Section 5.

3.4 Site Investigation and Regulatory History

A Tier I Permit (#548535) is in effect for the Site until April 26, 2028. Additional remediation and response actions completed at the remainder of the Site to proceed towards a Permanent Solution will be completed as Phase IV Comprehensive Remedial Actions as defined in the MCP.

A chronology with brief descriptions of the historical investigations and regulatory submittals for the Site was presented in the Partial TSSC dated March 3, 2021, a copy of which is available here: f3b4b8ca-e19e-4476-8272-7f3e3dac1084.pdf.

3.5 Relationship to Other Disposal Sites

Two separate disposal sites (RTN 1-19427 and 1-19434) are located within the geographic boundaries of Lot 2, outside of the Partial PPSC Site. Each of these has been linked to primary RTN 1-0682. A summary of the environmental conditions and the relationship of these disposal sites to the Site was described in the Partial TSSC.

3.6 Conceptual Site Model

Based on the results of the assessment activities completed at the Site, Pinchin developed a Conceptual Site Model (CSM) to illustrate the nature and extent of contamination, contaminant migration pathways, and potential receptors at the Site. A summary of the CSM is provided below.

- The primary source of dioxins/furans contamination in soils at the Partial PSSC Site is historical airborne deposition from the smokestack and the 2001 fire which consumed the factory building. Based on sampling completed following the attempted *in-situ* bioremediation efforts, the dioxins/furans were primarily present in soils located within the top 2 feet of the surface across the entire Site.
- The primary source of PCP and/or dioxins/furans in deeper soils at the Site are historical releases from the former dip tanks, with secondary impacts from storage and/or burial of treated wood at the Site. The concentrations of PCP in soils located within the Partial PSSC Site are less than 3 mg/kg.
- With respect to potential migration pathways for dioxins/furans remaining in soils within the Partial PSSC Site:

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- Migration with water: Dioxins/furans are insoluble and prefer to sorb to soil. Therefore, migration of dioxins from water permeating through the dioxins/furans-impacted soils in the Southern Berm has been eliminated as a concern at the Site.
- Volatilization: Dioxins/furans are not volatile. Therefore, volatilization of dioxins/furans from impacted soils in the Southern Berm has been eliminated as a concern at the Site.
- Dispersion as dust: Dioxins/furans will stay sorbed to soil particles and will not naturally biodegrade when exposed at the surface. Therefore, dioxins/furans can be present in and be dispersed with dust if generated at the Site.

- With respect to potential exposure pathways to dioxins/furans remaining in soils within the Partial PSSC Site:
  - Dermal Contact: Dioxins/furans may be present at exposure point concentrations (EPCs) exceeding its Method 3 Ceiling Limit (M3CL) in the soils within the Southern Berm that underlie the Engineered Barrier. Dermal contact represents a potential exposure pathway.
  - Inhalation/Ingestion of dust: Dioxins/furans may be present at EPCs exceeding its M3CL if the existing covers are disturbed and soil dust is generated by earthwork. Inhalation/ingestion of dust represents a potential exposure pathway.
  - Volatilization to air: Dioxins/furans are not volatile. Inhalation of dioxins/furans in ambient air (other than through dust) has been eliminated as a potential exposure pathway.
- Groundwater is not adversely impacted at the Partial PSSC Site.

4.0 ENVIRONMENTAL SETTING

4.1 Regional Hydrological Setting

As provided by the FEMA's Flood Insurance Rate Map (FIRM) provided for the area, approximately 75% of the Site is located within the 100-year floodplain. Nearly the entire parcel is located within the 500-year flood boundary.

4.2 Regional Water Resources

The Housatonic Water Works Company services the Site and surrounding properties with drinking water. The water source is from Long Pond Reservoir located southwest of the village of Housatonic.

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4.3 Regional Natural Resource Areas

Based on a review of MassDEP – Bureau of Waste Site Cleanup Phase I Site Assessment Map (Phase I Map), the entire Site is located within the geographic boundaries of a Zone II for a public water supply, namely, that for the Town of Sheffield.

Based on a review of the Phase I Map, an Estimated Rare Wetland Wildlife Habitat is associated with the Site. Areas of Protected Open Space (Memorial Park and Grove Street Park, respectively) exist on the opposite side of the Housatonic River south of Bridge Street, and on the opposite side of Bentley Road within 500 feet of the southeastern portion of the Site.

A copy of the Phase I Map for the Site is provided in Appendix A.

4.4 Site Geology and Hydrogeology

Based on soil borings advanced at the Site prior to the remediation activities, fill material was commonly encountered at depths shallower than 5 feet bgs with the exception of one area of buried wood debris in the southwest corner which extended to a depth of up to 14 feet bgs. The fill contains various materials including wood chips, gravel, glass, brick and ash. Beneath the shallow fill, native unconsolidated deposits consisting generally of silty, fine to coarse sand with varying amounts of clay and occasional fine gravel are present consistent with glacial till. According to the Bedrock Map of Massachusetts, bedrock underlying the Site consists of marble, phyllite and quartzite members of the Cambrian age Stockbridge Formation. Bedrock was not encountered during previous investigations at the Site including borings advanced to a maximum depth of 42 feet bgs.

Groundwater elevations determined from historical monitoring indicate that the depths to groundwater were generally 10 to 15 feet bgs. Groundwater flows to the west, towards the Housatonic River. Based on a slight upward gradient observed in a groundwater monitoring well pair located along the east bank of the river, it appears that the Housatonic River serves as a discharge location for groundwater at the Site. Hydraulic conductivity testing completed by Fuss &O'Neill (F&O) in 2000 indicated that the hydraulic conductivity of unconsolidated deposits at the Site range from 1.14 to 7.8 feet per day, with a geometric mean of 2.52 feet per day. Given a geometric mean of hydraulic conductivity of 2.52 feet per day, an effective porosity of 0.35 and a hydraulic gradient of 0.003 foot per foot, F&O calculated a linear groundwater flow velocity of 0.02 foot per day or 7.3 feet per year.

Extensive grading was done as part of the remediation efforts. In the area of the Partial PSSC Site, 2 to 4 feet of dioxins/furans-impacted soil was excavated from the proposed development area to reduce dioxins/furans TEQs in the surface soils and relocated to the area of the Southern Berm. Following confirmatory sampling, up to 7 feet of clean fill was imported to the Partial PSSC Site to achieve

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redevelopment design grades. Depths to groundwater in the wells sampled since submittal of the Partial TSSC range from approximately 5 to 9 feet bgs.

5.0 REMEDIATION AND REDEVELOPMENT

5.1 Overview

The goal of the remediation within the Partial PSSC Site was to allow for the construction of mixed-income, multi-unit housing and public open space. The majority of the contaminated soil at the Site prior to the initiation of remediation was present in the upper 18 to 20 inches of soil. Given the accessibility of the dioxins/furans-impacted soil and the failure of the *in-situ* bioremediation option to reduce the overall mass of dioxins/furans in soil at the Site, the remediation plan was designed to prevent exposure to contaminants in soil. No feasible options were identified to remove the contaminated soil or to reduce the contaminant mass during the assessment of remedial alternatives. To accomplish the remediation goal within the Partial PSSC Site, CDCSB relocated soils impacted by dioxins/furans at concentrations greater than 500 nanograms per kilogram (ng/kg) (i.e., the Upper Concentration Limit in effect at that time) from the building site to a landscaped berm located along the southern property boundary with the WWTP; the Southern Berm was finished with an Engineered Barrier. Remaining soils with low concentrations of dioxins/furans are covered by caps with conditions in place to maintain those caps. A Notice of AUL was recorded prior to submittal of this Partial PSSC to maintain those conditions.

5.2 Completed Remediation Activities

Implementation of the Phase IV RIP began on October 8, 2019 and continued intermittently through December 10, 2020 in conjunction with redevelopment of Lots 3 and 4. Remediation activities were conducted by Billings under Ransom's observation and in accordance with the approved Phase IV RIP and subsequent submittals to the MassDEP listed in Section 3.2.

Removal of at least the top 2 feet of soil was completed across Lots 2, 3, and the western portion of Lot 4; additional excavation occurred in selected Decision Units (DUs, as described later in this section) within the Partial PSSC Site as shown on Figure 5. The excavated soils were relocated initially to the Southern Berm on Lot 4, and later to the Eastern Berm on Lot 1 after the Southern Berm reached its design grades.

The remediation goal as outlined in the Phase IV RIP-Rev 5 was the achievement of a condition of NSR for soil using a Method 1 Risk Characterization (i.e., generic numerical standards developed by MassDEP and an established EPC of 20 ng/kg). Based on the post-remediation sampling results, a Method 3 Risk Characterization was used to evaluate site-specific risks which confirmed that a condition of NSR for soil was achieved at the 2021 Partial TSSC Site.

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A description of implementation of the Phase IV RIP and the completed soil remediation was presented in the partial TSSC. A brief summary is presented below:

- Site preparation activities began on October 8, 2019 including preparing construction entrances/exits, management of existing rubble/debris piles, installation of a temporary water line for dust control and a temporary diesel fuel AST for refueling of on-site equipment and importing clean fill materials.
- Air monitoring stations were established around the perimeter for dust and odors (i.e., ammonia, VOCs, hydrogen sulfide, and chlorine).
- To complete the excavation, the Site was divided into DUs sized to represent the area that could be excavated and relocated in approximately one day. Prior to beginning excavation, Billings surveyed the surface topography of the Site to establish a reference elevation before stripping off the top 2 feet of soil. The soil stripping was performed using a Global Positioning System (GPS)-controlled bulldozer to confirm the completed depth of excavation.
- Once the excavation depth was reached, Ransom sampled the exposed soils throughout the DU using the Incremental Composite Sampling Method (ICS). The composite samples were shipped to Test America for sample preparation by the ICS Method. From there, the ICS-prepared sample was sent to Pace Analytical, Inc. (Pace) for dioxins/furans analysis by U.S. EPA Method 1613. The concentrations of dioxins/furans were expressed as the 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] TEQ using the MassDEP TEFs in effect at that time.
- The sampling results were reviewed by Ransom upon receipt. If the dioxins/furans TEQ was elevated, additional soil was excavated and the post-excavation sampling was repeated until the dioxins/furans TEQ was reduced to an acceptable level. In the Partial PSSC Site, additional excavation was required in four DUs.

On April 17, 2025, the MassDEP issued a communication detailing revised recommendations for the TEFs used to calculate dioxins/furans TEQs for assessments completed under the MCP. MassDEP is currently using the TEFs derived and adopted by the World Health Organization (WHO) in 2005. As noted in the communication, the revision aligns MassDEP TEF values with those of the U.S. EPA (2010), California Environmental Protection Agency (OEHHA 2011) and multiple state organizations. MassDEP noted that the revised TEFs (DEP 2025 – TEFs) supersede those previously recommended by MassDEP that were in use at the time that the remediation activities were completed at the Site. A copy of MassDEP's communication regarding the currently recommended TEFs is included in Appendix C. A Plan view of the DUs in the Partial TSSC Site with the 2025 dioxins/furans TEQs is provided as Figure 6;

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a similar plan focused on the Partial PSSC Site is provided as Figure 7. A summary of the post-excavation concentrations of dioxins/furans is provided in Table 1, and copies of the laboratory chemical analysis reports for soil samples are provided in Appendix D.

Once Ransom determined that sufficient soil had been excavated and relocated to meet the remediation goals for construction of the Bentley Apartments, the contractor imported clean fill to bring the area up to the final redevelopment grades. Cross-sectional profile views are provided for the Bentley parcel on Figures 8 and 9.

5.3 Stormwater Management

Three stormwater/flood management basins were constructed along the Riverfront Park portion of Lot 4. Each basin was over-excavated below the final design grade to allow for the placement of at least 8 inches of imported material (topsoil) over the existing soils. The southernmost basin located within the Partial PSSC Site contains the lowest finished grades at the Site and was constructed in an area with up to 14 feet of buried treated wood. The wood and soil excavated to reach finished grades in this area was relocated to the Southern Berm through November 21, 2019. The southwest basin is expected to contain standing water; therefore, a fence has been constructed around this basin to prevent access to this area by the public. Plan and profile views for the southernmost basin are provided as Figures 10 and 11.

5.4 Construction of Southern Berm and Engineered Barrier

The remediation plan called for construction of an Engineered Barrier to prevent potential future exposures to the contaminated soils that comprised the Southern Berm at the Site. In mid-November 2019, Billings deployed waddles around the toe of the Southern Berm to prevent the erosion of soils from the berm area during its construction. Because the excavation work extended into December 2019 and winter weather delayed the construction of the Engineered Barrier until the spring, a soil tackifier (Gorilla Snot® by Soilworks, LLC) and a cellular fiber mulch product (Conwed Fibers® Cellulose Hydraulic Mulch) was applied to the Southern Berm on December 23, 2019 to stabilize the surface until construction resumed.

On January 14, 2020, Ransom observed erosion rills on the surface of the Southern Berm, particularly on the southern side. Billings resprayed the stabilization material on the berm to prevent additional erosion.

Billings continued to shape and grade the Southern Berm until May 29, 2020, at which time it was ready for construction of the Engineered Barrier. On June 1, 2020, Billings began construction of the Engineered Barrier which consisted of the following elements listed from the bottom up.

- A geo-composite (i.e., FabriNet 175 mil from GSE Environmental) consisting of a geonet heat-bonded with a non-woven needle-punched geotextile: The geo-composite is

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intended to provide a biotic barrier to burrowing animals, prevent catastrophic erosion of surface materials from exposing the underlying contaminated soils, and promote drainage of the surface soils.

- A geotextile warning barrier: The warning barrier (i.e., 65HVO from US Fabrics) consists of a high-visibility woven geotextile with the words "DANGER—DO NOT DIG" printed in both English and Spanish to serve as a demarcation layer.
- At least 1 foot of clean loam/topsoil to serve as the separation layer and provide a growth medium for the surface vegetation.
- Vegetation for aesthetics and erosion control.

The geo-composite fabric was placed in strips from north to south across the length of the Southern Berm, beginning on the eastern side of the berm. The fabric was laid directly on the dioxins/furans-contaminated soils with the geonet side facing up. A red geotextile warning barrier was placed on top of the geonet. The warning barrier has 3-inch lettering every 5 feet which says, "Danger Do Not Dig – Peligro No Excavar." After placement of the warning barrier, Billings placed 1 foot of clean loam on the berm. The thickness of the soil layer was verified at approximately 2-foot intervals using a rod. Once the soil cover reached at least 1 foot, Billings raked the surface in preparation for hydroseeding. Seeding of finished portions of the Southern Berm began on June 18, 2020; seeding of the entire Southern Berm was completed on June 23, 2020. Hay waddles were placed along the toe of the Southern Berm to capture runoff while the vegetation became established.

The Southern Berm surface has been inspected at least semi-annually to confirm that it remains intact.

5.5 Additional Groundwater Monitoring

Although soils in the developed portion of the Site met the criteria for NSR at the completion of the remediation activities, the concentration of PCP in groundwater at the northern end of Lot 3 was slightly greater than the GW-1 Standard and MMCL, preventing the achievement of a Permanent Solution in that portion of the Site. In accordance with the Definitive and Enterprising Steps needed to achieve a Permanent Solution listed in Section 11.2 of the 2021 Partial TSS, CDCSB installed five groundwater monitoring wells needed to provide routine groundwater monitoring for PCP and dioxins/furans to confirm that the PCP plume is stable and/or reducing in size on Lots 3 and 4. Per the Partial TSSC:

"Each well will be monitored bi-annually until compliance with the GW-1 Standard is achieved, at which time monitoring for that parameter in that well may be discontinued. Compliance with the GW-1 Standards must be based on the results of four consecutive quarterly monitoring events. Therefore, the monitoring frequency will be increased to quarterly for the parameter and monitoring well after the first

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event in which the COC concentration is less than the GW-1 Standard. If subsequent events do not confirm compliance with GW-1, monitoring must continue at a frequency of no more than bi-annually."

5.5.1 Well Installation

On June 7, 2021, Ransom monitored the advancement of five soil borings by Technical Drilling Services, Inc. (TDS) of Sterling, Massachusetts. The wells were located on Lots 3 and 4 to determine the limits of impacted groundwater within the developed Partial TSSC Site. Each boring was extended at least 5 feet into groundwater and completed as a groundwater monitoring well. Well MW601 is located in the southwest corner of Lot 4 near the former location of buried wood debris. Wells MW602 and MW603 are located in the central and northern portions of Lot 4, respectively. Wells MW604 and MW605 are located inside the northern border of Lot 3. Wells MW601, MW604, and MW605 are located within the Partial PSSC Site. Wells MW602 and MW603 are excluded from the Partial PSSC Site. The locations of the wells are depicted on Figure 12.

The wells were screened across the groundwater table using 10 feet of factory-slotted polyvinyl chloride (PVC) well screen. The well construction utilized 2-inch-diameter Schedule 40 PVC with a field-placed filter pack. The wells were finished with a flush-mounted well cover cemented in place upon completion.

Following installation, each well was developed by removing a quantity of groundwater equal to ten times the well volume, or by evacuating each well dry several times, whichever was appropriate. Each well was developed to restore the natural permeability of the soils surrounding the wells and remove silt and fines such that turbidity in groundwater samples collected from the well were less than 5 nephelometric turbidity units (NTU).

5.5.2 Initial Groundwater Sampling – June 2021

After recording the depth to groundwater, each monitoring well was purged and sampled in accordance with U.S. EPA low-flow sampling methods using a peristaltic pump with a low-flow setting (less than 0.5 liter per minute). The purged groundwater was passed through the flow cell of a water quality meter unit to continuously monitor specific conductivity, oxidation reduction potential (ORP), dissolved oxygen, pH, turbidity and temperature. Purging continued until the field parameters listed below stabilized to within the ranges presented:

Field Parameter	Stabilization Criteria
Specific Conductivity	3% of range
ORP	10.0 millivolts
Dissolved Oxygen	10% of range or <0.5 milligrams per liter (mg/L)
pH	0.10 standard pH units

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Field Parameter	Stabilization Criteria
Turbidity	No greater than 5 NTU
Temperature	3% of range

The groundwater samples were dispensed, unfiltered, into the appropriate laboratory-prepared glassware, labeled, and placed in a cooler with ice, and submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts for analysis as follows:

- PCP by U.S. EPA Method 8270C; and
- Dioxins/furans by U.S. EPA Method 1613.

As shown on Table 3, neither PCP nor dioxins/furans were detected in the groundwater samples collected from wells located at the Partial PSSC Site at concentrations greater than laboratory reporting limits. PCP was detected in the sample collected from well MW602, not located on the Partial PSSC Site, at a concentration of 1.3 µg/l.

5.5.3 Quarterly Groundwater Sampling, 2021 – 2022

Although biennial monitoring is required by the Partial TSSC, quarterly monitoring is required to demonstrate compliance with the MMCLs and GW-1 standard prior to submittal of a Permanent Solution Statement. Because groundwater samples collected from four of the five 600-series wells did not exhibit contaminant concentrations greater than their corresponding GW-1 criteria, Ransom collected three more rounds of quarterly samples on August 27, 2021, November 2 and 3, 2021, and March 11, 2022 to support compliance with the GW-1 criteria. Depths to groundwater ranged from approximately 5 to 9 feet bgs. Low-flow sampling methods were again used to collect the samples as noted above. The samples were submitted to Pace of Minneapolis, Minnesota for analysis.

PCP was not detected at concentrations greater than the laboratory reporting limit in the four groundwater samples submitted for analysis. Dioxins/furans (expressed as 2,3,7,8-TCDD TEQ) were detected in three of the five unfiltered groundwater samples submitted for analysis at concentrations ranging from 0.02 to 0.19 picograms per liter (pg/l). The GW-1 Standard for dioxin/furans (2,3,7,8-TCDD TEQ) is 30 pg/l.

5.6 Biennial Groundwater Sampling

On September 28, 2023, Ransom was present at the Site to complete the biennial PCP sampling of Well MW602 for PCP using the above-referenced procedure. PCP was detected in the sample collected from well MW602 in the northern half of Lot 4 (outside of the Partial PSSC Site) at a concentration of 76 µg/l.

On September 3, 2025, Pinchin was present at the Site to complete the biennial PCP sampling of well MW602. In addition, to confirm the current PCP concentrations in groundwater on Lot 3, Pinchin also

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sampled well MW605 for PCP using the procedure described above. PCP was not detected at a concentration greater than the laboratory reporting limit of 0.8 µg/l in groundwater samples collected from MW602 or MW605.

The sampling results for each event are included in Table 3. Copies of the groundwater chemical analysis report are provided in Appendix E.

6.0 NATURE AND EXTENT OF CONTAMINATION

The contaminant present in soils at the Partial PSSC Site is dioxins/furans. Based on the current development, there are separate potential exposure scenarios for the Bentley Apartments on Lot 3, and the Stormwater Basin and the Southern Berm on Lot 4. The extent of contamination in soil is discussed below for each area. Groundwater has not been adversely impacted on the Partial PSSC Site so has been dismissed as a medium of concern. The dioxins/furans TEQs are summarized in Table 1.

6.1 Extent of Soil Contamination – Bently Apartments

Dioxins/furans were detected in the 12 DU samples collected within the Bentley Apartments Site at TEQs ranging from 1 to 69 ng/kg, with an average TEQ of 14 ng/kg. At least 4 feet of clean fill is present over soils with TEQs greater than 20 ng/kg. The dioxins/furans TEQs within the Bentley Apartments area are shown on Figures 7 through 9.

6.2 Extent of Soil Contamination – Southern Stormwater Basin

Dioxins/furans were detected in the 6 DU samples collected within the area of the stormwater basin in the southwest corner of the Site at TEQs ranging from 1 to 35 ng/kg, with an average TEQ of 20 ng/kg. At least 1 foot of clean fill is present over soils with TEQs greater than 20 ng/kg. The dioxins/furans TEQs are shown on Figures 10 and 11.

6.3 Extent of Soil Contamination – Southern Berm

Prior to the start of remediation of the Site in 2019 and 2020, Ransom had determined that the top 2 feet of soil across the Site contained dioxins/furans at concentrations greater than the UCL of 500 ng/kg in effect at that time. (Refer to Figure 3 in Appendix B). The remediation plan was to relocate soils with concentrations of dioxins/furans greater than the UCL in effect at that time to the southern and eastern property boundaries in landscaped berms completed with an Engineered Barrier. During the remediation activities, soils from within the Bentley Apartments parcel (Lot 3), the western portion of Lot 4, and western portions of Lot 2 were relocated to the Southern Berm constructed along the southern property boundary on Lot 4. Based on the pre-remediation site characterization activities, dioxins/furans were present in those soils at concentrations of up to 7,900 ng/kg based on the MassDEP TEFs in effect at that time.

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No sampling was done within the Southern Berm. However, Pinchin recalculated dioxins/furans TEQs for the samples collected from SB10-S2 and SS323 with the greatest pre-remediation TEQs. The revised TEQs using MassDEP's 2025 TEFs were 1,105 and 1,073 ng/kg, respectively. The TEQ for sample SS32-S1 was originally calculated as 2,107 ng/kg; however, the revised TEQ calculated with the current TEFs in 418 ng/kg, which is less than the current Method 3 Ceiling Limit of 600 ng/kg for dioxins/furans. Based on the pre-characterization data and the revised TEFs, it is Pinchin's opinion that the Southern Berm is constructed of soils containing concentrations of dioxins/furans both greater than and less than the M3CL of 600 ng/kg. The Southern Berm is covered by an Engineered Barrier.

7.0 REPRESENTATIVENESS EVALUATION AND DATA USABILITY ASSESSMENT

Pinchin performed a Representativeness Evaluation and a Data Usability Assessment based on the *MCP Representativeness Evaluations and Data Usability Assessments Policy #WCS-07-350* dated September 19, 2007.

7.1 Representativeness Evaluation

7.1.1 Use of Field/Screening Data

The primary affected medium at the Portion of the Site is soil impacted by dioxins/furans, which are non-volatile and not evident by visual observation. Confirmation of the post-excavation concentrations of dioxins/furans was determined by U.S. EPA Method 1613, which has a turnaround time of several weeks. To obtain more rapid results to aid in monitoring the ongoing excavation, Ransom initially collected soil samples for analysis by an immunoassay screening method for dioxins/furans (U.S. EPA Method 4025) performed by Cape Technologies of South Portland, Maine (Cape). The screening results indicated post-remediation concentrations of dioxins/furans ranging from 13 to 52 ng/kg. However, the concentrations of dioxins/furans obtained by U.S. EPA Method 1613 for those samples ranged from 12 to 8,100 ng/kg.

No correlation was observed between the screening and laboratory methods. Based on subsequent conversations with Cape, they noted that the majority of the 2,3,7,8-TCDD TEQs in the laboratory results determined by U.S. EPA Method 1613 were based on the concentrations of octa-, hepta-, and hexa-dioxins and furans. Upon reviewing the results, Cape acknowledged that U.S. EPA Method 4025 is effective at screening for tetra- and penta- dioxins/furans and method "doesn't pick up these congeners [octa-, hepta- and hexa- dioxins/furans] as well." The lighter congeners for dioxins/furans comprised less than 2% of the dioxin/furan congeners at the Site, which results in the screening method vastly underestimating the actual concentrations.

Once the U.S. EPA Method 1613 results were received, the lack of correlation was apparent, and use of U.S. EPA Method 4025 was discontinued for the remaining remediation samples collected at the Site.

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A photoionization detector (PID)-equipped instrument was used during the earlier Site-wide assessment activities to screen soils for organic vapors.

7.1.2 Sampling Rationale

The Data Quality Objectives (DQOs) for the response actions completed at the Site included:

- Determining whether soils with contaminant concentration greater than their corresponding UCLs (in effect at that time) had been removed from the proposed development areas; and
- Gathering sufficient data to evaluate site-specific risks of harm to human health, safety, public welfare and the environment.

To achieve the DQOs, post-excavation samples were collected across the surface in each of the DUs to confirm that the surface soils impacted by dioxins/furans did not remain in the developed area. The additional soil samples collected in the Riverfront Area (RF1 through RF-4) were collected for use in determining the EPCs in surface soils in that area.

7.1.3 Number and Spatial Distribution and Handling of Samples

In Ransom's response to MassDEP's conditional approval of the Phase IV RIP-Revision 5, Ransom proposed a revised sampling plan for the construction and post-remediation confirmatory testing to address MassDEP's concerns regarding adequate sampling data for the post-remediation risk characterization; this plan was implemented at the Site. In lieu of discreet sampling locations, Ransom used ICS as described in U.S. EPA's "User Guide, Uniform Federal Policy Quality Assurance Project Plan Template for Soils Assessment of Dioxin Sites," dated September 2011. The changes in the sampling protocol were intended to incorporate spatial averaging into a single laboratory analysis. This allowed a single composite sample to be used to assess progress toward the remediation goals (or the need for addition excavation) during implementation of the RIP. Furthermore, it allowed a single ICS sample to be used as an EPC for assessing risk over a larger area (i.e., a DU) by providing a better representation of the true mean concentration of dioxins/furans.

To facilitate control of the Site during construction, the area remediated each generally corresponded to a single DU. Ransom collected one ICS sample from each DU for analysis of dioxins/furans by U.S. EPA Method 1613 for use as post-remediation concentrations in the risk characterization. Dioxins/furans concentrations are expressed as TEQs using MassDEP's updated 2025 TEFs.

The sampling for dioxins/furans was as follows for the DUs excavated in October and November 2019:

- Once Billings removed the upper 2 feet of soil, Ransom collected two ICS soil samples from the top 2 inches using the following procedure:

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- Ransom laid out an approximately 10-foot by 10-foot grid within the perimeter of the remediated area. At each of the nodes, Ransom collected approximately 10 grams of soil and split it between two ICS samples.
- One ICS sample (approximately 400 grams) was sent to Cape for analysis for dioxins/furans by immunoassay by U.S. EPA Method 4025M.
- The second ICS soil sample from the DU was held for possible laboratory analysis for dioxins/furans by U.S. EPA Method 1613.

- Ransom reviewed the results of the immunoassay screening analyses upon receipt. If the dioxins/furan concentration (expressed as TEQ) in the DU immunoassay sample exceeded the acceptable concentration for the intended future use, the second composite sample previously collected for ICS processing and analysis by U.S. EPA Method 1613 would be discarded and additional soils would be excavated from the entire DU. This condition did not happen, mainly because the screening method vastly underestimated the actual concentrations of dioxins/furans.
- Because the dioxins/furans concentrations expressed as TEQ in the immunoassay samples indicated that remediation goal had been met, the second ICS soil sample was submitted for ICS processing and laboratory analysis for dioxins/furans by U.S. EPA Method 1613.
  - If the dioxins/furans TEQ using Method 1613 was less than 20 ng/kg, the remediation goal had been achieved.
  - If the concentration of dioxins/furans sing Method 1613 was greater than 500 ng/kg, an additional 12 inches of soil was excavated from the DU.
  - If the concentration of dioxins/furans using Method 1613 was more than 20 ng/kg but less than 500 ng/kg, Ransom considered the future uses of the DU area and determine if additional soil would be removed prior to redevelopment, or whether site controls could be used to meet a condition of NSR during construction and post-development.

For samples collected after November 2019, the use of screening method was eliminated, and ICS samples were submitted from the DUs for ICS processing and U.S. EPA Method 1613 analysis.

It is Pinchin's opinion that the number of samples and the sample distribution were adequate to meet the DQO.

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7.1.4 Temporal Distribution of Samples

Temporal distribution of samples does not apply to soil sampling. Based on the groundwater sampling completed at the Partial PSSC Site, including one year of consecutive quarterly monitoring, groundwater is not adversely impacted within the Partial PSSC Site boundaries.

7.1.5 Completeness

Based on Pinchin's review of the analytical data for the Site and the CSM, no significant data gaps were identified, and the data set is considered complete for the purposes of this Partial PSSC.

For purposes of assessing risk of harm to human health, the most critical samples are surface soils in accessible areas.

7.1.6 Uncertainty and Inconsistency

Based on the information collected for the Site and presented in this Partial PSSC, Pinchin has not identified inconsistent information or sources of uncertainty which could bias the outcome of this assessment.

7.1.7 Information Considered Unrepresentative

Samples DU13, DU13-S1, and DU17, and DU17-S1 do not represent the soils currently located within these DUs because the soil represented by each of those DU samples was excavated and relocated to one of the soil berms. Those samples were replaced by DU13-S3 and DU17-S2.

Sample DU3 does not represent the current exposure concentration in the portion of the DU located outside of the fence surrounding the southwest Stormwater Basin. This area was filled with soils imported to the Site, including excess soil generated from the stream restoration activities on the abutting property. Sample RF1 was collected within the top 12 inches of soils at the finished grade to provide the exposure concentration of dioxins/furans in the portion of DU3 associated with the Bentley Apartments.

Portions of DU9 located east of the Bentley Apartment buildings were excavated to 3 feet below the finished grade. Composite sample DU20 was collected within the excavated area to assess the concentrations of dioxins/furans in soils remaining in this area such that the sample from DU9 is not representative of soils located within DU20.

The historical samples were used to identify areas where soils with concentrations of dioxins/furans with concentrations above the UCL were located at depths greater than 2 feet. Historical samples that were superseded by subsequent samples collected in the same depths and locations are considered to be unrepresentative of current conditions.

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7.1.8 Conclusions

Pinchin concludes that the Representativeness Evaluation demonstrates the adequacy of cumulative data to characterize the nature and extent of contamination at the Partial PSSC Site, the risk to health, safety, public welfare and the environment and the elimination/control of oil and/or hazardous material sources.

7.2 Data Usability Assessment

7.2.1 Analytical Data Usability Assessments

Based on the long history of investigation at this Site, the data generated after the May 21, 2004 effective date of the MassDEP's Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols WSC #02-320, (the CAM), is considered "CAM-Compliant" data. Therefore, this data meets the requirements of concluding "Presumptive Certainty" with respect to use of the data in support of this TSSC.

The data associated with the chemical analysis of the historical samples collected prior to late 2003, when Alpha, which performed the majority of the analytical work, adopted the CAM requirements), is considered "Pre-CAM." That data was used for the early site characterization but not relevant to this Partial PSSC.

In 2001, Ransom/Pinchin adopted an internal laboratory data review protocol which included the completion of a Laboratory Report Checklist to document the review. The laboratory data review process included an evaluation of the following quality control/quality assurance parameters:

- Sample integrity (temperature, preservation, containers, holding time, date and time of collection, accuracy of field identification and field manipulation [field filtering]);
- Laboratory information (current certification, name and address, lab report signed, lab ID No., and certification statements);
- Chain-of-Custody information (relinquish and receipt signatures, dates, and times);
- Laboratory report (method references, modifications to methods, units, reporting limits, analyst, date of sample preparation, date of analysis, dilution factors, % moisture content for solids, target analytes correct, matrix, and labor report and/or sample ID); and
- Quality Assurance/Quality Control (findings, notes explained, method blank results, laboratory control samples results, matrix spike/matrix spike duplicate results).

The completed Laboratory Report Checklists are attached to the laboratory reports and appended to reports submitted to the MassDEP. As a result, the "Pre-CAM" data was generally of a known quality and suitable for decision making.

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Based on a review of the data, Pinchin has concluded that the analytical data collected from the Site is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and sensitivity to be used in a Representative Evaluation and to support this Partial PSSC.

7.2.2 Data Evaluation Criteria

Based on the known source of contamination at the Partial PSSC Site, the selected laboratory analyses were appropriate for assessing conditions and meeting the DQOs. Based on Pinchin's comparison of the analytical data collected from the Partial PSSC Site and the DQOs, the data is considered useable for its intended purpose and can therefore be included in the Representativeness Evaluation.

7.2.3 Field Data Usability Assessment

To assess the field quality control data, Pinchin reviewed the sampling procedures, sample containers and preservation and holding times. The results of a field data usability assessment indicate that the analytical data collected at the Partial PSSC Site is representative of the sampling points from which they were collected.

7.2.4 Conclusions

The data collected from the Partial PSSC Site is representative with regard to the spatial and temporal distribution of sampling points and is adequate to be used to support this Partial PSSC. Based on a review of the data, Pinchin has concluded that the analytical data collected from the Partial PSSC Site is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and sensitivity to support this Partial PSSC.

8.0 METHOD 3 RISK CHARACTERIZATION

Pinchin contracted with OTO to complete a Method 3 Risk Characterization to assess potential risks to human health at the Partial PSSC Site. The Method 3 Risk Characterization is based on both current and foreseeable future uses of the Partial PSSC Site and the surrounding environment. A copy of the complete Method 3 Risk Characterization report, including summary tables and other supporting documents, is included in Appendix F.

8.1 Hazard Identification

8.1.1 Soil

Soil samples collected at the Partial PSSC Site indicate that the COCs are dioxins/furans and PCP.

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8.1.2 Groundwater

The analytical results for groundwater samples collected at the Site from 2019 through 2025 indicate that dioxins/furans and PCP are the groundwater COCs.

8.1.3 Surface Water/Sediment

No COCs are present in surface water or sediment.

8.1.4 Indoor Air

The COCs present at the Site are not volatile. Therefore, the potential for vapor migration is not present and indoor air is not a media of concern for the Partial PSSC Site.

8.2 Dose-Response Assessment

Dose-response information describes the health effects observed in humans or animals associated with particular doses of a constituent. Based on the observed effect and target organ identified, a numerical value is developed to estimate the magnitude of the health effect associated with a dose. Dose-response values are derived differently for non-carcinogenic and carcinogenic effects. The results of the dose-response assessment (dose-response values) were combined with the results of the exposure assessment (estimates of the magnitude of potential human exposure) to provide an estimate of the potential risk of harm to human health. Dose-response values for COCs are documented in the MassDEP's Shortform output tables provided in Appendix F.

8.3 Human Health Exposure Assessment

8.3.1 Site Activity and Uses

The Partial PSSC Site is being used for residential purposes and stormwater control. The Stormwater Basin in the southwest corner is fenced to prevent access.

8.3.2 Potential Human Receptors

Human receptors were identified per 310 CMR 40.0921 considering current and foreseeable uses and activities for the Partial PSSC Site. Potential human receptors identified under current and future Site use include construction/utility workers, residents, Site workers, and visitors/ trespassers.

8.3.3 Exposure Pathways and Assumptions

Soil analytical data indicated that detected concentrations of OHM were reported in soils at original grades located at depths of 0 to 2 to 12 to 14 feet bgs in pre-remediation and development conditions. For post-remediation conditions, the shallow soil located at 0 to 3 feet bgs in unpaved areas are categorized in the MCP as "accessible" for exposure. The soil located at 3 to 12 feet bgs in unpaved

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areas and 0 to 12 feet bgs under pavement or similar barrier are categorized in the MCP as “potentially accessible” for exposure. Soil located in building footprints and beneath permanent structures are categorized as “isolated” from exposure

The Method 3 evaluates concentrations of OHM under current and foreseeable future conditions. As demonstrated in this Method 3, post-remediation development meets a condition of NSR for soils using sufficient covers and a Notice of AUL, where required, and for other areas where no covers nor AUL are required.

There is limited potential for direct contact soil exposure after Site development by construction workers. Exposures to construction workers are managed with a Health and Safety Plan, as required in the Notice of AUL. Under post-development conditions, the potential for direct contact exposure may exist for residents for the Bentley Apartments and trespassers in the Stormwater Detention Area, where covers are not required. The current residents were evaluated as the maximum exposed individual for each area of the Partial PSSC Site.

Exposure factors, also referred to as exposure assumptions, are numerical estimates of the magnitude and duration of exposures that receptors may have to OHM at the Partial PSSC Site. For the potential exposure to soil by residents was evaluated using the MassDEP Shortforms for Human Health Risk Assessment under the MCP (sf0624rs) with the Vlookup Version v0624 (MassDEP, 2024b); encoded with receptor-specific exposure assumptions and equations.

Groundwater at the Site is impacted by PCP. However, recent groundwater sampling for the Partial PSSC portion of the Site evaluated in this PSSC indicates that PCP is not detected above laboratory reporting limits. Further, groundwater is not used as a source of drinking water for the Bentley Apartments.

8.3.4 Exposure Point Concentrations

Soil EPCs were based on the remediation plan for movement and reuse of soils at the Site. For soil EPCs, the data was segregated into soils that were managed, as specified in the Phase IV report, as excavated and placed under the Engineered Barrier at the Southern Berm (excluded from EPCs) or present under other barriers (i.e., concrete, asphalt, building, and clean fill with) with a Notice of AUL, or no restrictions on use required.

EPCs for areas with no barriers (i.e., accessible soil) were derived for each of the two Site areas (Bentley Apartments and Stormwater Detention Area). The EPCs for calculating risks were based on the maximum reported concentration in the DU samples for each subset of the data for these two areas. For comparison of EPCs to M3CLs, the maximum concentration was also used. EPCs are presented in Appendix A to the Method 3 report provided in Appendix F.

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8.4 Hazard Indices and Excess Lifetime Cancer Risks

Risk calculations for soil were performed by entering the sets of EPCs into the residential receptor-specific MassDEP Method 3 Shortform (sf0624rs). Risks to residents are considered to be protective of other receptors, including construction workers and trespassers. The Shortforms are a series of linked spreadsheets containing toxicological information for various compounds and exposure assumptions for the different receptors. The complete Shortforms are included in Appendix B to the Risk Characterization Report in Appendix F.

For a residential use scenario, we used the Residential ShortForm (sf0624rs), which considers soil incidental ingestion, dermal contact, and, for some parameters, ingestion of vegetables grown in the impacted soil. The COC 2,3,7,8-TCDD does not have a MassDEP Plant Uptake Factor (PUF), therefore, the vegetable ingestion pathway was not quantitatively evaluated.

The Residential ShortForm evaluates risks for exposures of 150 days/year and up to 30 years, including subchronic risks for toddlers aged 1 to 2 years old. Evaluation of residential exposures is protective of lesser exposed individuals, such as visitors and trespassers, who may be present, but for shorter frequency and duration.

Receptor	SubChronic Hazard Index (HI)	Chronic Hazard Index (HI)	Cancer Risk (ELCR)
Accessible Soil – No AUL Restrictions Required			
Resident, Bentley Apartments	0.14	0.045	$8x\ 10^{-7}$
Resident, Southern Stormwater Retention Area	0.58	0.19	3×10^{-6}

No values exceed MCP Risk limits.

A condition of NSR to soil exists after Site development with direct contact exposure being eliminated through fill, barriers, and the Notice of AUL, where required.

8.5 Evaluation of Potential Risks to Public Welfare

The MCP (310 CMR 40.0994) defines two purposes for conducting a characterization of risk to public welfare: (a) to identify and evaluate nuisance conditions which may be localized, and (b) to identify and evaluate significant community effects. The characterization of risk to public welfare considers effects that exist or may result from the presence of residual contamination or the implementation of a proposed remedial alternative.

The characterization of the risk of harm to public welfare considers Site, receptor, and exposure information, as well as data collected pursuant to the response action(s) being performed. The

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characterization of risk of harm to public welfare also considers such factors as the existence of nuisance conditions, loss of active or passive property use(s), and any non-pecuniary effects not otherwise considered in the characterization of risk of harm to health, safety, and the environment, but which may accrue due to the degradation of public resources directly attributed to the release or threat of release of OHM or the remedial alternative (310 CMR 40.0994(2)).

The risk of harm to public welfare is also characterized by comparing EPCs to the M3CLs in soil, as defined in 310 CMR 40.0996. In addition, a level of NSR of harm to public welfare exists or has been achieved if no nuisance conditions, such as noxious odors, persist in the breathing zone of ambient and indoor air in the reasonably foreseeable future.

The EPCs for soil outside the Engineered Barriers do not exceed M3CLs. No non-aqueous phase liquid (NAPL) is currently present at the Portion of the Site and potential odors are not believed to pose a significant risk to public welfare. Therefore, OTO concluded that there is NSR to public welfare for soils and groundwater at the Partial PSSC Site under current and foreseeable future conditions.

8.6 Evaluation of Potential Risks to Safety

According to the MCP, 310 CMR 40.0960, potential safety hazards include release-related conditions that may pose a threat of physical harm or bodily injury to people. Such release-related conditions may include, but are not limited to:

- The presence of rusted or corroded drums or containers, open pits, lagoons or other dangerous structures;
- Any threat of fire or explosion, including the presence of explosive vapors resulting from a release of oil and/or hazardous material; and
- Any uncontained materials that exhibit the characteristics of corrosivity, reactivity, or flammability.

None of the above-referenced conditions exists at the Site. Therefore, OTO concluded that there is not a risk of harm to safety due to release-related conditions at the Site.

8.7 Evaluation of Potential Risks to the Environment

The focus of a Method 3 Risk Characterization is on any environmental resource areas, such as wetlands, aquatic and terrestrial habitats, and fisheries that exist at a site. A condition of No Substantial Hazard to the environment exists if steps have been taken to eliminate or mitigate conditions, where applicable, affecting an environmental resource at a site (310 CMR 40.0956(2)). These conditions may include stressed biota, visible oil on soil or sediment, and continued discharge of contaminated groundwater to surface water.

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In accordance with Section 40.0995 of the MCP, this section of the risk assessment evaluates possible ecological risks due to OHM in soil and groundwater from the Partial PSSC Site. For the Partial PSSC Site, a Stage I Environmental Risk Screening was conducted. Based on the information detailed in the Method 3 Risk Characterization, OTO concluded that potentially significant exposures do not exist for terrestrial ecological receptors potentially exposed to soils at the Site. As a result, in summary, OTO concluded that there is currently a condition of No Substantial Hazard to the environment.

8.8 Uncertainties

The Method 3 Risk Characterization is dependent on the quality and nature of the sampling data from the site characterization. Sampling bias or selection of specific analytical methodologies may affect the accuracy of the data. Samples collected for the purposes of the Risk Characterization were obtained from areas of reported contamination and may not be representative of site-wide conditions. Constituent concentrations actually present in on-site media are uncertain because they were estimated from results of individual samples. Random fluctuations in analytical results exist due to variations in sampling and analytical procedures.

The EPCs, based on individual sample results, also represent conservative conditions. These instances of potential uncertainty apply specifically to current site use scenarios. Uncertainty is perhaps more pronounced for EPCs used under modeled future conditions. We have assumed that future concentrations will be equivalent to current concentrations, although changes in TEFs could revise the calculated TEQs.

Conservative, health-protective assumptions were used in calculating risks of exposure.

8.9 Conclusions

A Method 3 Risk Characterization was performed for the Partial PSSC Site in the southern portion of the Site referred to as the Bentley Development at 100 Bridge Street in Great Barrington, Massachusetts and RTN 1-0682. The Method 3 was completed in accordance with 310 CMR 40.0900 to evaluate if the current and foreseeable future Site conditions are consistent with a condition of NSR of harm to health, environment, safety, and public welfare.

The following conclusions were reached:

- A condition of NSR exists for soil exposure to current residents and lesser-exposed construction workers and trespassers with the use of fill, barriers, and a Notice of AUL to restrict direct contact exposure in specified areas of the Bentley Apartments, Riverfront Area, and Stormwater Retention Area. Other specified areas above the barriers (i.e.,

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accessible soil) of the Bentley Apartments, Riverfront Area, and Stormwater Retention Area do not require restrictions on use.

- A condition of NSR exists for future use of groundwater within the Partial PSSC Site as drinking water relative to concentrations of dioxins/furans and PCP, but not for the remainder of the Disposal Site;
- A condition of NSR exists for public welfare and safety; and
- A condition of NSR for the environment exists for the aquatic environment for the Partial PSSC Site, but not the remainder of the Disposal Site based on the potential for groundwater to discharge into the Housatonic River.

Based on these conclusions, a Partial Permanent Solution is supported by the overall conclusion of a condition of NSR for the Partial PSSC portion of the Site with the implementation of a Notice of AUL.

9.0 FEASIBILITY EVALUATIONS

Pinchin conducted a Feasibility Evaluation as required by 310 CMR 40.1056 in accordance with MassDEP Policy #WSC-04-160, Conducting Feasibility Evaluations under the MCP (the Policy). According to 310 CMR 40.0860, evaluations must be completed to evaluate the feasibility of:

- Reducing the concentrations of OHM to levels that achieve or approach Background; and
- Reducing the concentrations of OHM in soil beneath an Engineered Barrier to concentrations below the M3CL.

The COC present at the Partial PSSC Site is dioxins/furans. Although not specifically included as a Persistent Contaminant on Table 9-2 in the Policy, the list does include polychlorinated biphenyls (PCBs), which MassDEP notes are dioxin-like compounds in the communication provided in Appendix C. It is Pinchin's opinion that Sections of the Policy pertaining to persistent contaminants would apply to the dioxins/furans at this Site. Note that the M3CL for the dioxin/furan TEQ is 600 ng/kg.

9.1 Background Feasibility Evaluation

9.1.1 Background for S-1 Soils

According to Section 9.3.3.2 of the Policy, it is MassDEP's position that background in soil for persistent contaminants located in areas classified as S-1 shall be considered approached if the concentration of each persistent contaminant at each sampling location is at or below the Method 1 S-1 standards as specified in 310 CMR 40.0900. The corresponding Method 1 Standard for dioxins/furans is 20 ng/kg.

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The MCP classifies soils as Category S-1 if either:

- The soil of concern is accessible (i.e., within 3 feet of the ground surface in unpaved areas) and either:
  - Is used for growing fruits or vegetables for human consumption;
  - A child's frequency or intensity of use is considered to be high; or
  - An adult's frequency and intensity of use is considered to be high; or
- The soil of concern is potentially accessible (i.e., under a paved surface or located at depths of 3 to 15 feet under an unpaved area) and a child's frequency and intensity of use are both considered to be high.

Twelve of the 17 dioxin/furan TEQs are at or less than the Method 1 S-1 Standard; however, it is Pinchin's opinion that Category S-1 does not apply to soils within the Partial PSSC Site.

9.1.2 Background for S-2 and S-3 Soils

According to Section 9.3.2.4 of the Policy, it is MassDEP's position that achieving or approaching background in soil can be deemed infeasible for persistent contaminants in areas with lower exposure potential (i.e., S-2 and S-3 soil categories).

The MCP classifies soils as Category S-2 if either:

- The soil of concern is accessible and:
  - Either a child's frequency or intensity of use is considered to be low; or
  - Children are not present at the disposal site and either the adult's frequency or intensity of use is considered to be high; or
- The soil of concern is potentially accessible and:
  - Either a child's frequency and intensity of use is considered to be high; or
  - Children are not present at the disposal site and an adult's frequency and intensity of use are both considered to be high.

The MCP classifies soils isolated under the footprint of a building or located at a depth of greater than 15 feet below the ground surface as Category S-3.

9.2 Site Soil Background Evaluation

Based on the existing development and uses of the Partial PSSC Site, Pinchin has determined that the soils within the Partial PSSC Site can be classified as follows:

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- Bentley Apartments: Category S-2 and S-3: The impacted soils are located at least 3 feet bgs, with much of the area also located under buildings or pavement. Children are present at the Site and may use landscaped areas; however, the intensity of use would be low given the managed nature of the residential property.
- Southern Stormwater Basin: Category S-2 and S-3: Impacted soils are accessible in that they are located within three feet of the ground surface in an unpaved area. However, the area is fenced off for stormwater detention so neither children nor adults are expected to be present with any frequency or intensity.
- Southern Berm: Category S-3: Impacted soils are isolated under an Engineered Barrier.

It is Pinchin's opinion that the soils within the Partial PSSC Site meet the criteria for Category S-2 and S-3 Soils as described above. Therefore, it is Pinchin's opinion that background at the Site shall be considered approached.

9.3 M3CL Feasibility Evaluation

Based on the pre-remediation site characterization activities, dioxins/furans were present in soils within the Partial PSSC Site at concentrations (as expressed as TEQs) of up to 7,900 ng/kg based on the MassDEP TEFs in effect at that time. The proposed remediation strategy was to reduce the concentrations of dioxins/furans in the portions of the Site to be developed and to consolidate them in two areas that would be controlled by an Engineered Barrier.

A Phase III Study was prepared by Ransom in 2005 for the Disposal Site. The primary objective of the Phase III Study was to identify and evaluate remedial action alternatives (RAAs) that are reasonably likely to reduce dioxins and PCP concentrations in soil to below their corresponding UCLs and to reduce the concentrations of dioxins/furans and PCP in groundwater at the Site to below their corresponding MCP Method 1 GW-1 groundwater standards. Ransom completed a detailed evaluation of the following RAAs, which represented a combination of passive and active alternatives as well as *in-situ* and *ex-situ* applications to address the presence of dioxins and PCP in soil at the Site:

- Excavation and Off-Site Incineration;
- Excavation and *Ex-Situ* Thermal Desorption;
- *In-Situ* Thermal Desorption; and
- Physical Barrier.

Ransom concluded that Alternative 4, Physical Barrier, was overall the most reliable, easy to implement, cost-effective, low risk, beneficial, immediate, and therefore the most feasible RAA for implementation at the Site. Although other RAAs with the potential to achieve a Permanent Solution with regard to soil at

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the Site were identified, those alternatives were substantially more expensive to implement (over $48M for off-site incineration and $5-9M for thermal desorption) and presented a greater risk with regard to the difficulty of implementation and degree of success.

Subsequent to completion of the 2005 Phase III RAP, Biotech Restorations, LLC (BRT) reported success in reducing dioxins/furans and PCP concentrations in soil using enhanced bioremediation with their proprietary bioremediation "Factor." Their method included application of soil amendments and Factor to impacted soils and promoting bioremediation via standard land-farming methods. The potential success of this technology was demonstrated in a bench study conducted by BRT. CDCSB was in favor of attempting to reduce the contaminant concentrations at the Site. Therefore, a Phase III Remedial Action Plan Addendum No. 1 was submitted to MassDEP in May 2013, proposing the implementation of this remediation method. The bioremediation process began during the week of June 23, 2014.). In May 2015, MassDEP suspended additional bioremediation at the Site pending documentation of success related to the process. In August 2015, the MassDEP terminated further bioremediation efforts as its ability to reduce the concentrations of dioxins/furans was not confirmed.

Based on the previous activities, it is Pinchin's opinion that a reduction in contaminant concentrations in soil below the Engineered Barrier is not feasible. It is worth noting, however, that the TEFs adopted by MassDEP in 2025 have significantly reduced the previously calculated dioxin/furan concentrations (expressed as TEQs).

10.0 PERMANENT SOLUTION STATEMENT

It is Pinchin's opinion that the requirements of a Permanent Solution have been met for the southern portion of the disposal site tracked as RTN 1-0682 and identified herein as the Bentley Apartments, southern Stormwater Retention Area, and Southern Berm. Additional response actions are not warranted. Per CMR 310.1056 of the MCP, the Permanent Solution Criteria are below.

- A clear and accurate description of the site to which the Permanent Solution applies: The Partial PSS applies to the 3.94-acre portion of the property located at 100 Bridge Street, currently developed as the Bentley Apartments on Lot 3 and the adjacent Southern Berm and Stormwater Retention Area on a portion of Lot 4. The layout of the area is shown on Figure 2 and described in the Notice of AUL included in Appendix G.
- CSM: Refer to Section 2.4.
- Elimination or Control of OHM Sources: Per Pinchin's CSM, the primary source of dioxin/furan contamination in surface soils at the Partial PSSC Site was historical airborne deposition from the smokestack and the fire which consumed the factory building in 2001, with secondary impacts from storage and/or burial of treated wood at

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the Site. The former factory and the buried debris have been removed. Impacted soils located within the Bentley Apartment development site were relocated to the Southern Berm and placed under an Engineered Barrier.

- Assess/control subsurface migration: As noted in Section 2.4, the dioxins/furans present are not mobile or soluble. Subsurface migration is not an issue. Access to the impacted soils located in the Southern Berm is controlled by an Engineered Barrier constructed in accordance with 310 CMR 40.0998, which states that an Engineered Barrier shall:
  - prevent direct contact with contaminated media;
  - control any vapors or dust emanating from contaminated media;
  - prevent erosion and infiltration of precipitation or run-off that could jeopardize the integrity of the barrier or result in the potential mobilization and migration of contaminants;
  - be comprised of materials that are resistant to degradation;
  - be consistent with the technical standards of Resource Conservation and Recovery Act (RCRA) Subpart N, 40 CFR 264.300, 310 CMR 30.600: Technical Standards for All Hazardous Waste Facilities or equivalent standards;
  - include a defining layer that visually identifies the beginning of the barrier; and
  - be appropriately monitored and maintained to ensure the long-term integrity and performance in accordance with a monitoring and maintenance plan; such plan shall be submitted to the Department and shall document that one or more financial assurance mechanism(s) as specified at 310 CMR 40.0998(4) have been established which adequately provide for ongoing future monitoring, maintenance and any necessary repair or replacement of the barrier.

Based on the design and construction of the Engineered Barrier, the nature of the contaminants (i.e., non-volatile, non-mobile), and the conditions of the Notice of AUL for monitoring and maintenance, it is Pinchin's opinion that the Engineered Barrier installed at the Partial PSSC Site described in Section 5.4 meets the above-listed criteria.

- NAPL: No NAPL is present at the Site.
- NSR has been achieved: Refer to Section 8.0 for the Method 3 Risk Characterization.
- Feasibility Evaluation: Refer to Section 10.0 for the Feasibility Evaluation.
- AULs: A Notice of AUL is required to maintain the Engineered Barrier and to prevent disturbance of the impacted soils located at least 4 feet bgs. Refer to Appendix G for a copy of the Notice of AUL.

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- M3CL exceedances: Refer to Section 10.4 for a feasibility evaluation for achievement of the M3CL beneath the Engineered Barrier.
- PSS with Conditions: Refer to the Notice of AUL in Appendix G.
- Data Usability/Representativeness: Refer to Section 7.0 for the Data Usability Assessment and Data Representativeness Evaluation.
- Operation and Maintenance (O&M): Refer to the Notice of AUL in Appendix G for conditions related to monitoring and maintenance of the Engineered Barrier.

11.0 CONCEPTUAL CLIMATE IMPACT EVALUATION

The MCP requires an evaluation of reasonably foreseeable future changes in Disposal Site conditions, including anticipated impacts associated with climate change. The Site is located within a 100-year floodplain associated with the Housatonic River. Therefore, the Partial PPS Site is in a sensitive area relative to potential impacts from climate change.

Based on the sampling described above, the soils within the flood zone that are impacted by elevated concentrations of dioxins/furans are located beneath buildings, pavement, or at least 3 feet of clean fill. Therefore, although the Site property may be susceptible to impacts from climate change (i.e., an increased risk of flooding), the impacted soils are not expected to be mobilized by flooding. In addition, the COCs are adhered to soil particles and are not susceptible to migration with the infiltration of stormwater. It is Pinchin's opinion that the remaining impacted soils at the Partial PSSC Site would not pose an adverse risk to sensitive populations, environmental resources, or other receptors if flooding were to occur due to climate change.

12.0 PUBLIC NOTIFICATION

On October 12, 2016, the CDCSB and MassDEP received notice from residents of the Town of Great Barrington, Massachusetts requesting that the Site be designated as a Public Involvement Plan (PIP) Site. A PIP was prepared on June 9, 2017. In accordance with the PIP, the CDCSB committed to brief the public about Site milestones in public meetings, followed by a comment period during which the public is encouraged to provide written comments and/or questions concerning the Site. CDCSB will provide written responses to written comments and take them into consideration during the response actions.

A public meeting was held via Zoom on _____ to present brief the public of the contents of the Draft Partial PSSC and answer questions. The CDCSB accepted written comments from the public through _____. Documentation of the meeting notification, the meeting itself, and a response to the public comments received by the CDCSB is provided in Appendix H.

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In accordance with 310 CMR 40.1403(3)(f), Pinchin prepared letters summarizing the Partial PSSC for transmittal to the chief municipal officer and local board of health. These public notification documents have been transmitted to the appropriate municipal offices in Great Barrington. Copies of the letters are provided in Appendix I.

A public notice for recording of the Notice of AUL will be published in _____. Copies of the notification documents to Great Barrington's Mayor, Board of Health, Planning Board, and Zoning Board of Appeals pertaining to the Notice of AUL will be submitted under separate cover via eDEP.

13.0 LIMITATIONS

This Partial PSSC was prepared for the use of CDCSB, exclusively. The findings provided by Pinchin in this report were based solely on the information reported in this document. Should additional information become available in the future, this information should be reviewed by Pinchin and the findings presented herein may be modified.

The response actions completed at the sites have been undertaken in accordance with generally accepted consulting engineering practices. No other warranty, expressed or implied, is made. It is Pinchin's understanding that this report is to be used exclusively by CDCSB until it is filed with the MassDEP, at which time it will become a part of the public record. Until this report is filed with the MassDEP, the content of this report may not be copied, provided to, or otherwise communicated to any party not directly involved in this response, in whole or in part, without written consent of Pinchin.

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TABLE 1. SUMMARY OF POST-EXCAVATION DIOXINS/FURANS CONCENTRATIONS IN SOIL
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Identification	Dioxin TEQ	Original Elevation (MSL)	Total Cut (feet)	Minimum Soil Cover (in feet)	Comments
BENTLEY APARTMENTS (LOT 3)					
DU4	1	671.5 - 674	2	8”	
DU8	20	670 - 673	2	5	
DU9	12	671 - 674	2	4	
DU12	9	672.5 - 674	2	4	
DU13-S3	24	673	4	4	
DU15	3	673	2	2	
DU16	4	673 - 674	2	6	
DU17-S2	69	673 - 674	3	5	
DU18	7	673 - 679	2	4	
DU19	16	670 - 675	2	3	
DU20	1	672 - 674	3	3	Excavated to 3 feet below proposed finished grade. Overlaps DU9, DU10, and DU14.
RF1	1	---	---	none	Sampled 0-1' bgs from final grade
SOUTHERN STORMWATER BASIN					
DU1	35	670 - 675	2	1	
DU2	30	670 - 675	2	3	
DU3	33	670 - 672	2	1	Northeast portion underlies RF1
DU4	1	671.5 - 674	2	8”	
RF1	1	---	---	none	Sampled 0-1' bgs from final grade
DU21	20	669-672	0	1	Strip between stormwater basin and woods.

Notes:

1. MSL = Mean Sea Level
2. Samples were collected from the surface of the entire Decision Unit (DU) using the Incremental Composite Sampling Method after excavation was complete. Refer to Figure 6 for the DU locations. tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] Toxicity Equivalency Quotients [TEQs] MassDEP’s 2025 Toxicity Equivalency Factors (TEFs).

DRAFT

TABLE 2. SUMMARY OF 2019 GROUNDWATER SAMPLE CHEMICAL ANALYSIS RESULTS
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
of the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Well ID	Sample ID	Well Screen Depth (ft bgs)	Concentrations in Groundwater		
			Pentachlorophenol (PCP) (µg/l)	Lead, Dissolved (µg/l)	Dioxins (pg/l)
Wells within the Partial Permanent Solution with Conditions (Partial PSC) Site Boundary					
TW503a	W2	16-20	BRL (1.7)	---	---
	W3	20-24	**1.1**	---	---
	W1	7-17	---	---	BRL
TW5034a	W1	10-15	BRL (0.8)	---	---
	W2	15-20	BRL (0.8)	---	---
	W3	21-24	BRL (0.8)	---	---
	W1	7-17	---	---	BRL
TW505	W1	5-15	BRL (0.8)	---	4
TW506	W1	5-15	BRL (0.8)	BRL (10)	BRL
Disposal Site Wells outside of the Partial PSC Site Boundary					
TW501a	W1	15-Oct	BRL (0.8)	---	---
	W2	15-20	BRL (0.8)	---	---
	W1	17-Jul	---	BRL (10)	12
TW501b	W1	15-Nov	**460**	---	---
	W2	16-20	**700**	---	---
	W3	20-24	**15**	---	---
TW502a	W1	15-Oct	**6,500**	---	---
	W2	15-20	**420**	---	---
	W3	20-23	**200**	---	---
TW507	W1	15-May	**120**	BRL (10)	BRL
TW508	W1	15-May	BRL (0.8)	BRL (10)	BRL
TW509	W1	4.5-4.5	BRL (0.8)	BRL (10)	BRL
TW510	W1	15-May	**1.3**	---	BRL
TW511	W1	15-May	BRL (0.8)	---	BRL

Notes:

1. The samples were collected by Ransom Consulting, LLC in March and April 2019 and analyzed by Alpha Analytical, Inc., (now known as Pace Analytical Services) of Westborough, Massachusetts.
2. BRL ( ) = below reporting limit indicated in parentheses; --- = Not analyzed.
3. Pentachlorophenol (PCP) was analyzed by U.S. EPA Method 8270D; PCP concentrations are expressed in micrograms per liter (µg/l).
4. Dioxins/furans were analyzed using U.S. EPA Method 1618B. Concentrations of dioxins/furans are expressed in picograms per liter (pg/l) as 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] Toxicity Equivalency Quotients [TEQs] calculated using MassDEP's 2025 Toxicity Equivalency Factors (TEFs).
5. Concentrations shown highlighted and in boldface type are greater than their corresponding MCP Method 1 GW-1 Groundwater Standards (i.e., 1 µg/l for PCP; 15 µg/l for lead; and 30 pg/l for the dioxin TEQ). GW-2 Standards are not applicable to PCP or dioxins/furans. Refer to 310 CMR 40.0974.
6. Concentrations shown in red and underlined are greater than their corresponding Method 3 Ceiling Limits (M3CLs) in groundwater. M3CLs are as follows: 2,000 µg/l for PCP; 150 µg/l for lead; 400,000 pg/l for dioxins. Refer to 310 CMR 40.0996(7).

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TABLE 3. SUMMARY OF GROUNDWATER SAMPLE CHEMICAL ANALYSIS RESULTS, 2021-2025
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Well Identification	MW601		MW602		MW603		MW604		MW605	
Sample Date	PCP (µg/l)	Dioxins TEQ (pg/l)	PCP (µg/l)	Dioxins TEQ (pg/l)	PCP (µg/l)	Dioxins TEQ (pg/l)	PCP (µg/l)	Dioxins TEQ (pg/l)	PCP (µg/l)	Dioxins TEQ (pg/l)
6/24/2021	BRL (0.8)	BRL (0.029)	**1.3**	BRL (0.029)	BRL (0.8)	BRL (0.029)	BRL (0.8)	BRL (0.029)	BRL (0.8)	BRL (0.029)
8/27/2021	BRL (0.97)	0.03	---	0.02	BRL (0.97)	0.05	BRL (0.96)	BRL (0.32-2.5)	BRL (0.97)	BRL (0.32-2.5)
11/2/2021	BRL (0.97)	BRL (1.2-11)	---	BRL	BRL (0.97)	0.14	BRL (0.97)	BRL (0.90-6.5)	BRL (0.98)	BRL (0.90-6.5)
3/11/2022	BRL (0.97)	0.19	---	0.09	BRL (0.95)	0.4	BRL (0.94)	BRL (0.41-5.1)	BRL (0.95)	BRL (0.51-4.3)
9/28/2023	---	---	**76**	---	---	---	---	---	---	---
9/3/2025	---	---	BRL (0.80)	---	---	---	---	---	BRL (0.80)	---

Notes:

LLC for dioxins/furans in August 2021, November 2021, and March 2022), and to Alpha Analytical for PCP and/or dioxins/furans in June 2021, September 2023, and September 2025.

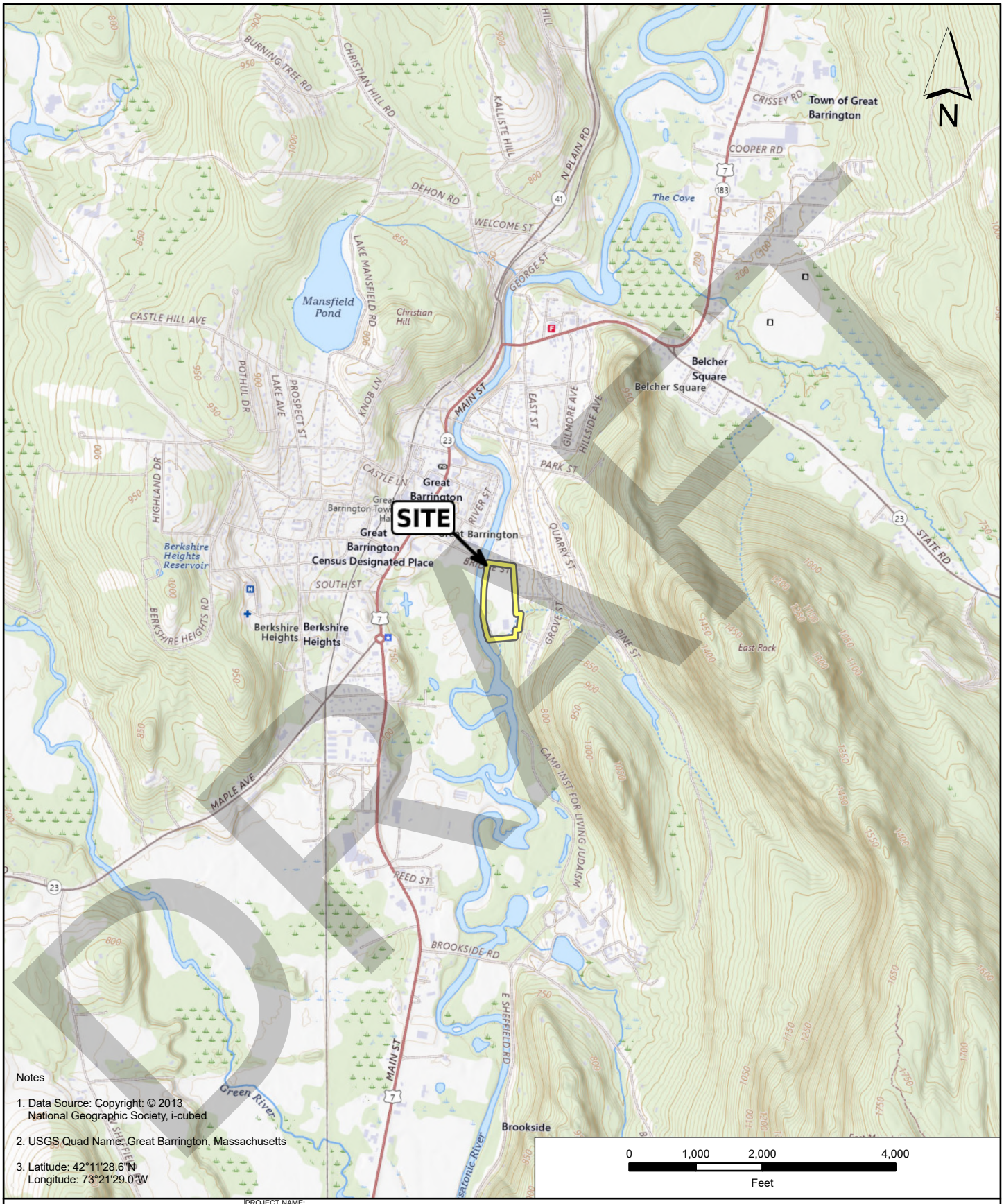
2. BRL ( ) = below reporting limit indicated in parentheses; --- = Not analyzed.

3. Pentachlorophenol (PCP) was analyzed by Method 8270D; PCP concentrations are expressed in micrograms per liter (µg/l).

4. Dioxins/furans were analyzed using U.S. EPA Method 1618B. Concentrations of dioxins/furans are expressed in picograms per liter (pg/l) as 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] Toxicity Equivalency Quotients [TEQs] calculated using MassDEP's 2025 Toxicity Equivalency Factors (TEFs).

5. Concentrations shown highlighted and in boldface type are above the MCP Method 1 GW-1 Groundwater Standards (i.e., 1 µg/l for PCP; 30 pg/l for the dioxins/furans). GW-2 Standards are not applicable to PCP or dioxins/furans. Refer to 310 CMR 40.0974.

DRAFT



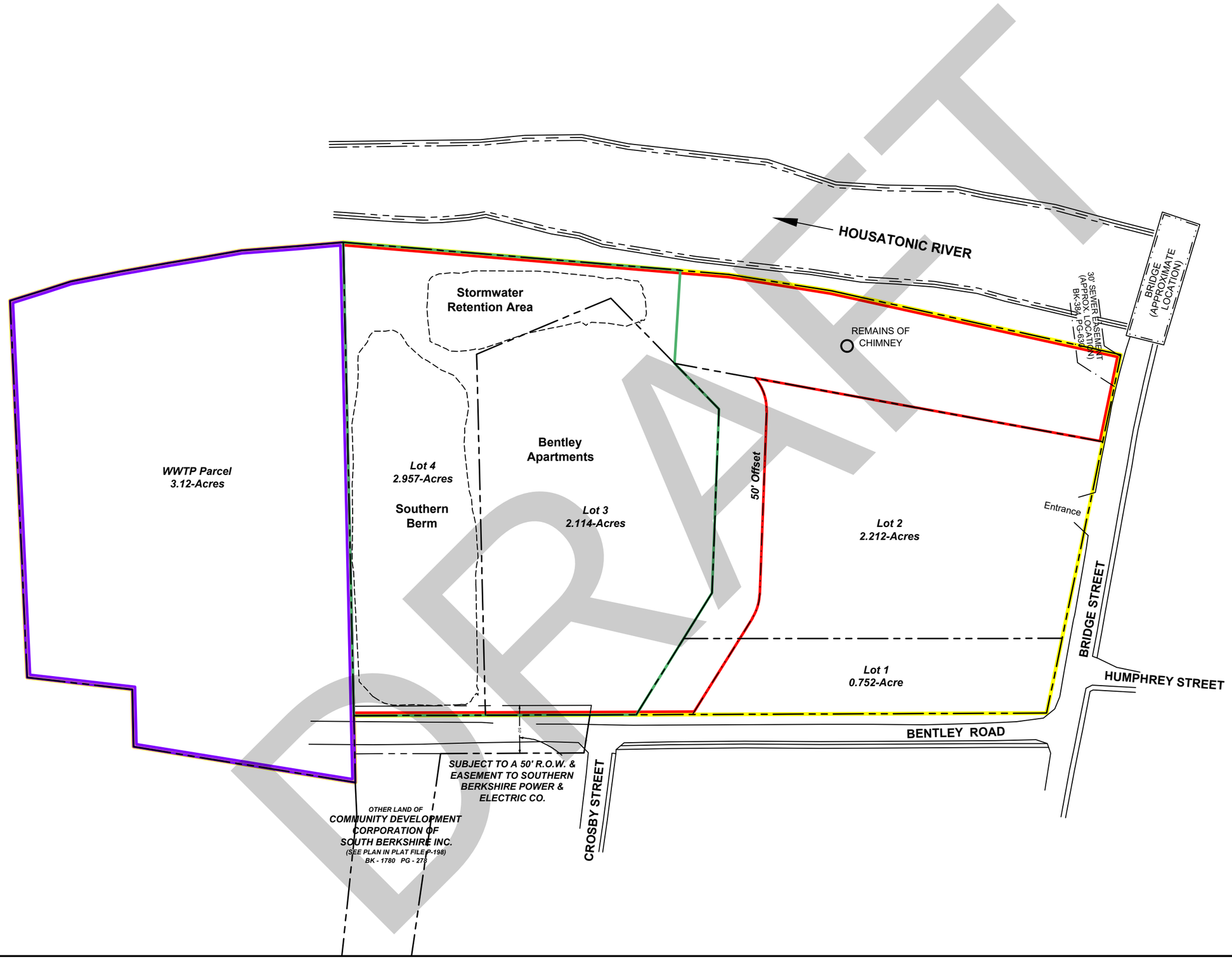
Notes

1. Data Source: Copyright: © 2013 National Geographic Society, i-cubed
2. USGS Quad Name: Great Barrington, Massachusetts
3. Latitude: 42°11'28.6"N
   Longitude: 73°21'29.0"W

DRAFT

PINCHIN

PROJECT NAME:	FORMER NEW ENGLAND LOG HOMES				
CLIENT NAME:	COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE				
PROJECT LOCATION:	100 BRIDGE STREET GREAT BARRINGTON, MASSACHUSETTS				
FIGURE NAME:	SITE LOCATION MAP				FIGURE NUMBER: 1
PROJECT NUMBER: 021.01074.025	SCALE: AS SHOWN	DRAWN BY: PM	REVIEWED BY: NM	DATE: JULY 2026	



DRAFT

0 50' 100'
Feet
N

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Temporary Solution Site Boundary (March 2021).
- Partial Permanent Solution Boundary - WWTP
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments

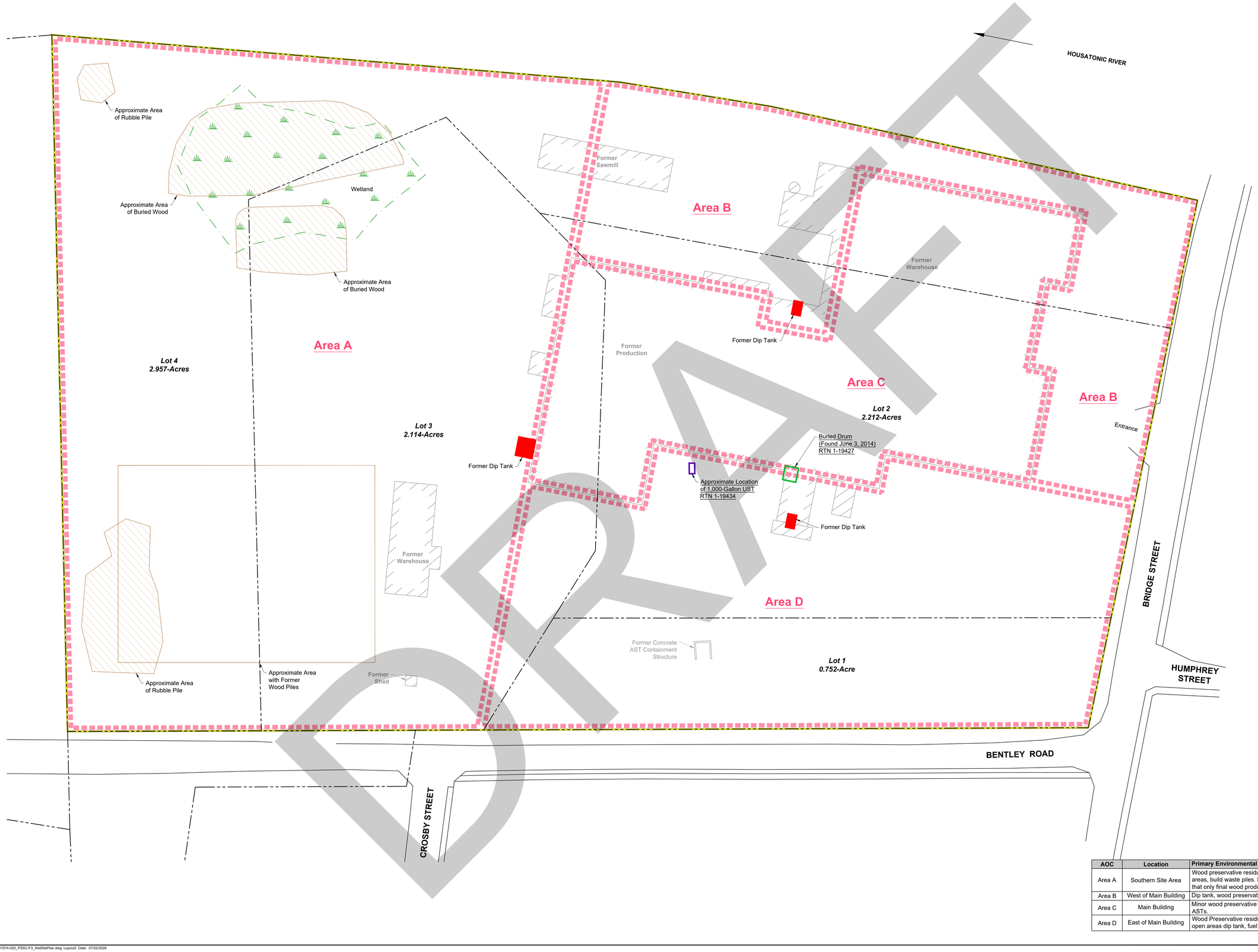
NOTE

Lots 1 through 4 comprise the original 8 +/- acre Former New England Log Homes property.

PINCHIN

PROJECT NAME:	FORMER NEW ENGLAND LOG HOMES
CLIENT NAME:	COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE
PROJECT LOCATION:	100 BRIDGE STREET GREAT BARRINGTON, MA
FIGURE NAME:	SITE PLAN WITH LOT LAYOUT
PROJECT NUMBER: 021.01074.025	SCALE: 1" = 100'
DRAWN BY: PM	REVIEWED BY: NM
DATE: AUGUST 2026	FIGURE NUMBER: 2

X:\Pinchin_NewEngland\Massachusetts\GreatBarrington_MA\FormerNELogHomes\Drawings\June2026_021.01074.025_PSSC\FNELH_021.01074-025_PSSC-F2_SitePlan.dwg; Layout2 Date: 07/22/2026



DRAFT

AOC	Location	Primary Environmental Concerns from Former Operations
Area A	Southern Site Area	Wood preservative residues from storage of wood in open areas, build waste piles. Based on previous testing, it appears that only final wood products were treated with preservatives.
Area B	West of Main Building	Dip tank, wood preservatives residue, vertical ASTs.
Area C	Main Building	Minor wood preservative residue, machine activities, fuel oil ASTs.
Area D	East of Main Building	Wood Preservative residue from storage of treated wood in open areas dip tank, fuel oil UST, diesel and gasoline ASTs.

0 15' 30'
Feet

LEGEND
- Berkshire County Lot Lines
- Site Boundary
- IRA Drum Site Boundary (RTN 1-19427)
- 1,000-Gallon UST (RTN 1-19434)

NOTES
Reference: Phase I - Initial Site Investigation Report, Former New England Log Homes Site, Great Barrington, Massachusetts, October 2000, Figure 5, Areas of Concern, prepared by Fuss & O'Neill, Inc.

PINCHIN

PROJECT NAME:
FORMER
NEW ENGLAND LOG HOMES

CLIENT NAME:
COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE

PROJECT LOCATION:
100 BRIDGE STREET
GREAT BARRINGTON, MA

FIGURE NAME:
HISTORICAL SITE PLAN

PROJECT NUMBER:	SCALE:
021.01074.025	1" = 40'
DRAWN BY: PM	REVIEWED BY: NM
DATE: AUGUST 2026	FIGURE NUMBER: 3

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0 15' 30'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Temporary Solution Site Boundary (March 2021).
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 Post-Remediation Surface Contour
- Approximate PCP Concentration Contour
- ⊠ Temporary Well Installed in 2019 with PCP Concentration
- (PCP = 1.3 µg/L) Maximum Pentachlorophenol Concentration in Groundwater in Micrograms per Liter (µg/L).
- (DIOXIN = 0.14 pg/L) Maximum Dioxin/Furan Concentration in Picograms per Liter (pg/L) (2,3,7,8-TCDD Equivalence) using the 2025 MassDEP Toxicity Equivalency Factors (TEFs)
- BRL Contaminant not detected at a concentration greater than the Laboratory Reporting Limit

NOTES

1. Monitoring Well and Temporary Well locations are approximate in location and scale.
2. Temporary Sells in the TW500-Series were sampled for PCP in March or April 2019.

CONCRETE DRAINAGE STRUCTURE
HOUSATONIC RIVER
TW505 (PCP: BRL) (DIOXINS: 3.9 pg/L)
(Stormwater Retention Area)
CULVERT 18"
CULVERT 12"
TW506 (PCP: BRL)
GUARD RAIL
SHED
UTILITY PAD
CONCRETE BERM
WALK
TW507 (PCP: 120 µg/L; 2019) (DIOXINS: BRL)
CONCRETE SLAB
TW508 (PCP: BRL)
REMAINS OF CHIMNEY
TW501a (PCP: BRL) (DIOXINS: 18.6 pg/L)
Lot 4 (Riverfront Park (in Progress))
Approximate Location of Former Dip Tank
TW509 (PCP: BRL)
TW501b (PCP: 700 µg/L)
100 µg/L
1,000 µg/L
6,000 µg/L
Lot 4 (Southern Berm)
MAIL BOX
OVERHANG
WALK
CONCRETE PAD
TW504a (PCP: BRL)
NO PARKING
TW503a (PCP: 1.1 µg/L)
Approximate Location of Former Dip Tank
Lot 3 (Bentley Apartments Parcel)
Lot 2
TW502a (PCP: 6,500 µg/L) (DIOXINS: 101 pg/L)
RETAINING WALL
Approximate Location of Former Dip Tank
TW510 (PCP: 1.3 µg/L)
BRIDGE STREET
SIDEWALK
CULVERT 12"
CONCRETE PAD
MAIL BOX
CONC. BERM
UTILITY PAD
Lot 1 (Eastern Berm (in Progress))
TW511 (PCP: BRL)
ASPHALT BERM (TYP.)
SIDEWALK PLATE
BENTLEY ROAD
SIDEWALK
SIDEWALK
CROSBY STREET
SIDEWALK

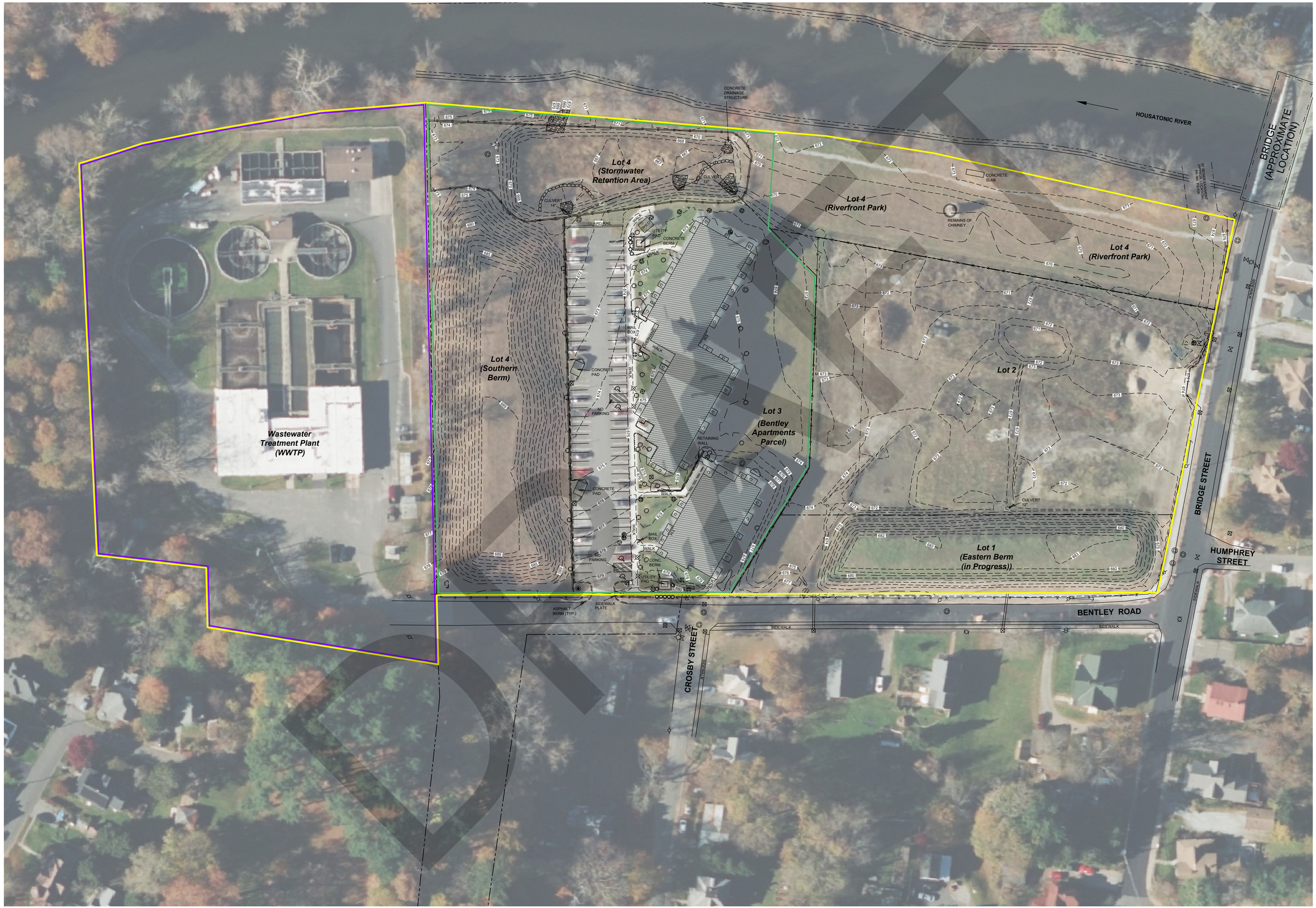
	METHOD 1 STANDARDS	METHOD 3 CEILING LIMIT
DIOXIN	GW-1: 30 pg/L	400,000 pg/L
PCP	GW-1: 1 µg/L	2,000 µg/L

PINCHIN

PROJECT NAME: FORMER NEW ENGLAND LOG HOMES
CLIENT NAME: COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE
PROJECT LOCATION: 100 BRIDGE STREET GREAT BARRINGTON, MA
FIGURE NAME: CONTAMINANT CONCENTRATIONS IN GROUNDWATER - 2019
PROJECT NUMBER: 021.01074.025
SCALE: 1" = 30'
DRAWN BY: PM
REVIEWED BY: NM
DATE: AUGUST 2026
FIGURE NUMBER: 4

DRAFT

X:\ FNELH_021.01074-025_PSSC-F4_GW-Contam.dwg; Layout3 Date: 07/22/2026



0 20' 40'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Permanent Solution Boundary - WWTP
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 Post-Remediation Surface Contour

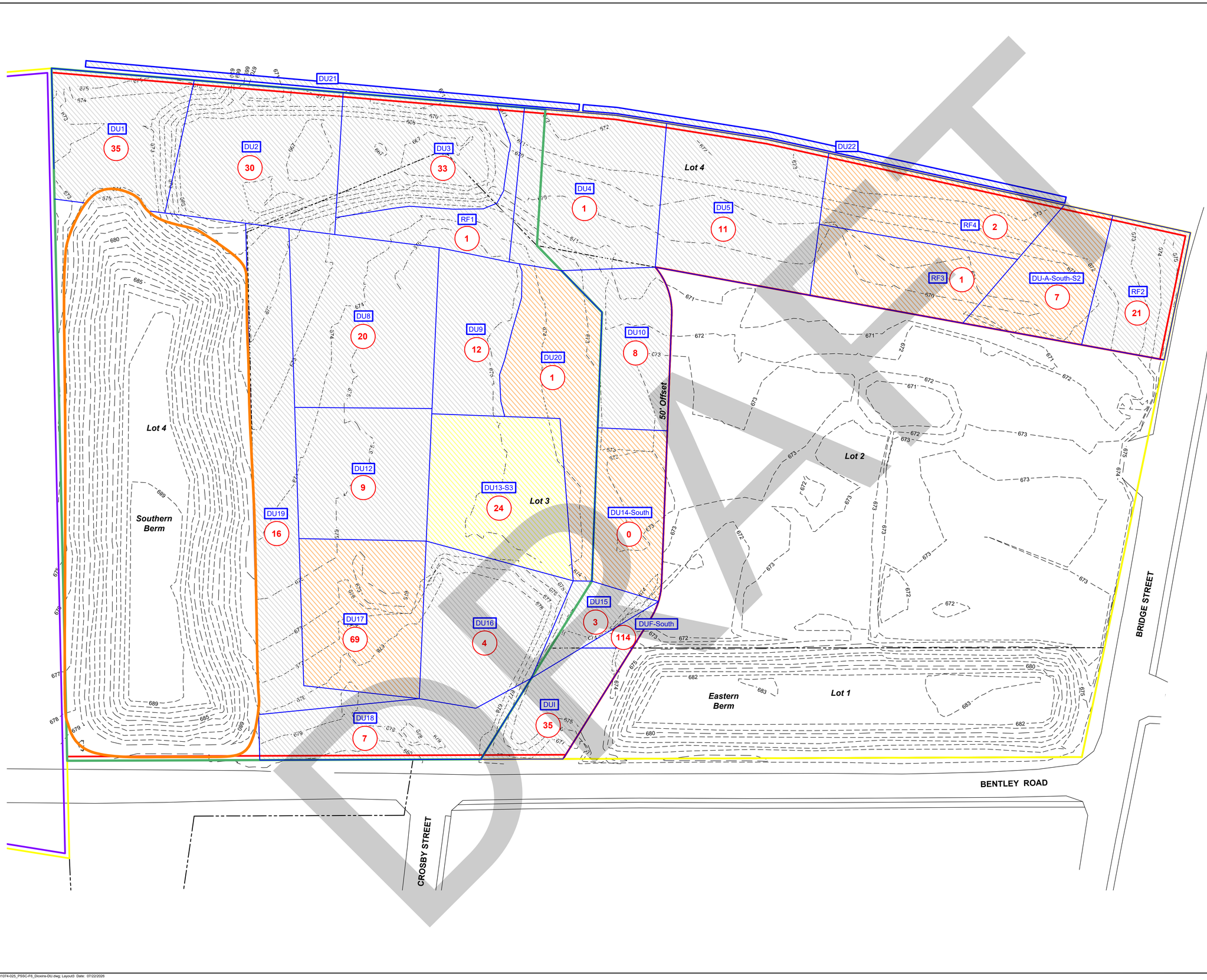
NOTES

Reference: Existing Conditions Site Plan Prepared for Community Development Corporation of South Berkshire, Inc. Greate Barrington, Massachusetts, January 2021 by Kelly, Granger, Parsons & Associates, Inc., Great Barrington, MA

PINCHIN

PROJECT NAME:	FORMER NEW ENGLAND LOG HOMES
CLIENT NAME:	COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE
PROJECT LOCATION:	100 BRIDGE STREET GREAT BARRINGTON, MA
FIGURE NAME:	EXISTING CONDITIONS
PROJECT NUMBER: 021.01074.025	SCALE: 1" = 40'
DRAWN BY: PM	REVIEWED BY: NM
DATE: AUGUST 2026	FIGURE NUMBER: 5

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0 20' 40'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Temporary Solution Site Boundary (March 2021)
- Partial Permanent Solution Boundary - WWTP
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 Post-Remediation Surface Contour
- Engineered Barrier
- Decision Unit (DU) Boundary (Daily Work Area)
- DU1 DU Identification Number
- 190 Post-Remediation Dioxins/Furans concentration (ng/kg) in the DU from an Incremental Composite Sample (ICS) analyzed by EPA Method 1613 (2019-2020). Concentrations expressed as 2,3,7,8-Tetrachlorodi - benzo-p-dioxin (2,3,7,8-tcdd) Toxicity Equivalency (TE) and calculated using the MassDEP 2025 Toxicity Equivalency Factors (TEFs).

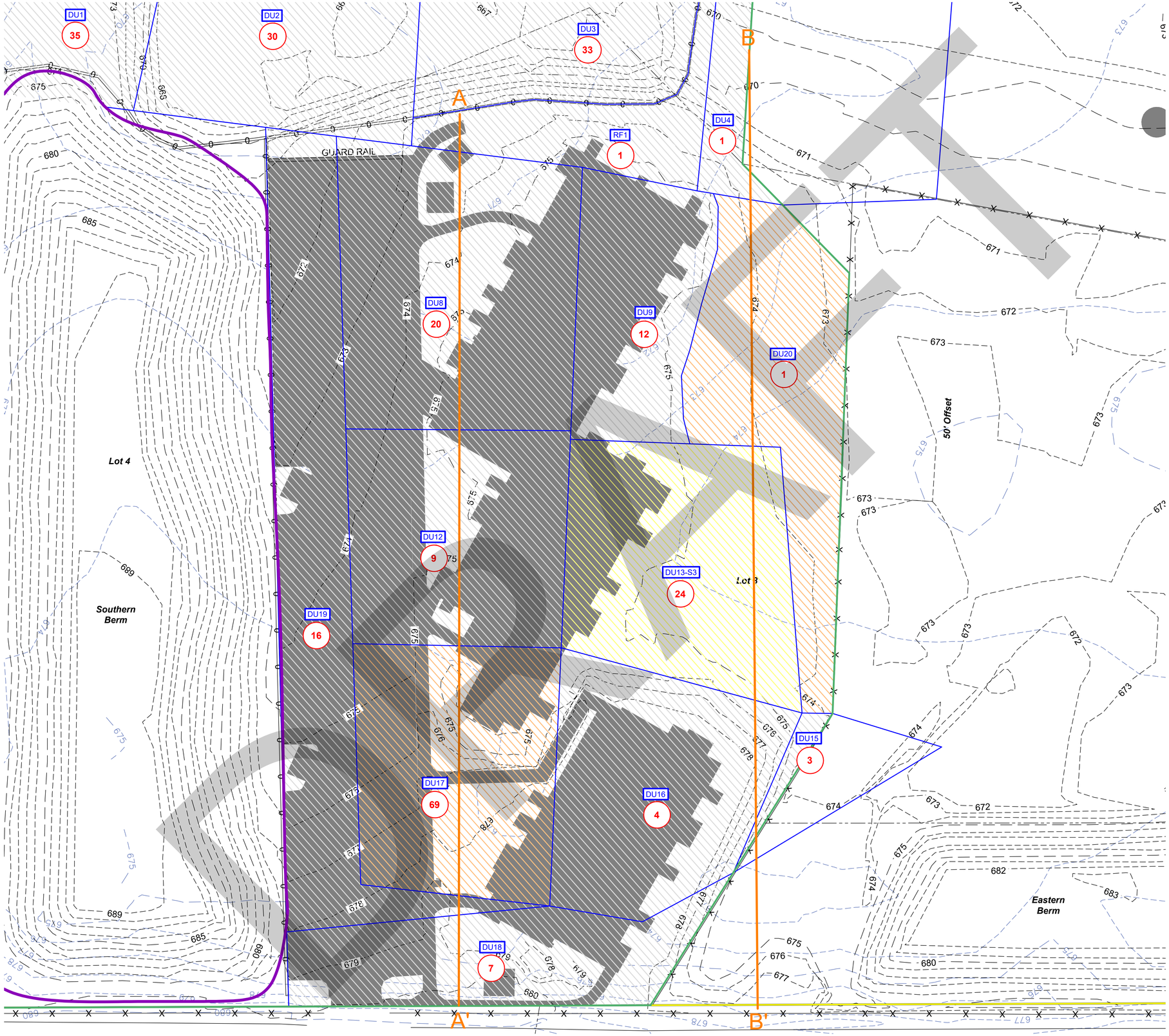
DU Excavtion Depth:

- 2-Feet Below Original Site Grade
- 3-Feet Below Original Site Grade
- 4-Feet Below Original Site Grade

PINCHIN

PROJECT NAME:	FORMER NEW ENGLAND LOG HOMES
CLIENT NAME:	COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE
PROJECT LOCATION:	100 BRIDGE STREET GREAT BARRINGTON, MA
FIGURE NAME:	DIOXINS CONCENTRATIONS PER DECISION UNIT (Lots 3 and 4)
PROJECT NUMBER: 021.01074.025	SCALE: 1" = 40'
DRAWN BY: PM	REVIEWED BY: NM
DATE: AUGUST 2026	FIGURE NUMBER: 6

X:\FNELH_021.01074-025_PSSC-F6_Dioxins-DU.dwg; Layout3 Date: 07/22/2026



0 10' 20'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 Pre-Remediation Surface Contour
- 674 Post-Remediation Surface Contour
- Engineered Barrier
- Decision Unit (DU) Boundary (Daily Work Area)
- DU1 DU Identification Number
- 35 Post-Remediation Dioxins/Furans concentration (ng/kg) in the DU from an Incremental Composite Sample (ICS) analyzed by EPA Method 1613 (2019-2020). Concentrations expressed as 2,3,7,8-Tetrachlorodi - benzo-p-dioxin (2,3,7,8-tcdd) Toxicity Equivalency (TE) and calculated using the MassDEP 2025 Toxicity Equivalency Factors (TEFs).
- Impervious Surface

DU Excavtion Depth:

- 2-Feet Below Original Site Grade
- 3-Feet Below Original Site Grade
- 4-Feet Below Original Site Grade

NOTES

1. See figures 8 and 9 for cross sections.

PINCHIN

PROJECT NAME:	FORMER NEW ENGLAND LOG HOMES
CLIENT NAME:	COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE
PROJECT LOCATION:	100 BRIDGE STREET GREAT BARRINGTON, MA
FIGURE NAME:	Dioxins/Furans Concentrations per Decision Unit (BENTLEY APARTMENTS)
PROJECT NUMBER:	021.01074.025
SCALE:	1" = 20'
DRAWN BY:	PM
REVIEWED BY:	NM
DATE:	AUGUST 2026
FIGURE NUMBER:	7

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LEGEND:

PRE–REMEDIATION GROUND SURFACE

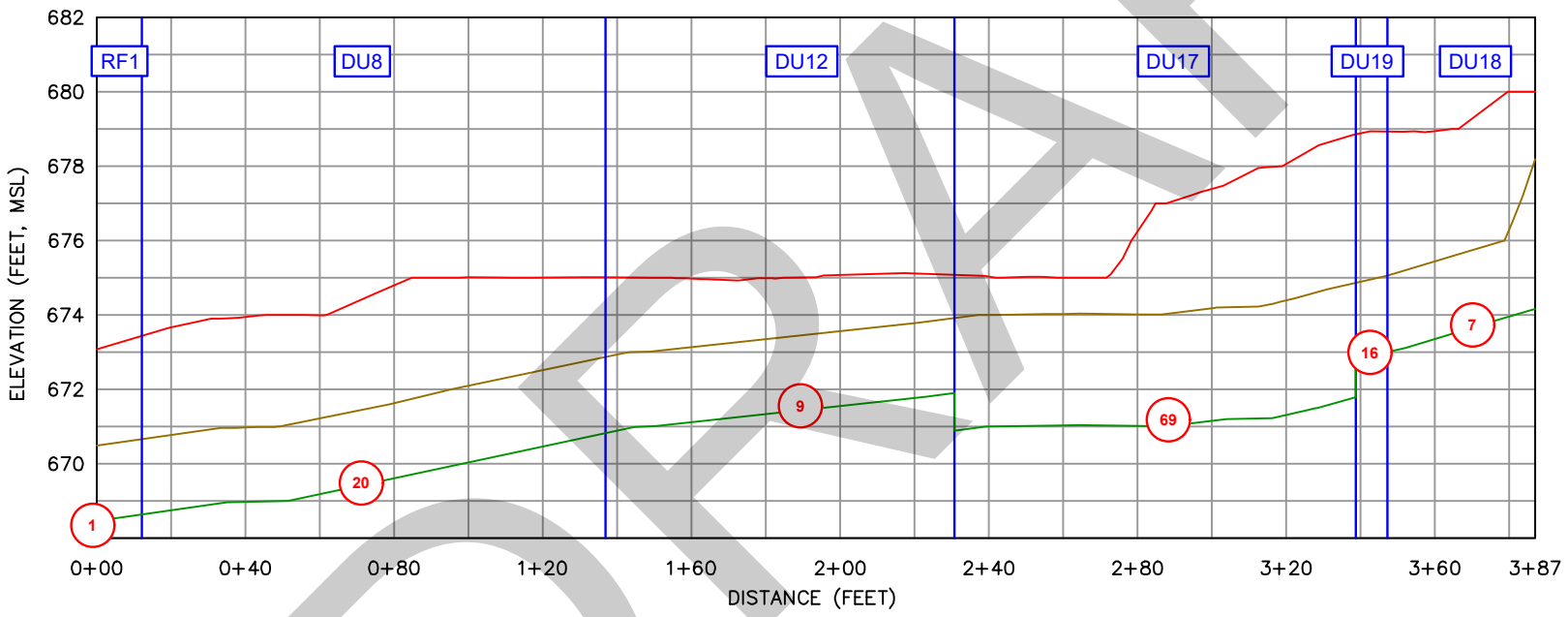
FINISHED GRADE

EXCAVATION DEPTH AT WHICH A DECISION UNIT (DU) SAMPLE WAS COLLECTED USING THE INCREMENTAL COMPOSITE SAMPLING (ICS) METHOD.

16 POST–REMEDIATION DIOXINS/FURANS CONCENTRATION (ng/kg) IN THE DU FROM AN INCREMENTAL COMPOSITE SAMPLE (ICS) ANALYZED BY EPA METHOD 1613 (2019–2020). CONCENTRATIONS EXPRESSED AS 2,3,7,8–TETRACHLORODIBENZO–P–DIOXIN (2,3,7,8–TCDD) TOXICITY EQUIVALENCY (TE) AND CALCULATED USING THE MASSDEP 2025 TOXICITY EQUIVALENCY FACTORS (TEFS).

DRAFT

A–A' PROFILE



PINCHIN

PROJECT NAME:
FORMER
NEW ENGLAND LOG HOMES

CLIENT NAME:
COMMUNITY DEVELOPMENT
CORPORATION OF
SOUTH BERKSHIRE

PROJECT LOCATION:
100 BRIDGE STREET
GREAT BARRINGTON, MA

FIGURE NAME:
A-A'
BENTLEY SOUTH LAWN

PROJECT NUMBER:	SCALE:
021.01074.025	N.T.S.
DRAWN BY:	REVIEWED BY:
PM	NM
DATE:	FIGURE NUMBER:
AUGUST 2026	8

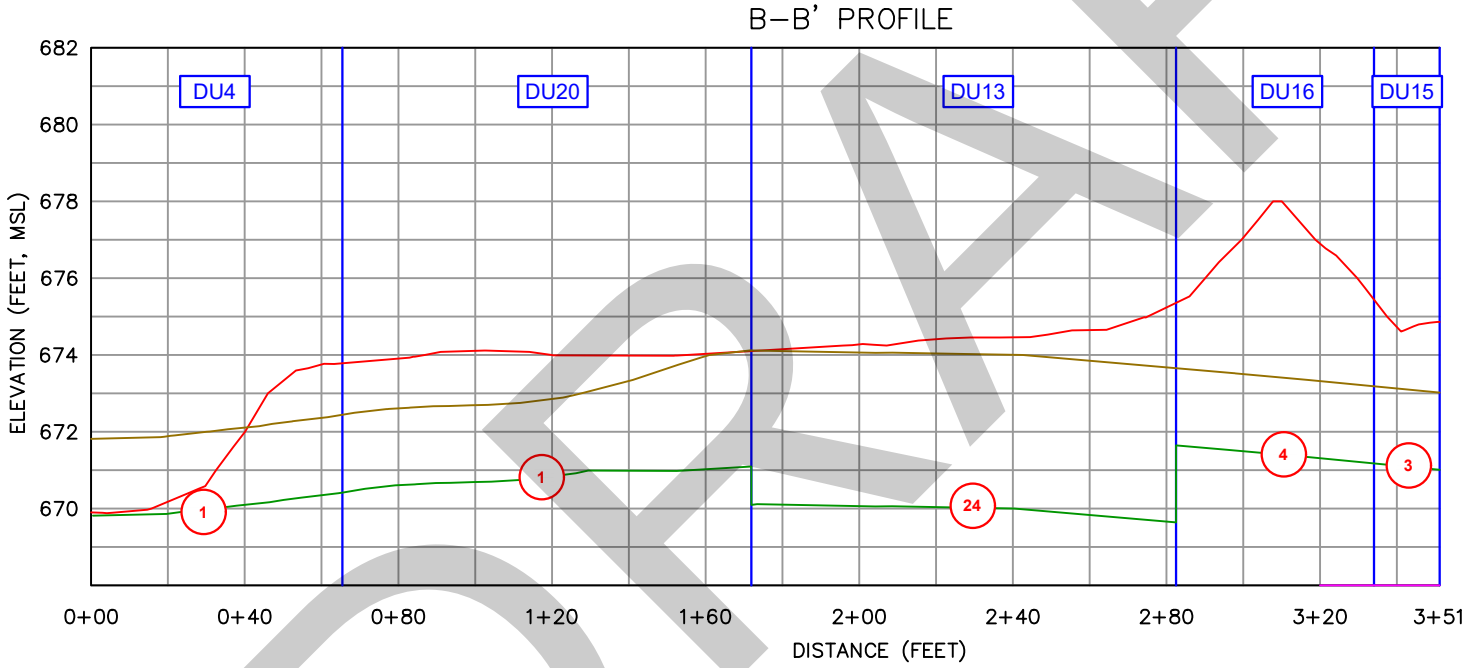
LEGEND:

PRE–REMEDIATION GROUND SURFACE

FINISHED GRADE

EXCAVATION DEPTH AT WHICH A DECISION UNIT (DU) SAMPLE WAS COLLECTED USING THE INCREMENTAL COMPOSITE SAMPLING (ICS) METHOD.

24 POST–REMEDIATION DIOXINS/FURANS CONCENTRATION (ng/kg) IN THE DU FROM AN INCREMENTAL COMPOSITE SAMPLE (ICS) ANALYZED BY EPA METHOD 1613 (2019–2020). CONCENTRATIONS EXPRESSED AS 2,3,7,8–TETRACHLORODIBENZO–P–DIOXIN (2,3,7,8–TCDD) TOXICITY EQUIVALENCY (TE) AND CALCULATED USING THE MASSDEP 2025 TOXICITY EQUIVALENCY FACTORS (TEFS).



DRAFT

PINCHIN

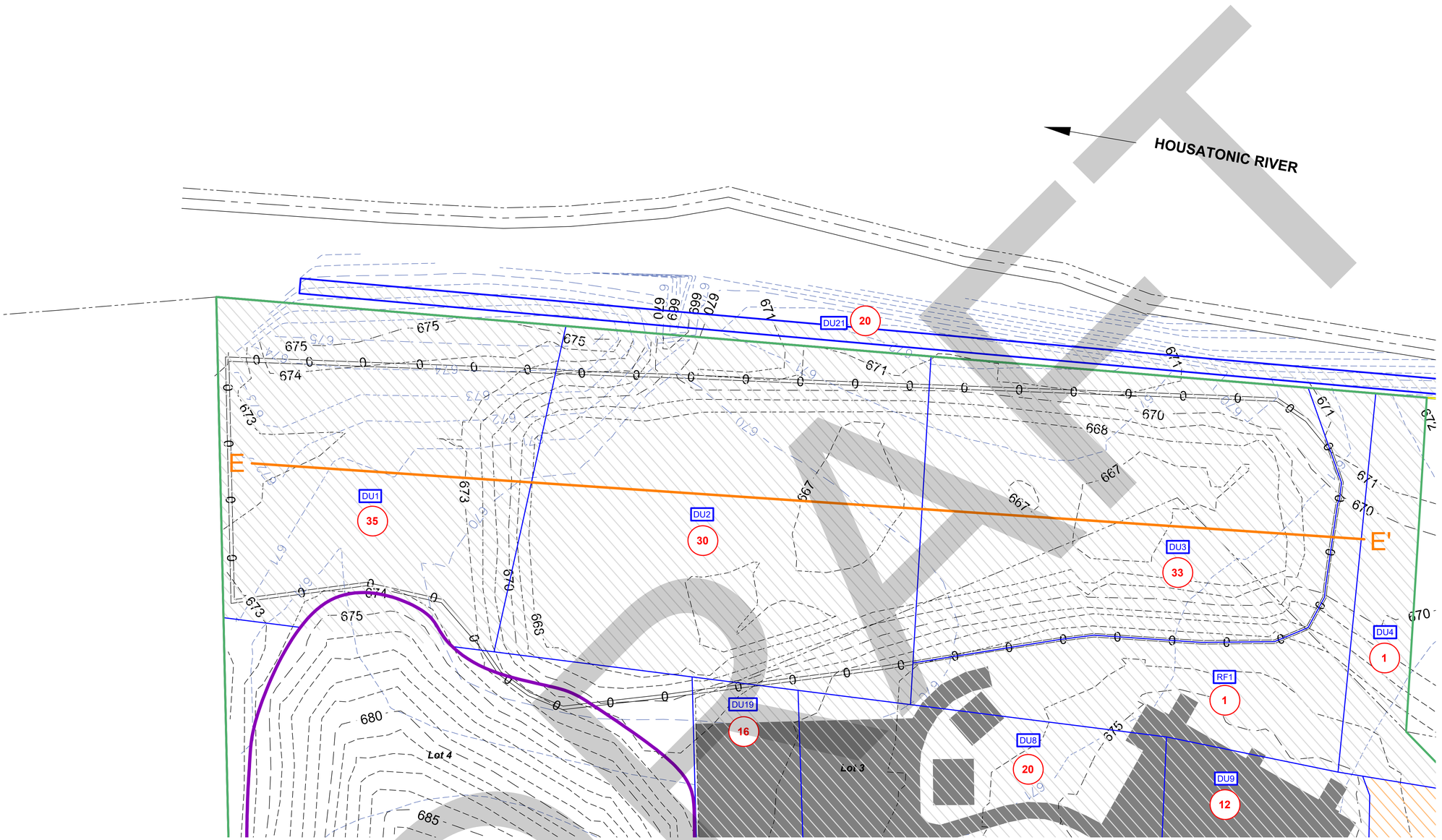
PROJECT NAME:
FORMER
NEW ENGLAND LOG HOMES

CLIENT NAME:
COMMUNITY DEVELOPMENT
CORPORATION OF
SOUTH BERKSHIRE

PROJECT LOCATION:
100 BRIDGE STREET
GREAT BARRINGTON, MA

FIGURE NAME:
B-B'
BENTLEY NORTH LAWN

PROJECT NUMBER:	SCALE:
021.01074.025	N.T.S.
DRAWN BY:	REVIEWED BY:
PM	NM
DATE:	FIGURE NUMBER:
AUGUST 2026	9



0 7.5' 15'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 Pre-Remediation Surface Contour
- 674 Post-Remediation Surface Contour
- Engineered Barrier
- Decision Unit (DU) Boundary (Daily Work Area)
- DU1 DU Identification Number
- 35 Post-Remediation Dioxins/Furans concentration (ng/kg) in the DU from an Incremental Composite Sample (ICS) analyzed by EPA Method 1613 (2019-2020). Concentrations expressed as 2,3,7,8-Tetrachlorodi - benzo-p-dioxin (2,3,7,8-tcdd) Toxicity Equivalency (TE) and calculated using the MassDEP 2025 Toxicity Equivalency Factors (TEFs).
- Impervious Surface

DU Excavtion Depth:

- 2-Feet Below Original Site Grade
- 3-Feet Below Original Site Grade
- 4-Feet Below Original Site Grade

NOTES

1. See figures 11 for cross section.

PINCHIN

PROJECT NAME:
FORMER
NEW ENGLAND LOG HOMES

CLIENT NAME:
COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE

PROJECT LOCATION:
100 BRIDGE STREET
GREAT BARRINGTON, MA

FIGURE NAME:
SOUTHWEST
STORMWATER BASIN

PROJECT NUMBER:	SCALE:
021.01074.025	1" = 15'
DRAWN BY:	REVIEWED BY:
PM	NM
DATE:	FIGURE NUMBER:
AUGUST 2026	10

DRAFT

LEGEND:

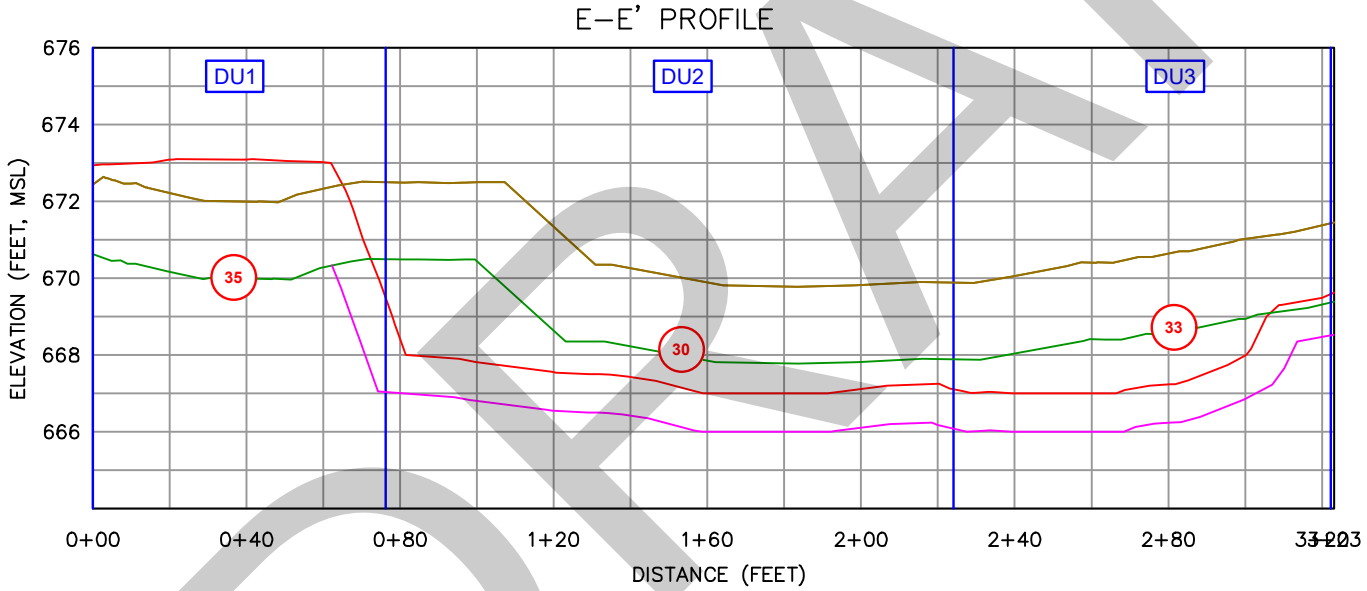
PRE–REMEDIATION GROUND SURFACE

FINISHED GRADE

EXCAVATION DEPTH AT WHICH A DECISION UNIT (DU) SAMPLE WAS COLLECTED USING THE INCREMENTAL COMPOSITE SAMPLING (ICS) METHOD.

35 — POST–REMEDIATION DIOXINS/FURANS CONCENTRATION (ng/kg) IN THE DU FROM AN INCREMENTAL COMPOSITE SAMPLE (ICS) ANALYZED BY EPA METHOD 1613 (2019–2020). CONCENTRATIONS EXPRESSED AS 2,3,7,8–TETRACHLORODIBENZO–P–DIOXIN (2,3,7,8–TCDD) TOXICITY EQUIVALENCY (TE) AND CALCULATED USING THE MASSDEP 2025 TOXICITY EQUIVALENCY FACTORS (TEFS).

IN LOCATIONS WHERE THE DU EXCAVATION DEPTHS WERE HIGHER THAN FINISHED GRADES, ADDITIONAL SOILS WERE EXCAVATED TO 12" BELOW THE PROPOSED FINISHED GRADE AND CLEAN FILL BROUGHT IN TO ACHIEVE FINISHED GRADE.



DRAFT

PINCHIN

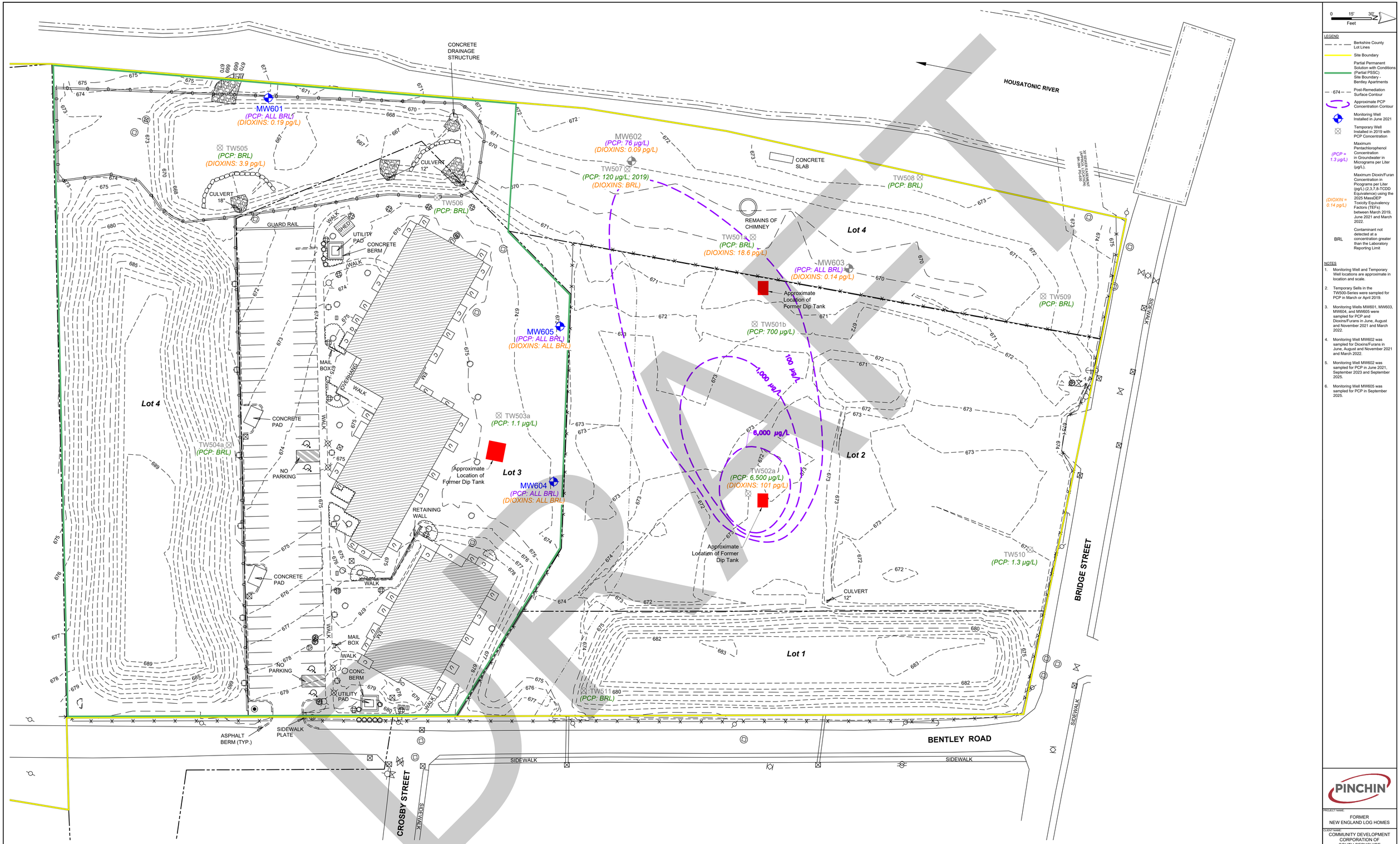
PROJECT NAME:
FORMER
NEW ENGLAND LOG HOMES

CLIENT NAME:
COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE

PROJECT LOCATION:
100 BRIDGE STREET
GREAT BARRINGTON, MA

FIGURE NAME:
E-E'
PRIMARY STORMWATER BASIN

PROJECT NUMBER:	SCALE:
021.01074.025	N.T.S.
DRAWN BY:	REVIEWED BY:
PM	NM
DATE:	FIGURE NUMBER:
AUGUST 2026	11



0 15' 30'
Feet

LEGEND

- Berkshire County Lot Lines
- Site Boundary
- Partial Permanent Solution with Conditions (Partial PSSC) Site Boundary - Bentley Apartments
- 674 — Post-Remediation Surface Contour
- Approximate PCP Concentration Contour
- Monitoring Well Installed in June 2021
- Temporary Well Installed in 2019 with PCP Concentration
- (PCP = 1.3 µg/L) Maximum Pentachlorophenol Concentration in Groundwater in Micrograms per Liter (µg/L).
- (DIOXIN = 0.14 pg/L) Maximum Dioxin/Furan Concentration in Picograms per Liter (pg/L) (2,3,7,8-TCDD Equivalence) using the 2025 MassDEP Toxicity Equivalency Factors (TEFs) between March 2019, June 2021 and March 2022.
- BRL Contaminant not detected at a concentration greater than the Laboratory Reporting Limit

NOTES

1. Monitoring Well and Temporary Well locations are approximate in location and scale.
2. Temporary Sells in the TW500-Series were sampled for PCP in March or April 2019.
3. Monitoring Wells MW601, MW603, MW604, and MW605 were sampled for PCP and Dioxins/Furans in June, August and November 2021 and March 2022.
4. Monitoring Well MW602 was sampled for Dioxins/Furans in June, August and November 2021 and March 2022.
5. Monitoring Well MW602 was sampled for PCP in June 2021, September 2023 and September 2025.
6. Monitoring Well MW605 was sampled for PCP in September 2025.

PINCHIN

PROJECT NAME: FORMER NEW ENGLAND LOG HOMES

CLIENT NAME: COMMUNITY DEVELOPMENT CORPORATION OF SOUTH BERKSHIRE

PROJECT LOCATION: 100 BRIDGE STREET GREAT BARRINGTON, MA

FIGURE NAME: CONTAMINANT CONCENTRATIONS IN GROUNDWATER

PROJECT NUMBER	SCALE
021.01074.025	1" = 30'
DRAWN BY: PM	REVIEWED BY: NM
DATE: AUGUST 2026	FIGURE NUMBER: 12

DRAFT

X:\ FNELH_021.01074-025_PSSC-F12_GW-Contam.dwg; Layout3 Date: 07/22/2026

APPENDIX A

MassDEP – Bureau of Waste Site Cleanup Phase I Site Assessment Map

DRAFT

MassDEP - Bureau of Waste Site Cleanup

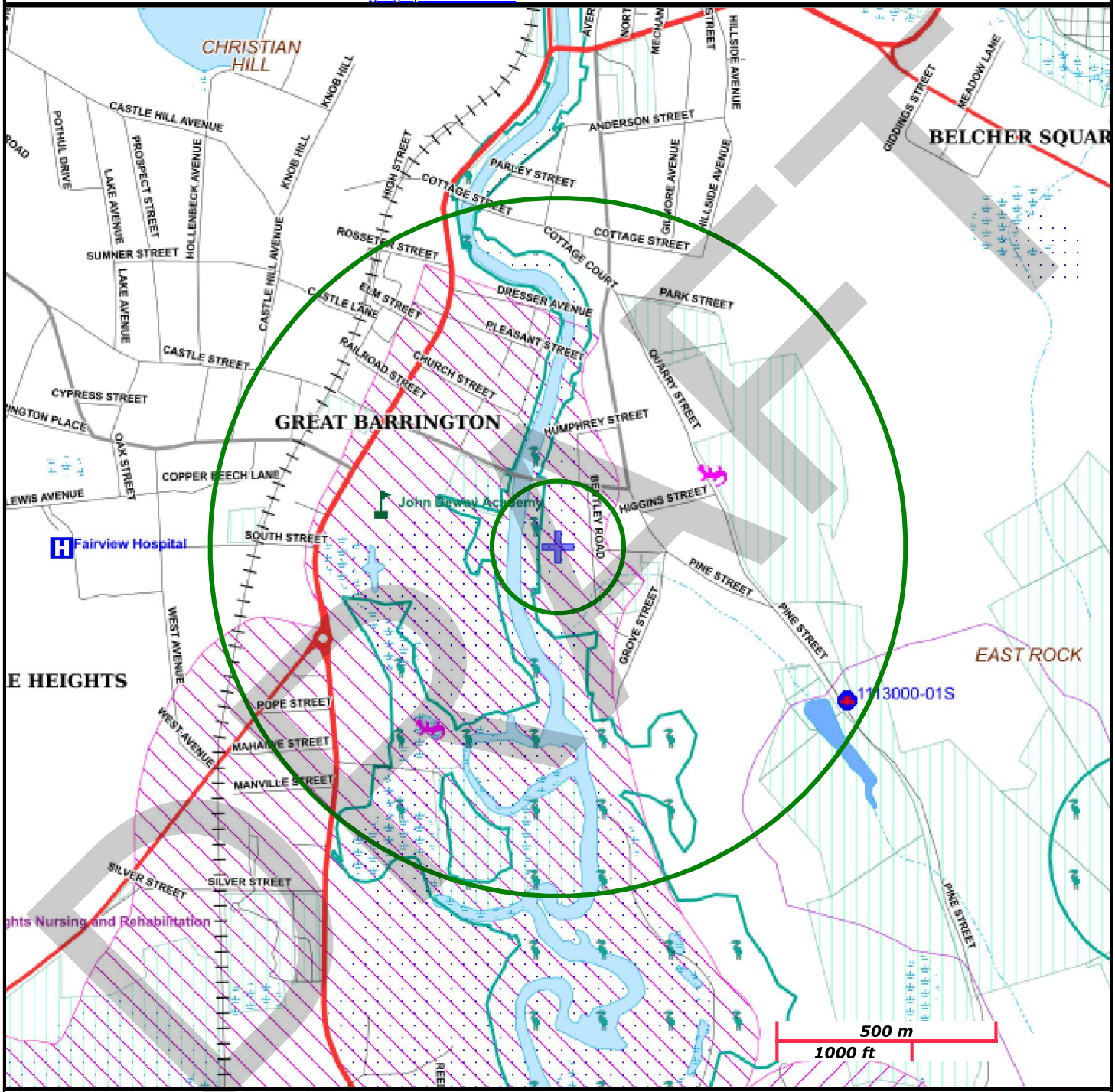
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
FORMER NEW ENGLAND LOG HOMES
100 BRIDGE STREET GREAT BARRINGTON, MA
1-000000682

NAD83 UTM Meters:
4672298mN , 635578mE (Zone: 18)
April 29, 2026

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

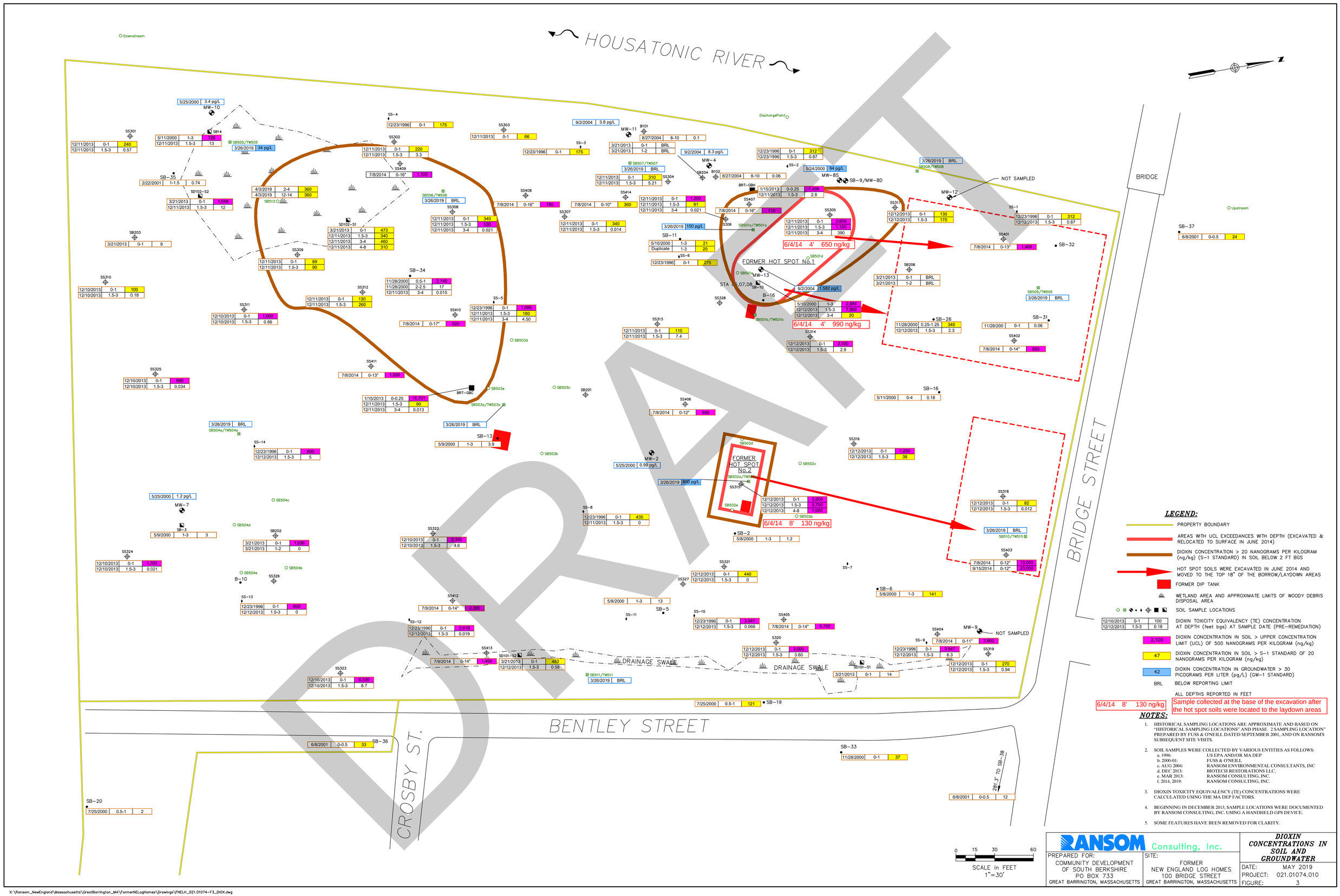
NHESP Pri-Hab of Rare Species; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

APPENDIX B

Site Characterization Figures from Phase IV RIP – Revision 5

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HOUSATONIC RIVER

BRIDGE

BRIDGE STREET

BENTLEY STREET

CROSBY ST.

FORMER HOT SPOT NO.1

PETROLEUM-IMPACTED SOILS (FOUND JUNE 3, 2014)

PETROLEUM AND DRUM HOT SPOT LAYDOWN AREA

FORMER DIP TANK

APPROXIMATE FORMER LOCATION OF DIP TANK

APPROXIMATE FORMER LOCATION OF 8' DIA. BRICK CHIMNEY

APPROXIMATE LOCATION OF 1,000-GALLON UST (UNCOVERED JUNE 23, 2014)

STA 06,07,08

NOT DETECTED

Downstream

3/26/2019	mg/kg
RIVER SEDIMENT	BRL
3/5/2019	µg/L
SURFACE WATER	BRL

Upstream

3/26/2019	mg/kg
RIVER SEDIMENT	BRL
3/5/2019	µg/L
SURFACE WATER	BRL

05/25/2000	ND

MW-10

04/04/2019	GROUNDWATER
5-15	BRL

SB505/TW505

04/04/2019	GROUNDWATER
5-15	BRL

SB506/TW506

11/28/2000	SOIL
0.5-1	BRL
2-2.5	BRL

11/21/2003	120

04/04/2019	GROUNDWATER
5-15	120

MW-11

SB507/TW507

3/5/2019	SOIL
4-6	BRL
8-10	BRL

3/26/2019	GROUNDWATER
10-15	BRL
15-20	BRL

11/28/2000	SOIL
1-3	--
10-12	BRL

11/28/2000	SOIL
18-20	2.5

4/2/2019	SOIL
2-4	BRL
8-10	BRL

5/10/2000	SOIL
10	65
12/12/2013	SOIL
0-3	1.11
4-6	0.18
8-10	24
12-14	32
16-18	12
18-20	2.5

11/28/2000	SOIL
1-3	BRL
5-7	BRL
10-12	BRL

12/12/2013	SOIL
0-3	540

4/2/2019	SOIL
2-4	BRL
8-10	BRL

4/2/2019	SOIL
2-4	BRL
8-10	BRL

4/1/2019	SOIL
2-4	0.54
8-10	2.6
14-16	2.8

4/1/2019	GROUNDWATER
11-15	460
16-20	700
20-24	15

3/19/1996	SOIL
6	800

3/6/2019	SOIL
2-4	BRL
8-10	BRL

3/6/2019	GROUNDWATER
10-15	BRL
15-20	BRL
20-23	BRL

4/1/2019	SOIL
2-4	BRL
8-10	BRL
10-12	BRL

4/1/2019	GROUNDWATER
11-15	--
15-20	BRL
20-23	1.1

4/2/2019	SOIL
2-4	BRL
8-10	BRL

2000, 2003	BRL

MW-7

4/2/2019	SOIL
2-4	BRL
8-10	BRL

4/2/2019	SOIL
2-4	BRL
8-10	BRL

4/2/2019	SOIL
2-4	BRL
8-10	BRL

12/10/2013	SOIL
0-3	BRL

3/19/1996	SOIL
6	5.1

12/12/2013	SOIL
0-3	BRL
4-6	BRL
8-10	BRL
12-14	BRL
16-18	BRL

6/24/2014	SOIL
10	BRL

11/21/2003	10

MW-2

4/3/2019	SOIL
2-4	0.78
8-10	BRL
12-14	0.64

11/28/2000	SOIL
10-12	BRL

DischargePoint

3/26/2019	mg/kg
RIVER SEDIMENT	BRL
3/5/2019	µg/L
SURFACE WATER	BRL

05/25/2000	160

MW-4

2000, 2003	ND

MW-8S SB-9 SB-9/MW-8D

3/26/2019	GROUNDWATER
5-15	BRL

SB508/TW508

11/21/2003	1,200

MW-12

3/4/2019	SOIL
2-4	BRL
8-10	BRL
12-14	BRL

06/05/2013	SOIL
9	1.1

06/05/2013	SOIL
9	0.16

06/05/2013	SOIL
9	0.22

4/2/2019	SOIL
2-4	BRL
8-10	BRL

06/05/2013	SOIL
9	0.79

06/05/2013	SOIL
9	0.56

4/3/2019	SOIL
2-4	BRL
8-10	BRL

4/3/2019	SOIL
2-4	BRL
8-10	BRL

3/7/2019	SOIL
2-4	0.490
8-10	47
12-14	2.9

3/7/2019	GROUNDWATER
10-15	6,500
15-20	420
20-23	200

4/3/2019	SOIL
2-4	BRL
8-10	BRL

3/26/2019	GROUNDWATER
5-15	1.3

SB510/TW510

11/28/2000	SOIL
1-3	BRL
1-3	BRL
5-7	BRL

3/26/2019	GROUNDWATER
4.5-14.5	BRL

SB509/TW509

04/04/2019	GROUNDWATER
5-15	BRL

SB511/TW511

SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 SB-13 SB-14 SB-16 SB-24 SB-25 SB-26 SB-27 SB-31 SB-34 SB-35

B-10 B-16 B101 B102

MW-13 MW-9

SS-1 SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10 SS-11 SS-12 SS-13 SS-14 SS-16

SS301 SS302 SS303 SS304 SS305 SS306 SS307 SS308 SS309 SS310 SS311 SS312 SS313 SS314 SS315 SS316 SS317 SS318 SS319 SS320 SS321 SS322 SS323 SS324 SS325 SS326 SS327 SS328 SS401 SS402 SS403 SS404 SS405 SS406 SS408 SS409 SS410 SS411 SS412 SS413 SS414

SB201 SB202 SB203 SB204 SB206

SD102-S1 SD102-S2 SD101-S1 SD101-S2

BTR-GBC BTR-GBH

SB501a/TW501a SB501b/TW501b SB501c SB501d SB501e

SB502a/TW502a SB502b SB502c SB502d SB502e

SB503a/TW503a SB503b SB503c SB503d SB503e

SB504a/TW504a SB504b SB504c SB504d SB504e

SB512

PENTACHLOROPHENOL (PCP)		
MEDIA	METHOD 1 STANDARDS	UPPER CONCENTRATION LIMIT
GROUNDWATER	GW-1: 1 ug/L	2,000 ug/L
SOIL	S-1, S-2, S-3: 3 mg/kg	700 mg/kg

LEGEND:

- PROPERTY BOUNDARY
- FORMER DIP TANK
- WETLAND AREA AND APPROXIMATE LIMITS OF WOODY DEBRIS DISPOSAL AREA
- SOIL/GROUNDWATER SAMPLES (VARIOUS DATES) WITH PENTACHLOROPHENOL CONCENTRATION
- 2,100 — PCP CONCENTRATION ABOVE UPPER CONCENTRATION LIMIT (UCL)
- 47 — PCP CONCENTRATION IN SOIL > S-1 STANDARD (3 mg/kg)
- 12 — PCP CONCENTRATION IN GROUNDWATER > GW-1 STANDARD (1 µg/L)
- BRL — BELOW REPORTING LIMIT
- ALL DEPTHS REPORTED IN FEET

NOTES:

1. HISTORICAL SAMPLING LOCATIONS ARE APPROXIMATE AND BASED ON "HISTORICAL SAMPLING LOCATIONS" AND PHASE 2 SAMPLING LOCATION" PREPARED BY FUSS & O'NEILL DATED SEPTEMBER 2001, AND ON RANSOM'S SUBSEQUENT SITE VISITS.
2. SOIL SAMPLES WERE COLLECTED BY VARIOUS ENTITIES AS FOLLOWS:
   a. 1996: US EPA AND/OR MA DEP
   b. 2000-01: FUSS & O'NEILL
   c. AUG 2004: RANSOM ENVIRONMENTAL CONSULTANTS, INC
   d. DEC 2013: BIOTECH RESTORATIONS LLC.
   e. MAR 2013: RANSOM CONSULTING, INC.
   f. 2014, 2019: RANSOM CONSULTING, INC.
3. BEGINNING IN DECEMBER 2013, SAMPLE LOCATIONS WERE DOCUMENTED BY RANSOM CONSULTING, INC. USING A HANDHELD GPS DEVICE.
4. SOME FEATURES HAVE BEEN REMOVED FOR CLARITY.

0 15 30 60

SCALE in FEET
1"=30'

RANSOM Consulting, Inc.

PREPARED FOR:
COMMUNITY DEVELOPMENT
OF SOUTH BERKSHIRE
PO BOX 733
GREAT BARRINGTON, MASSACHUSETTS

SITE:
FORMER
NEW ENGLAND LOG HOMES
100 BRIDGE STREET
GREAT BARRINGTON, MASSACHUSETTS

PENTACHLOROPHENOL (PCP) CONCENTRATIONS

DATE: MAY 2019
PROJECT: 021.01074.010
FIGURE: 4

DRAFT

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HOUSATONIC RIVER

BRIDGE

BRIDGE STREET

BENTLEY STREET

CROSBY ST.

Downstream

Upstream

DischargePoint

APPROXIMATE FORMER LOCATION OF 8' DIA. BRICK CHIMNEY

BTR-GBH

BTR-GBC

APPROXIMATE FORMER LOCATION OF DIP TANK

FORMER DIP TANK

PETROLEUM-IMPACTED SOILS (FOUND JUNE 3, 2014)

PETROLEUM AND DRUM HOT SPOT LAYDOWN AREA

APPROXIMATE LOCATION OF 1,000-GALLON UST (UNCOVERED JUNE 23, 2014)

STA 06,07,08

06/05/2013	DEPTH: 10
C9-C18 ALIPHATICS	12.6
C19-C36 ALIPHATICS	358
C11-C22 AROMATICS	164

06/05/2013	DEPTH: 9
C9-C18 ALIPHATICS	BRL
C19-C36 ALIPHATICS	80.6
C11-C22 AROMATICS	30.8

06/05/2013	DEPTH: 9
C9-C18 ALIPHATICS	13.7
C19-C36 ALIPHATICS	393
C11-C22 AROMATICS	198

06/05/2013	DEPTH: 9
C9-C18 ALIPHATICS	15.3
C19-C36 ALIPHATICS	412
C11-C22 AROMATICS	204

06/05/2013	DEPTH: 9
C9-C18 ALIPHATICS	18.9
C19-C36 ALIPHATICS	495
C11-C22 AROMATICS	230

6/24/2014	DEPTH: 5-7
C5-C8 ALIPHATICS	BRL
C9-C12 ALIPHATICS	14.7
C9-C10 AROMATICS	33

6/24/2014	DEPTH: 5-7
C9-C18 ALIPHATICS	1,880
C19-C36 ALIPHATICS	1,150
C11-C22 AROMATICS	1,720

05/08/2000	DEPTH: 2
C9-C18 ALIPHATICS	2,400
C19-C36 ALIPHATICS	310
C11-C22 AROMATICS	1,200

12/12/2013	DEPTH: 0-3
C9-C18 ALIPHATICS	BRL
C19-C36 ALIPHATICS	8.92
C11-C22 AROMATICS	16.5

12/12/2013	DEPTH: 0-3
C9-C18 ALIPHATICS	BRL
C19-C36 ALIPHATICS	BRL
C11-C22 AROMATICS	BRL

12/12/2013	DEPTH: 0-3
C9-C18 ALIPHATICS	BRL
C19-C36 ALIPHATICS	BRL
C11-C22 AROMATICS	9.66

MA DEP METHOD 1 SOIL STANDARD AND UCLSs (in mg/kg)

PARAMETER	S-1	S-3	UCL
C9-C18 ALIPHATICS	1,000	5,000	20,000
C19-C36 ALIPHATICS	3,000	5,000	20,000
C11-C22 AROMATICS	1,000	1,000	10,000

LEGEND:

PROPERTY BOUNDARY

PETROLEUM-IMPACTED SOILS LOCATED ABOVE 9' BGS WERE RELOCATED TO THE SURFACE LAY-DOWN AREA

SOIL SAMPLE (JULY 2014 AND MARCH/DECEMBER 2013) WITH PETROLEUM CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)

OTHER HISTORICAL SAMPLES (VARIOUS DATES) WITH PETROLEUM CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)

1,200 CONCENTRATIONS SHOWN IN YELLOW ARE ABOVE THE METHOD 1 S-3 SOIL STANDARD

BRL BELOW REPORTING LIMIT

ALL DEPTHS REPORTED IN FEET

NOTES:

1. HISTORICAL SAMPLING LOCATIONS ARE APPROXIMATE AND BASED ON "HISTORICAL SAMPLING LOCATIONS" AND PHASE 2 SAMPLING LOCATION" PREPARED BY FUSS & O'NEILL DATED SEPTEMBER 2001, AND ON RANSOM'S SUBSEQUENT SITE VISITS.
2. SOIL SAMPLES WERE COLLECTED BY VARIOUS ENTITIES AS FOLLOWS:
   - a. 1996: US EPA AND/OR MA DEP
   - b. 2000-01: FUSS & O'NEILL
   - c. AUG 2004: RANSOM ENVIRONMENTAL CONSULTANTS, INC
   - d. DEC 2013: BIOTECH RESTORATIONS LLC.
   - e. MAR 2013: RANSOM CONSULTING, INC.
   - f. 2014, 2019: RANSOM CONSULTING, INC.
3. BEGINNING IN DECEMBER 2013, SAMPLE LOCATIONS WERE DOCUMENTED BY RANSOM CONSULTING, INC. USING A HANDHELD GPS DEVICE.
4. SOME FEATURES HAVE BEEN REMOVED FOR CLARITY.

0 15 30 60

SCALE in FEET
1"=30'

RANSOM Consulting, Inc.

PREPARED FOR:
COMMUNITY DEVELOPMENT
OF SOUTH BERKSHIRE
PO BOX 733
GREAT BARRINGTON, MASSACHUSETTS

SITE:
FORMER
NEW ENGLAND LOG HOMES
100 BRIDGE STREET
GREAT BARRINGTON, MASSACHUSETTS

PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL

DATE: MAY 2019
PROJECT: 021.01074.010
FIGURE: 5

X:\Ransom_NewEngland\Massachusetts\GreatBarrington_MA\FormerNELogHomes\Drawings\FNELH_021.01074-F5_TPH.dwg

HOUSATONIC RIVER

BRIDGE

BRIDGE STREET

DischargePoint

12/11/2013	DEPTH: 0-3
ARSENIC	8.2
LEAD	97
THALLIUM	BRL
PAH	2.4

12/11/2013	DEPTH: 0-3
ARSENIC	11
LEAD	33
THALLIUM	BRL
PAH	103

5/11/2000	DEPTH: 2
ARSENIC	17
LEAD	580
THALLIUM	NOT SAMPLED
PAH	51

SB507/TW507

4/4/2019	GROUNDWATER
LEAD, DISSOLVED	BRL

3/26/2019	GROUNDWATER
LEAD, DISSOLVED	BRL

SB508/TW508

SB506/TW506

4/4/2019	GROUNDWATER
LEAD, DISSOLVED	BRL

APPROXIMATE FORMER LOCATION OF 8' DIA. BRICK CHIMNEY

12/11/2013	DEPTH: 0-3
ARSENIC	5.2
LEAD	17
THALLIUM	BRL
PAH	6.4

12/11/2013	DEPTH: 0-3
ARSENIC	8
LEAD	43
THALLIUM	BRL
PAH	11

12/12/2013	DEPTH: 0-3
ARSENIC	8
LEAD	16
THALLIUM	BRL
PAH	BRL

12/11/2013	DEPTH: 0-3
ARSENIC	4.3
LEAD	200
THALLIUM	BRL
PAH	239

SB501a/TW501a

3/26/2019	GROUNDWATER
LEAD, DISSOLVED	BRL

05/20/2000	DEPTH: 2-3
PAH	43
12/12/2012	DEPTH: 2-3
PAH	31

6/6/1996	DEPTH: 2
ARSENIC	68.8
LEAD	193
THALLIUM	NOT SAMPLED
6/6/1996	DEPTH: 0-3
ARSENIC	4.5
LEAD	56
THALLIUM	BRL

SB509/TW509

3/26/2019	GROUNDWATER
LEAD, DISSOLVED	BRL

12/11/2013	DEPTH: 0-3
ARSENIC	9.9
LEAD	32
THALLIUM	BRL
PAH	0.43

6/6/1996	DEPTH: 1.25
ARSENIC	36.2
LEAD	119
THALLIUM	102
PAH	83

5/11/2000	DEPTH: 2
ARSENIC	4.4
LEAD	10.6
THALLIUM	NOT SAMPLED
PAH	678

6/3/2014	DEPTH: 5-7
ZINC	3,960

SB503a/TW503a

SB502a/TW502a

SB510/TW510

APPROXIMATE FORMER LOCATION OF DIP TANK

APPROXIMATE LOCATION OF 1,000-GALLON UST (UNCOVERED JUNE 23, 2014)

FORMER DIP TANK

STA 06,07,08

BTR-GBC

SS303 SS-3 SS304 SS306 SS307 SS308 SS313 SS314 SS315 SS316 SS317 SS318 SS320 SS321 SS327 SS328 SS401 SS402 SS403 SS404 SS405 SS406 SS408 SS410 SS412 SS414

SS-1 SS-2 SS-5 SS-6 SS-7 SS-8 SS-10 SS-11

MW-2 MW-4 MW-8S MW-9 MW-10A MW-11 MW-12 MW-13

SB-2 SB-5 SB-9 SB-9/MW-8D SB-10 SB-11 SB-16 SB-24 SB-25 SB-26 SB-27 SB-29 SB-31

B101 B102 SB201 SB204 SB206

SB501b/TW501b

SB501c SB501d SB501e SB502b SB502c SB502d SB502e SB503b SB503c SB503d SB503e

MA DEP METHOD 1 SOIL STANDARD AND UCLSs (in mg/kg)

PARAMETER	S-1	S-3	UCL
ARSENIC	20	50	500
LEAD	200	600	6,000
THALLIUM	8	80	800
ZINC	1,000	5,000	10,000

MA DEP METHOD 1 SOIL STANDARDS VARY FOR PAH - REFER TO 310 CMR 40.0975.

LEGEND:

- PROPERTY BOUNDARY
- AREA WITH ELEVATED METALS CONCENTRATIONS
- SOIL SAMPLE (JULY 2014 AND MARCH/DECEMBER 2013) WITH PAH AND METALS CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
- OTHER HISTORICAL SAMPLES (VARIOUS DATES) WITH METALS AND PAH CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)
- 68.8 CONCENTRATION IN SOIL ABOVE METHOD 1 S-3 STANDARDS
- BRL BELOW REPORTING LIMIT
- ALL DEPTHS REPORTED IN FEET

NOTES:

1. HISTORICAL SAMPLING LOCATIONS ARE APPROXIMATE AND BASED ON "HISTORICAL SAMPLING LOCATIONS" AND PHASE 2 SAMPLING LOCATION" PREPARED BY FUSS & O'NEILL DATED SEPTEMBER 2001, AND ON RANSOM'S SUBSEQUENT SITE VISITS.
2. SOIL SAMPLES WERE COLLECTED BY VARIOUS ENTITIES AS FOLLOWS:
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   d. DEC 2013: BIOTECH RESTORATIONS LLC.
   e. MAR 2013: RANSOM CONSULTING, INC.
   f. 2014, 2019: RANSOM CONSULTING, INC.
3. BEGINNING IN DECEMBER 2013, SAMPLE LOCATIONS WERE DOCUMENTED BY RANSOM CONSULTING, INC. USING A HANDHELD GPS DEVICE.
4. SOME FEATURES HAVE BEEN REMOVED FOR CLARITY.

0 10 20 40

SCALE in FEET
1"=20'

RANSOM Consulting, Inc.

PREPARED FOR:
COMMUNITY DEVELOPMENT
OF SOUTH BERKSHIRE
PO BOX 733
GREAT BARRINGTON, MASSACHUSETTS

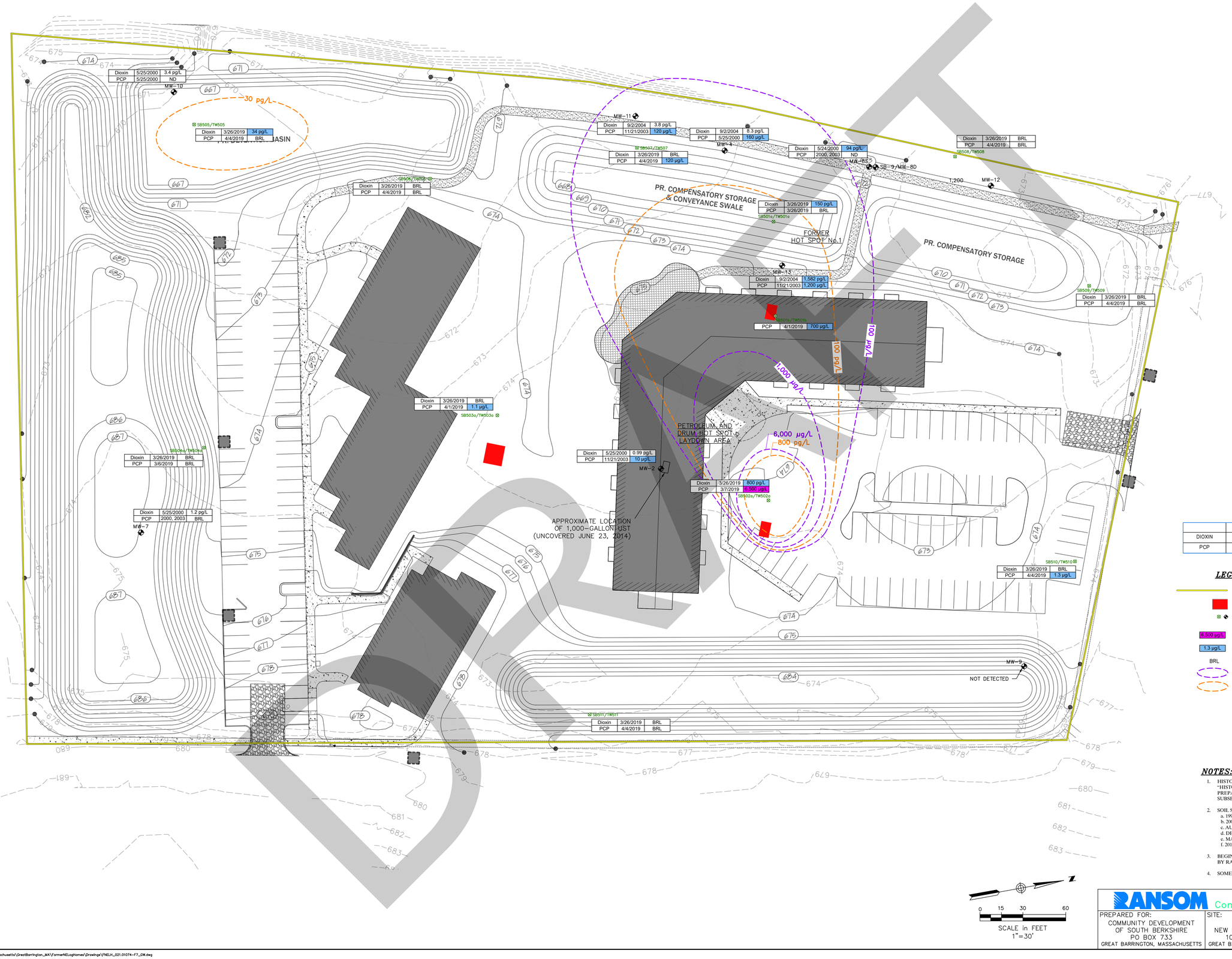
SITE:
FORMER
NEW ENGLAND LOG HOMES
100 BRIDGE STREET
GREAT BARRINGTON, MASSACHUSETTS

PAH AND METALS CONCENTRATIONS (DETAIL)

DATE: MAY 2019
PROJECT: 021.01074.010
FIGURE: 6

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X:\Ransom_NewEngland\Massachusetts\GreatBarrington_MA\FormerNELogHomes\Drawings\FNELH_021.01074-F6_PAHMETALS.dwg



	METHOD 1 STANDARDS	UPPER CONCENTRATION LIMIT
DIOXIN	GW-1: 30 pg/L	400,000 pg/L
PCP	GW-1: 1 ug/L	2,000 ug/L

LEGEND:

- PROPERTY BOUNDARY
- FORMER DIP TANK
- GROUNDWATER SAMPLES (VARIOUS DATES)
- 6,500 µg/L — CONCENTRATION ABOVE UPPER CONCENTRATION LIMIT (UCL)
- 1.3 µg/L — CONCENTRATION IN GROUNDWATER > GW-1 STANDARD
- BRL — BELOW REPORTING LIMIT
- APPROXIMATE PCP CONCENTRATION CONTOUR
- APPROXIMATE DIOXIN CONCENTRATION CONTOUR

NOTES:

1. HISTORICAL SAMPLING LOCATIONS ARE APPROXIMATE AND BASED ON "HISTORICAL SAMPLING LOCATIONS" AND PHASE 2 SAMPLING LOCATION" PREPARED BY FUSS & O'NEILL DATED SEPTEMBER 2001, AND ON RANSOM'S SUBSEQUENT SITE VISITS.
2. SOIL SAMPLES WERE COLLECTED BY VARIOUS ENTITIES AS FOLLOWS:
   a. 1996: US EPA AND/OR MA DEP
   b. 2000-01: FUSS & O'NEILL
   c. AUG 2004: RANSOM ENVIRONMENTAL CONSULTANTS, INC
   d. DEC 2013: BIOTECH RESTORATIONS LLC.
   e. MAR 2013: RANSOM CONSULTING, INC.
   f. 2014, 2019: RANSOM CONSULTING, INC.
3. BEGINNING IN DECEMBER 2013, SAMPLE LOCATIONS WERE DOCUMENTED BY RANSOM CONSULTING, INC. USING A HANDHELD GPS DEVICE.
4. SOME FEATURES HAVE BEEN REMOVED FOR CLARITY.

0 15 30 60
SCALE in FEET
1"=30'

RANSOM Consulting, Inc.

PREPARED FOR:
COMMUNITY DEVELOPMENT
OF SOUTH BERKSHIRE
PO BOX 733
GREAT BARRINGTON, MASSACHUSETTS

SITE:
FORMER
NEW ENGLAND LOG HOMES
100 BRIDGE STREET
GREAT BARRINGTON, MASSACHUSETTS

CONTAMINANT CONCENTRATIONS IN GROUNDWATER

DATE: MAY 2019
PROJECT: 021.01074.010
FIGURE: 7

X:\Ransom_NewEngland\Massachusetts\GreatBarrington_MA\FormerNELogHomes\Drawings\FNELH_021.01074-F7_GW.dwg

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APPENDIX C

MassDEP Toxicity Equivalency Factors for Dioxins/Furans

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

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April 17, 2025

This communication is to announce an update to the Massachusetts Department of Environmental Protection (MassDEP) recommended toxicity equivalency factors (TEFs) for dioxin-like compounds (DLC), which include certain polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs).

MassDEP is now recommending the use of the TEFs derived and adopted by the World Health Organization (WHO) in 2005 (Van Den Berg et al., 2006). This revision aligns MassDEP TEF values with those of the US Environmental Protection Agency (USEPA 2010), California Environmental Protection Agency (OEHHA 2011), and multiple state organizations. These revised TEFs supersede those previously recommended by MassDEP.

Polychlorinated dibenzo-p-dioxins, PCFDs and PCBs constitute a large group of structurally related compounds, some of which are very toxic. As a group many PCDDS, PCDFs and PCBs are lipophilic, persistent, ubiquitous, and bioaccumulate in the environment. Their resistance to degradation and semi-volatility allows them to be transported over long distances. PCDDs and PCDFs are unintentionally formed through thermal processes or as byproducts of certain industrial chemical syntheses. PCBs were produced for use in a variety of applications such as dielectric and heat transfer fluids, plasticizers, wax extenders, and flame retardants.

There are 75 PCDD, 135 PCDF, and 209 PCB chemical structures which vary in the number and position of their chlorine atoms (termed congeners). The most well studied of these is 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), which is also extremely toxic. Seven of the 75 PCDD, 10 of the 135 PCDF and 12 of the 209 PCB congeners are routinely referred to as “dioxin-like compounds” (DLCs) because these compounds have closely related chemical structures and physio-chemical properties and elicit a common set of toxic responses by binding to a specific cellular receptor protein known as the aryl hydrocarbon receptor (AhR).

Various groups, including MassDEP, have developed various TEFs for DLCs over the past several decades. All express the toxicity of DLCs relative to that of 2,3,7,8-TCDD. The TEFs currently recommended by MassDEP are reported in Table 1.

Due to uncertainty around the potential toxicity of the "Total homologs" ORS concludes that it is appropriate to report any "Total homolog" data reported in 8290A dioxin analytical results where these data are used for risk characterization. However, the "Total homolog" data are not expected to be included in the dioxin TEF calculations.

Table 1. Summary of Toxicity Equivalency Factors (TEFs)

	***DEP 2025 - TEF**
Polychlorinated dibenzo-p-dioxins (PCDDs)	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.0003
Polychlorinated Dibenzofurans (PCDFs)	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.03
2,3,4,7,8-PeCDF	0.3
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.0003
Non-*ortho*-substituted PCBs	
3,3',4,4'-tetraCB (PCB 77)	0.0001
3,4,4',5-tetraCB (PCB 81)	0.0003
3,3',4,4',5-pentaCB (PCB 126)	0.1
3,3',4,4',5,5'-hexaCB (PCB 169)	0.03
Mono-*ortho*-substituted PCBs	
2,3,3',4,4'-pentaCB (PCB 105)	0.00003
2,3,4,4',5-pentaCB (PCB 114)	0.00003
2,3',4,4',5-pentaCB (PCB 118)	0.00003
2',3,4,4',5-pentaCB (PCB 123)	0.00003
2,3,3',4, 4', 5-hexaCB (PCB 156)	0.00003
2,3,3',4, 4', 5'-hexaCB (PCB 157)	0.00003
2,3',4,4',5,5'-hexaCB (PCB 167)	0.00003
2,3,3',4,4',5,5'-heptaCB (PCB 189)	0.00003

*TEF values from Van den Berg, 2006 (aka, WHO, 2005).

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References:

OEHHA (California Office of Environmental Health Hazard Assessment). 2011. Use of the Toxicity Equivalency Factor (TEF WHO-05) Scheme for Estimating Toxicity of Mixtures of Dioxin-Like Chemicals. Technical Support Document for Cancer Potency Factors, Appendix C.

USEPA (U.S. Environmental Protection Agency). 2010. Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds. Risk Assessment Forum, Washington, D.C. EPA/100/R-10/005.

Van den Berg, M., et al. 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.

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APPENDIX D

Soil Sample Laboratory Chemical Analysis Reports – Dioxins/Furans Analyses

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	RF4	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	77	0.1	8	0.01	1
OCDD	720	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	8	0.1	1	0.1	1
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	11	0.1	1	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	29	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	-	0.01	-	0	-
Total Hepta-Dioxins (HpCDD)	150	0.01	1	0	-
Total Tetra-Furans (TCDF)	12	0.01	0	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	-	0.01	-	0	-
Total Hepta-Furans (HpCDF)	11	0.01	-	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**11**	**Current TEQ:**	**2**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	RF3	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	72	0.1	7	0.01	1
OCDD	620	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	15	0.1	2	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	39	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	6	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	120	0.01	0	0	-
Total Tetra-Furans (TCDF)	-	0.01	-	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	6	0.01	0	0	-
Total Hepta-Furans (HpCDF)	15	0.01	-	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**10**	**Current TEQ:**	**1**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	RF2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	33	0.1	3	0.01	0
OCDD	280	0.001	0	0.0003	0
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	7	0.1	1	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	25	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	-	0.01	-	0	-
Total Hepta-Dioxins (HpCDD)	52	0.01	0	0	-
Total Tetra-Furans (TCDF)	-	0.01	-	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	-	0.01	-	0	-
Total Hepta-Furans (HpCDF)	13	0.01	0	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**5**	**Current TEQ:**	**0**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	RF1	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	34	0.1	3	0.01	0
OCDD	310	0.001	0	0.0003	0
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	8	0.1	1	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	20	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	-	0.01	-	0	-
Total Hepta-Dioxins (HpCDD)	57	0.01	0	0	-
Total Tetra-Furans (TCDF)	-	0.01	-	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	-	0.01	-	0	-
Total Hepta-Furans (HpCDF)	8	0.01	-	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**5**	**Current TEQ:**	**1**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	DU-I	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	11	0.1	1	0.1	1
1,2,3,6,7,8-HxCDD	63	0.1	6	0.1	6
1,2,3,7,8,9-HxCDD	26	0.1	3	0.1	3
1,2,3,4,6,7,8-HpCDD	1,400	0.1	140	0.01	14
OCDD	9,600	0.001	10	0.0003	3
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	12	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	21	0.1	2	0.1	2
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	18	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDF	260	0.1	26	0.01	3
1,2,3,4,7,8,9-HpCDF	18	0.1	2	0.01	0
OCDF	610	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	3	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	280	0.01	2	0	-
Total Hepta-Dioxins (HpCDD)	2,200	0.01	8	0	-
Total Tetra-Furans (TCDF)	15	0.01	0	0	-
Total Penta-Furans (PeCDF)	95	0.05	5	0	-
Total Hexa-Furans (HxCDF)	220	0.01	2	0	-
Total Hepta-Furans (HpCDF)	280	0.01	0	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**210**	**Current TEQ:**	**35**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
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100 Bridge Street, Lots 3 and 4
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MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	DU-F SOUTH	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	11	0.5	6	1	11
1,2,3,4,7,8-HxCDD	24	0.1	2	0.1	2
1,2,3,6,7,8-HxCDD	210	0.1	21	0.1	21
1,2,3,7,8,9-HxCDD	55	0.1	6	0.1	6
1,2,3,4,6,7,8-HpCDD	4,200	0.1	420	0.01	42
OCDD	32,000	0.001	32	0.0003	10
Furans:					
2,3,7,8-TCDF	4	0.1	0	0.1	0
1,2,3,7,8-PeCDF	9	0.5	4	0.03	0
2,3,4,7,8-PeCDF	11	0.5	6	0.3	3
1,2,3,4,7,8-HxCDF	38	0.1	4	0.1	4
1,2,3,6,7,8-HxCDF	30	0.1	3	0.1	3
1,2,3,7,8,9-HxCDF	17	0.1	2	0.1	2
2,3,4,6,7,8-HxCDF	21	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDF	710	0.1	71	0.01	7
1,2,3,4,7,8,9-HpCDF	42	0.1	4	0.01	0
OCDF	2,100	0.001	2	0.0003	1
Totals					
Total Tetra-Dioxins (TCDD)	3	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	28	0.05	1	0	-
Total Hexa-Dioxins (HxCDD)	750	0.01	5	0	-
Total Hepta-Dioxins (HpCDD)	6,600	0.01	24	0	-
Total Tetra-Furans (TCDF)	37	0.01	0	0	-
Total Penta-Furans (PeCDF)	240	0.05	11	0	-
Total Hexa-Furans (HxCDF)	710	0.01	6	0	-
Total Hepta-Furans (HpCDF)	2,300	0.01	15	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**647**	**Current TEQ:**	**114**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DUA- North	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	49	0.1	5	0.1	5
1,2,3,7,8,9-HxCDD	11	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	960	0.1	96	0.01	10
OCDD	7,100	0.001	7	0.0003	2
Furans:					
2,3,7,8-TCDF	2	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	180	0.1	18	0.01	2
1,2,3,4,7,8,9-HpCDF	12	0.1	1	0.01	0
OCDF	720	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	180	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	1,700	0.01	7	0	-
Total Tetra-Furans (TCDF)	9	0.01	0	0	-
Total Penta-Furans (PeCDF)	11	0.05	1	0	-
Total Hexa-Furans (HxCDF)	150	0.01	1	0	-
Total Hepta-Furans (HpCDF)	730	0.01	5	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**147**	**Current TEQ:**	**21**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DUA-South S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	4	1	4	1	4
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	6	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	130	0.1	13	0.01	1
OCDD	1,100	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	1	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	23	0.1	2	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	81	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	4	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	27	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	220	0.01	1	0	-
Total Tetra-Furans (TCDF)	1	0.01	-	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	24	0.01	0	0	-
Total Hepta-Furans (HpCDF)	79	0.01	1	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**24**	**Current TEQ:**	**7**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DUA- South	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	6	1	6	1	6
1,2,3,7,8-PeCDD	12	0.5	6	1	12
1,2,3,4,7,8-HxCDD	22	0.1	2	0.1	2
1,2,3,6,7,8-HxCDD	220	0.1	22	0.1	22
1,2,3,7,8,9-HxCDD	57	0.1	6	0.1	6
1,2,3,4,6,7,8-HpCDD	5,900	0.1	590	0.01	59
OCDD	45,000	0.001	45	0.0003	14
Furans:					
2,3,7,8-TCDF	5	0.1	1	0.1	1
1,2,3,7,8-PeCDF	5	0.5	3	0.03	0
2,3,4,7,8-PeCDF	17	0.5	9	0.3	5
1,2,3,4,7,8-HxCDF	95	0.1	10	0.1	10
1,2,3,6,7,8-HxCDF	32	0.1	3	0.1	3
1,2,3,7,8,9-HxCDF	13	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	18	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDF	1,200	0.1	120	0.01	12
1,2,3,4,7,8,9-HpCDF	95	0.1	10	0.01	1
OCDF	5,700	0.001	6	0.0003	2
Totals					
Total Tetra-Dioxins (TCDD)	8	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	45	0.05	2	0	-
Total Hexa-Dioxins (HxCDD)	770	0.01	5	0	-
Total Hepta-Dioxins (HpCDD)	9,000	0.01	31	0	-
Total Tetra-Furans (TCDF)	26	0.01	0	0	-
Total Penta-Furans (PeCDF)	230	0.05	10	0	-
Total Hexa-Furans (HxCDF)	690	0.01	5	0	-
Total Hepta-Furans (HpCDF)	5,300	0.01	40	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**933**	**Current TEQ:**	**157**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU22	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	24	0.1	2	0.1	2
1,2,3,7,8,9-HxCDD	9	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	530	0.1	53	0.01	5
OCDD	4,700	0.001	5	0.0003	1
Furans:					
2,3,7,8-TCDF	32	0.1	3	0.1	3
1,2,3,7,8-PeCDF	7	0.5	3	0.03	0
2,3,4,7,8-PeCDF	7	0.5	4	0.3	2
1,2,3,4,7,8-HxCDF	9	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	73	0.1	7	0.01	1
1,2,3,4,7,8,9-HpCDF	6	0.1	1	0.01	0
OCDF	150	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	2	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	100	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	890	0.01	4	0	-
Total Tetra-Furans (TCDF)	79	0.01	0	0	-
Total Penta-Furans (PeCDF)	36	0.05	1	0	-
Total Hexa-Furans (HxCDF)	140	0.01	1	0	-
Total Hepta-Furans (HpCDF)	200	0.01	1	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**88**	**Current TEQ:**	**17**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU21	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	7	0.1	1	0.1	1
1,2,3,6,7,8-HxCDD	28	0.1	3	0.1	3
1,2,3,7,8,9-HxCDD	12	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	810	0.1	81	0.01	8
OCDD	7,100	0.001	7	0.0003	2
Furans:					
2,3,7,8-TCDF	4	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	11	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	170	0.1	17	0.01	2
1,2,3,4,7,8,9-HpCDF	13	0.1	1	0.01	0
OCDF	470	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	2	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	130	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	1,300	0.01	5	0	-
Total Tetra-Furans (TCDF)	18	0.01	0	0	-
Total Penta-Furans (PeCDF)	50	0.05	3	0	-
Total Hexa-Furans (HxCDF)	220	0.01	2	0	-
Total Hepta-Furans (HpCDF)	530	0.01	3	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**128**	**Current TEQ:**	**20**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU20	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	62	0.1	6	0.01	1
OCDD	510	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	2	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	22	0.1	2	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	39	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	11	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	7	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	20	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	100	0.01	0	0	-
Total Tetra-Furans (TCDF)	65	0.01	1	0	-
Total Penta-Furans (PeCDF)	41	0.05	2	0	-
Total Hexa-Furans (HxCDF)	21	0.01	0	0	-
Total Hepta-Furans (HpCDF)	52	0.01	0	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**13**	**Current TEQ:**	**1**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
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3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU19	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	33	0.1	3	0.1	3
1,2,3,7,8,9-HxCDD	10	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	680	0.1	68	0.01	7
OCDD	7,500	0.001	8	0.0003	2
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	140	0.1	14	0.01	1
1,2,3,4,7,8,9-HpCDF	10	0.1	1	0.01	0
OCDF	370	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	1	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	5	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	140	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	1,100	0.01	4	0	-
Total Tetra-Furans (TCDF)	5	0.01	0	0	-
Total Penta-Furans (PeCDF)	55	0.05	3	0	-
Total Hexa-Furans (HxCDF)	210	0.01	2	0	-
Total Hepta-Furans (HpCDF)	440	0.01	3	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**110**	**Current TEQ:**	**16**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
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Sample Location:	DU-18	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	15	0.1	2	0.1	2
1,2,3,7,8,9-HxCDD	8	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	350	0.1	35	0.01	4
OCDD	2,400	0.001	2	0.0003	1
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	79	0.1	8	0.01	1
1,2,3,4,7,8,9-HpCDF	5	0.1	1	0.01	0
OCDF	180	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	79	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	590	0.01	2	0	-
Total Tetra-Furans (TCDF)	1	0.01	0	0	-
Total Penta-Furans (PeCDF)	25	0.05	1	0	-
Total Hexa-Furans (HxCDF)	89	0.01	1	0	-
Total Hepta-Furans (HpCDF)	210	0.01	1	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**55**	**Current TEQ:**	**7**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
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Sample Location:	DU17-S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	6	0.5	3	1	6
1,2,3,4,7,8-HxCDD	21	0.1	2	0.1	2
1,2,3,6,7,8-HxCDD	110	0.1	11	0.1	11
1,2,3,7,8,9-HxCDD	46	0.1	5	0.1	5
1,2,3,4,6,7,8-HpCDD	2,600	0.1	260	0.01	26
OCDD	18,000	0.001	18	0.0003	5
Furans:					
2,3,7,8-TCDF	1	0.1	0	0.1	0
1,2,3,7,8-PeCDF	8	0.5	4	0.03	0
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	34	0.1	3	0.1	3
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	6	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	41	0.1	4	0.1	4
1,2,3,4,6,7,8-HpCDF	530	0.1	53	0.01	5
1,2,3,4,7,8,9-HpCDF	43	0.1	4	0.01	0
OCDF	660	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	11	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	380	0.01	2	0	-
Total Hepta-Dioxins (HpCDD)	3,900	0.01	13	0	-
Total Tetra-Furans (TCDF)	19	0.01	0	0	-
Total Penta-Furans (PeCDF)	240	0.05	12	0	-
Total Hexa-Furans (HxCDF)	770	0.01	7	0	-
Total Hepta-Furans (HpCDF)	1,300	0.01	7	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**410**	**Current TEQ:**	**69**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU16	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	11	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	210	0.1	21	0.01	2
OCDD	1,900	0.001	2	0.0003	1
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	50	0.1	5	0.01	1
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	110	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	1	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	38	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	330	0.01	1	0	-
Total Tetra-Furans (TCDF)	4	0.01	0	0	-
Total Penta-Furans (PeCDF)	17	0.05	1	0	-
Total Hexa-Furans (HxCDF)	61	0.01	1	0	-
Total Hepta-Furans (HpCDF)	140	0.01	1	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**33**	**Current TEQ:**	**4**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU15	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	8	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	160	0.1	16	0.01	2
OCDD	1,200	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	56	0.1	6	0.01	1
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	140	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	24	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	270	0.01	1	0	-
Total Tetra-Furans (TCDF)	5	0.01	0	0	-
Total Penta-Furans (PeCDF)	22	0.05	1	0	-
Total Hexa-Furans (HxCDF)	55	0.01	1	0	-
Total Hepta-Furans (HpCDF)	150	0.01	1	0	-
3		**Old 1995 TEQ:**	**28**	**Current TEQ:**	**3**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU14 South-S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	-	0.1	-	0.01	-
OCDD	20	0.001	0	0.0003	0
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	-	0.1	-	0.01	-
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	-	0.001	-	0.0003	-
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	-	0.01	-	0	-
Total Hepta-Dioxins (HpCDD)	-	0.01	-	0	-
Total Tetra-Furans (TCDF)	-	0.01	-	0	-
Total Penta-Furans (PeCDF)	-	0.05	-	0	-
Total Hexa-Furans (HxCDF)	-	0.01	-	0	-
Total Hepta-Furans (HpCDF)	-	0.01	-	0	-
0		**Old 1995 TEQ:**	**0**	**Current TEQ:**	**0**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU13-S3	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	41	0.1	4	0.1	4
1,2,3,7,8,9-HxCDD	8	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	1,200	0.1	120	0.01	12
OCDD	11,000	0.001	11	0.0003	3
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	5	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	8	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	180	0.1	18	0.01	2
1,2,3,4,7,8,9-HpCDF	15	0.1	2	0.01	0
OCDF	660	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	11	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	13	0.05	1	0	-
Total Hexa-Dioxins (HxCDD)	130	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	1,800	0.01	6	0	-
Total Tetra-Furans (TCDF)	2	0.01	0	0	-
Total Penta-Furans (PeCDF)	32	0.05	2	0	-
Total Hexa-Furans (HxCDF)	250	0.01	2	0	-
Total Hepta-Furans (HpCDF)	680	0.01	5	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**174**	**Current TEQ:**	**24**

NOTES:

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU12	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	16	0.1	2	0.1	2
1,2,3,7,8,9-HxCDD	6	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	430	0.1	43	0.01	4
OCDD	3,900	0.001	4	0.0003	1
Furans:					
2,3,7,8-TCDF	1	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	79	0.1	8	0.01	1
1,2,3,4,7,8,9-HpCDF	6	0.1	1	0.01	0
OCDF	310	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	54	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	640	0.01	2	0	-
Total Tetra-Furans (TCDF)	3	0.01	0	0	-
Total Penta-Furans (PeCDF)	18	0.05	1	0	-
Total Hexa-Furans (HxCDF)	82	0.01	1	0	-
Total Hepta-Furans (HpCDF)	280	0.01	2	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**64**	**Current TEQ:**	**9**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU10	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	14	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	6	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	360	0.1	36	0.01	4
OCDD	2,800	0.001	3	0.0003	1
Furans:					
2,3,7,8-TCDF	2	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	97	0.1	10	0.01	1
1,2,3,4,7,8,9-HpCDF	6	0.1	1	0.01	0
OCDF	270	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	5	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	68	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	580	0.01	2	0	-
Total Tetra-Furans (TCDF)	17	0.01	0	0	-
Total Penta-Furans (PeCDF)	24	0.05	1	0	-
Total Hexa-Furans (HxCDF)	99	0.01	1	0	-
Total Hepta-Furans (HpCDF)	280	0.01	2	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**58**	**Current TEQ:**	**7.7**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
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100 Bridge Street, Lots 3 and 4
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Sample Location:	DU9	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	13	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	7	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	520	0.1	52	0.01	5
OCDD	5,500	0.001	6	0.0003	2
Furans:					
2,3,7,8-TCDF	2	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	13	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	120	0.1	12	0.01	1
1,2,3,4,7,8,9-HpCDF	7	0.1	1	0.01	0
OCDF	330	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	11	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	7	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	94	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	880	0.01	4	0	-
Total Tetra-Furans (TCDF)	32	0.01	0	0	-
Total Penta-Furans (PeCDF)	29	0.05	1	0	-
Total Hexa-Furans (HxCDF)	120	0.01	1	0	-
Total Hepta-Furans (HpCDF)	370	0.01	2	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**85**	**Current TEQ:**	**12.4**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	Stream Pile	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	6	1	6	1	6
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	19	0.1	2	0.1	2
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	420	0.1	42	0.01	4
OCDD	3,600	0.001	4	0.0003	1
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	75	0.1	8	0.01	1
1,2,3,4,7,8,9-HpCDF	6	0.1	1	0.01	0
OCDF	270	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	6	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	57	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	660	0.01	2	0	-
Total Tetra-Furans (TCDF)	-	0.01	-	0	-
Total Penta-Furans (PeCDF)	16	0.05	1	0	-
Total Hexa-Furans (HxCDF)	94	0.01	1	0	-
Total Hepta-Furans (HpCDF)	260	0.01	2	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**69**	**Current TEQ:**	**15**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU8	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	29	0.1	3	0.1	3
1,2,3,7,8,9-HxCDD	15	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDD	920	0.1	92	0.01	9
OCDD	9,300	0.001	9	0.0003	3
Furans:					
2,3,7,8-TCDF	5	0.1	1	0.1	1
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	9	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	180	0.1	18	0.01	2
1,2,3,4,7,8,9-HpCDF	13	0.1	1	0.01	0
OCDF	510	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	4	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	5	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	160	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	1,600	0.01	7	0	-
Total Tetra-Furans (TCDF)	13	0.01	0	0	-
Total Penta-Furans (PeCDF)	44	0.05	2	0	-
Total Hexa-Furans (HxCDF)	200	0.01	2	0	-
Total Hepta-Furans (HpCDF)	570	0.01	4	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**144**	**Current TEQ:**	**20.5**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU7-S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	40	0.1	4	0.1	4
1,2,3,7,8,9-HxCDD	8	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	1,800	0.1	180	0.01	18
OCDD	17,000	0.001	17	0.0003	5
Furans:					
2,3,7,8-TCDF	120	0.1	12	0.1	12
1,2,3,7,8-PeCDF	11	0.5	6	0.03	0
2,3,4,7,8-PeCDF	9	0.5	4	0.3	3
1,2,3,4,7,8-HxCDF	27	0.1	3	0.1	3
1,2,3,6,7,8-HxCDF	8	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	8	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	8	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	240	0.1	24	0.01	2
1,2,3,4,7,8,9-HpCDF	21	0.1	2	0.01	0
OCDF	830	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	190	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	3,100	0.01	13	0	-
Total Tetra-Furans (TCDF)	190	0.01	1	0	-
Total Penta-Furans (PeCDF)	32	0.05	1	0	-
Total Hexa-Furans (HxCDF)	250	0.01	2	0	-
Total Hepta-Furans (HpCDF)	1,000	0.01	7	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**281**	**Current TEQ:**	**51**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
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Sample Location:	DU6-S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	2	1	2	1	2
1,2,3,7,8-PeCDD	5	0.5	3	1	5
1,2,3,4,7,8-HxCDD	10	0.1	1	0.1	1
1,2,3,6,7,8-HxCDD	82	0.1	8	0.1	8
1,2,3,7,8,9-HxCDD	22	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDD	2,000	0.1	200	0.01	20
OCDD	16,000	0.001	16	0.0003	5
Furans:					
2,3,7,8-TCDF	25	0.1	3	0.1	3
1,2,3,7,8-PeCDF	6	0.5	3	0.03	0
2,3,4,7,8-PeCDF	6	0.5	3	0.3	2
1,2,3,4,7,8-HxCDF	18	0.1	2	0.1	2
1,2,3,6,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	9	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	11	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	330	0.1	33	0.01	3
1,2,3,4,7,8,9-HpCDF	23	0.1	2	0.01	0
OCDF	1,500	0.001	2	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	11	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	17	0.05	1	0	-
Total Hexa-Dioxins (HxCDD)	370	0.01	3	0	-
Total Hepta-Dioxins (HpCDD)	3,200	0.01	12	0	-
Total Tetra-Furans (TCDF)	49	0.01	0	0	-
Total Penta-Furans (PeCDF)	24	0.05	1	0	-
Total Hexa-Furans (HxCDF)	310	0.01	3	0	-
Total Hepta-Furans (HpCDF)	1,400	0.01	10	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**311**	**Current TEQ:**	**56**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU6	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	6	0.5	3	1	6
1,2,3,4,7,8-HxCDD	15	0.1	2	0.1	2
1,2,3,6,7,8-HxCDD	200	0.1	20	0.1	20
1,2,3,7,8,9-HxCDD	29	0.1	3	0.1	3
1,2,3,4,6,7,8-HpCDD	5,900	0.1	590	0.01	59
OCDD	61,000	0.001	61	0.0003	18
Furans:					
2,3,7,8-TCDF	18	0.1	2	0.1	2
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	16	0.5	8	0.3	5
1,2,3,4,7,8-HxCDF	32	0.1	3	0.1	3
1,2,3,6,7,8-HxCDF	23	0.1	2	0.1	2
1,2,3,7,8,9-HxCDF	13	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	16	0.1	2	0.1	2
1,2,3,4,6,7,8-HpCDF	1,100	0.1	110	0.01	11
1,2,3,4,7,8,9-HpCDF	77	0.1	8	0.01	1
OCDF	5,200	0.001	5	0.0003	2
Totals					
Total Tetra-Dioxins (TCDD)	5	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	40	0.05	2	0	-
Total Hexa-Dioxins (HxCDD)	690	0.01	4	0	-
Total Hepta-Dioxins (HpCDD)	9,000	0.01	31	0	-
Total Tetra-Furans (TCDF)	63	0.01	0	0	-
Total Penta-Furans (PeCDF)	120	0.05	5	0	-
Total Hexa-Furans (HxCDF)	980	0.01	9	0	-
Total Hepta-Furans (HpCDF)	4,600	0.01	34	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**905**	**Current TEQ:**	**136**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
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3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU5	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	13	0.1	1	0.1	1
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	430	0.1	43	0.01	4
OCDD	4,100	0.001	4	0.0003	1
Furans:					
2,3,7,8-TCDF	3	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	6	0.5	3	0.3	2
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	5	0.1	1	0.1	1
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	6	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	120	0.1	12	0.01	1
1,2,3,4,7,8,9-HpCDF	8	0.1	1	0.01	0
OCDF	370	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	4	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	51	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	740	0.01	3	0	-
Total Tetra-Furans (TCDF)	35	0.01	0	0	-
Total Penta-Furans (PeCDF)	92	0.05	4	0	-
Total Hexa-Furans (HxCDF)	150	0.01	1	0	-
Total Hepta-Furans (HpCDF)	410	0.01	3	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**78**	**Current TEQ:**	**11.5**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
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3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
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Sample Location:	DU4	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDD	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDD	77	0.1	8	0.01	1
OCDD	710	0.001	1	0.0003	0
Furans:					
2,3,7,8-TCDF	1	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	-	0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,4,6,7,8-HpCDF	20	0.1	2	0.01	0
1,2,3,4,7,8,9-HpCDF	-	0.1	-	0.01	-
OCDF	44	0.001	0	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	-	0.01	-	0	-
Total Penta-Dioxins (PeCDD)	-	0.05	-	0	-
Total Hexa-Dioxins (HxCDD)	6	0.01	0	0	-
Total Hepta-Dioxins (HpCDD)	130	0.01	1	0	-
Total Tetra-Furans (TCDF)	3	0.01	0	0	-
Total Penta-Furans (PeCDF)	7	0.05	0	0	-
Total Hexa-Furans (HxCDF)	20	0.01	0	0	-
Total Hepta-Furans (HpCDF)	56	0.01	0	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**12**	**Current TEQ:**	**1.3**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	DU3	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	-	0.5	-	1	-
1,2,3,4,7,8-HxCDD	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	37	0.1	4	0.1	4
1,2,3,7,8,9-HxCDD	9	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	1,600	0.1	160	0.01	16
OCDD	16,000	0.001	16	0.0003	5
Furans:					
2,3,7,8-TCDF	6	0.1	1	0.1	1
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	-	0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,6,7,8-HxCDF	-	0.1	-	0.1	-
1,2,3,7,8,9-HxCDF	15	0.1	1	0.1	1
2,3,4,6,7,8-HxCDF	7	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	390	0.1	39	0.01	4
1,2,3,4,7,8,9-HpCDF	18	0.1	2	0.01	0
OCDF	2,000	0.001	2	0.0003	1
Totals					
Total Tetra-Dioxins (TCDD)	6	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	44	0.05	2	0	-
Total Hexa-Dioxins (HxCDD)	310	0.01	3	0	-
Total Hepta-Dioxins (HpCDD)	2,600	0.01	10	0	-
Total Tetra-Furans (TCDF)	13	0.01	0	0	-
Total Penta-Furans (PeCDF)	36	0.05	2	0	-
Total Hexa-Furans (HxCDF)	390	0.01	4	0	-
Total Hepta-Furans (HpCDF)	1,700	0.01	13	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**259**	**Current TEQ:**	**32.8**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	DU2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD		1	-	1	-
1,2,3,7,8-PeCDD		0.5	-	1	-
1,2,3,4,7,8-HxCDD		0.1	-	0.1	-
1,2,3,6,7,8-HxCDD	35	0.1	4	0.1	4
1,2,3,7,8,9-HxCDD	12	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	1,200	0.1	120	0.01	12
OCDD	11,000	0.001	11	0.0003	3
Furans:					
2,3,7,8-TCDF	4	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF		0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	8	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	30	0.1	3	0.1	3
1,2,3,7,8,9-HxCDF		0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	10	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	480	0.1	48	0.01	5
1,2,3,4,7,8,9-HpCDF	15	0.1	2	0.01	0
OCDF	1,100	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	6	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	12	0.05	1	0	-
Total Hexa-Dioxins (HxCDD)	180	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	2,000	0.01	8	0	-
Total Tetra-Furans (TCDF)	27	0.01	0	0	-
Total Penta-Furans (PeCDF)	55	0.05	3	0	-
Total Hexa-Furans (HxCDF)	310	0.01	3	0	-
Total Hepta-Furans (HpCDF)	1,200	0.01	7	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**214**	**Current TEQ:**	**30.5**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	DU1	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD		1	-	1	-
1,2,3,7,8-PeCDD		0.5	-	1	-
1,2,3,4,7,8-HxCDD	5	0.1	1	0.1	1
1,2,3,6,7,8-HxCDD	33	0.1	3	0.1	3
1,2,3,7,8,9-HxCDD	12	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDD	1,100	0.1	110	0.01	11
OCDD	22,000	0.001	22	0.0003	7
Furans:					
2,3,7,8-TCDF	1	0.1	0	0.1	0
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF		0.5	-	0.3	-
1,2,3,4,7,8-HxCDF	8	0.1	1	0.1	1
1,2,3,6,7,8-HxCDF	27	0.1	3	0.1	3
1,2,3,7,8,9-HxCDF		0.1	-	0.1	-
2,3,4,6,7,8-HxCDF	10	0.1	1	0.1	1
1,2,3,4,6,7,8-HpCDF	250	0.1	25	0.01	3
1,2,3,4,7,8,9-HpCDF	13	0.1	1	0.01	0
OCDF	680	0.001	1	0.0003	0
Totals					
Total Tetra-Dioxins (TCDD)	4	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	9	0.05	0	0	-
Total Hexa-Dioxins (HxCDD)	180	0.01	1	0	-
Total Hepta-Dioxins (HpCDD)	2,100	0.01	10	0	-
Total Tetra-Furans (TCDF)	11	0.01	0	0	-
Total Penta-Furans (PeCDF)	55	0.05	3	0	-
Total Hexa-Furans (HxCDF)	250	0.01	2	0	-
Total Hepta-Furans (HpCDF)	770	0.01	5	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**190**	**Current TEQ:**	**30.1**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	SS323	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	2.5	1	3	1	3
1,2,3,7,8-PeCDD	84	0.5	42	1	84
1,2,3,4,7,8-HxCDD	300	0.1	30	0.1	30
1,2,3,6,7,8-HxCDD	1,800	0.1	180	0.1	180
1,2,3,7,8,9-HxCDD	770	0.1	77	0.1	77
1,2,3,4,6,7,8-HpCDD	44,000	0.1	4,400	0.01	440
OCDD		0.001	-	0.0003	-
Furans:					
2,3,7,8-TCDF	11	0.1	1	0.1	1
1,2,3,7,8-PeCDF	-	0.5	-	0.03	-
2,3,4,7,8-PeCDF	97	0.5	49	0.3	29
1,2,3,4,7,8-HxCDF	370	0.1	37	0.1	37
1,2,3,6,7,8-HxCDF	700	0.1	70	0.1	70
1,2,3,7,8,9-HxCDF	110	0.1	11	0.1	11
2,3,4,6,7,8-HxCDF	440	0.1	44	0.1	44
1,2,3,4,6,7,8-HpCDF	5,800	0.1	580	0.01	58
1,2,3,4,7,8,9-HpCDF	450	0.1	45	0.01	5
OCDF	15,000	0.001	15	0.0003	5
Totals					
Total Tetra-Dioxins (TCDD)	27	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	430	0.05	17	0	-
Total Hexa-Dioxins (HxCDD)	7,300	0.01	44	0	-
Total Hepta-Dioxins (HpCDD)	67,000	0.01	230	0	-
Total Tetra-Furans (TCDF)	210	0.01	2	0	-
Total Penta-Furans (PeCDF)	2,500	0.05	120	0	-
Total Hexa-Furans (HxCDF)	9,300	0.01	77	0	-
Total Hepta-Furans (HpCDF)	17,000	0.01	108	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**6,181**	**Current TEQ:**	**1,072.7**

NOTES:

1. The MassDEP 1995 TEFs were provided by MassDEP for use during preparation of the Remedy Implementation Plan and used until mid 2024.
2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	SB1-S2	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	-	1	-	1	-
1,2,3,7,8-PeCDD	30	0.5	15	1	30
1,2,3,4,7,8-HxCDD	130	0.1	13	0.1	13
1,2,3,6,7,8-HxCDD	1,500	0.1	150	0.1	150
1,2,3,7,8,9-HxCDD	300	0.1	30	0.1	30
1,2,3,4,6,7,8-HpCDD	45,000	0.1	4,500	0.01	450
OCDD	470,000	0.001	470	0.0003	141
Furans:					
2,3,7,8-TCDF	-	0.1	-	0.1	-
1,2,3,7,8-PeCDF	980	0.5	490	0.03	29
2,3,4,7,8-PeCDF	23	0.5	12	0.3	7
1,2,3,4,7,8-HxCDF	560	0.1	56	0.1	56
1,2,3,6,7,8-HxCDF	280	0.1	28	0.1	28
1,2,3,7,8,9-HxCDF	150	0.1	15	0.1	15
2,3,4,6,7,8-HxCDF	150	0.1	15	0.1	15
1,2,3,4,6,7,8-HpCDF	11,000	0.1	1,100	0.01	110
1,2,3,4,7,8,9-HpCDF	1,100	0.1	110	0.01	11
OCDF	66,000	0.001	66	0.0003	20
Totals					
Total Tetra-Dioxins (TCDD)	370	0.01	4	0	-
Total Penta-Dioxins (PeCDD)	270	0.05	12	0	-
Total Hexa-Dioxins (HxCDD)	4,900	0.01	30	0	-
Total Hepta-Dioxins (HpCDD)	68,000	0.01	230	0	-
Total Tetra-Furans (TCDF)	62	0.01	1	0	-
Total Penta-Furans (PeCDF)	1,100	0.05	5	0	-
Total Hexa-Furans (HxCDF)	11,000	0.01	99	0	-
Total Hepta-Furans (HpCDF)	53,000	0.01	409	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**7,858**	**Current TEQ:**	**1,105.1**

NOTES:

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2. The current Toxicity Equivalency Factors based on the 2005 World Health Organization (WHO) TEFs were provided by Greg Braun, Chief, MassDEP Risk Analysis Division, in an email dated November 13, 2024.
3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Appendix D: Examples of Dioxin Toxicity Equivalent Calculations
Partial Permanent Solution Statement with Conditions
For the Southern Portion (Bentley Development)
for the Former New England Log Homes Site
100 Bridge Street, Lots 3 and 4
Great Barrington, Massachusetts
MassDEP RTN 1-0682
Tier I Permit #548535

Sample Location:	SS322-S1	Old MassDEP 1995 Toxicity Equivalency Factor (TEF)	Old MassDEP 1995 TE Values	New MassDEP (WHO 2005) Toxicity Equivalency Factor (TEF)	Current (2024) MassDEP TE Values
Congeners	**Concentration in ng/kg**				
Dioxins:					
2,3,7,8-TCDD	1.9	1	2	1	2
1,2,3,7,8-PeCDD	44	0.5	22	1	44
1,2,3,4,7,8-HxCDD	150	0.1	15	0.1	15
1,2,3,6,7,8-HxCDD	700	0.1	70	0.1	70
1,2,3,7,8,9-HxCDD	370	0.1	37	0.1	37
1,2,3,4,6,7,8-HpCDD	13,000	0.1	1,300	0.01	130
OCDD	73,000	0.001	73	0.0003	22
Furans:					
2,3,7,8-TCDF	8	0.1	1	0.1	1
1,2,3,7,8-PeCDF	44	0.5	22	0.03	1
2,3,4,7,8-PeCDF	54	0.5	27	0.3	16
1,2,3,4,7,8-HxCDF	140	0.1	14	0.1	14
1,2,3,6,7,8-HxCDF	170	0.1	17	0.1	17
1,2,3,7,8,9-HxCDF	38	0.1	4	0.1	4
2,3,4,6,7,8-HxCDF	200	0.1	20	0.1	20
1,2,3,4,6,7,8-HpCDF	2,300	0.1	230	0.01	23
1,2,3,4,7,8,9-HpCDF	150	0.1	15	0.01	2
OCDF	3,800	0.001	4	0.0003	1
Totals					
Total Tetra-Dioxins (TCDD)	10	0.01	0	0	-
Total Penta-Dioxins (PeCDD)	190	0.05	7	0	-
Total Hexa-Dioxins (HxCDD)	2,900	0.01	17	0	-
Total Hepta-Dioxins (HpCDD)	20,000	0.01	70	0	-
Total Tetra-Furans (TCDF)	150	0.01	1	0	-
Total Penta-Furans (PeCDF)	1,600	0.05	75	0	-
Total Hexa-Furans (HxCDF)	3,600	0.01	31	0	-
Total Hepta-Furans (HpCDF)	5,800	0.01	34	0	-
Dioxin TEQ (all congeners)		**Old 1995 TEQ:**	**2,107**	**Current TEQ:**	**418.6**

NOTES:

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3. Individual Concentrations were subtracted from the total group concentrations prior to calculating the contribution based on Total Group Congeners.

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Report Prepared for:

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REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10499556
Sample Receipt Date: 11/13/2019
Client Project #: 24023589
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

November 26, 2019

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

Report Prepared Date:
November 26, 2019

Report of Laboratory Analysis

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

DRAFT

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DISCUSSION

This report presents the results from the analyses performed on seven samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 62-110%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.
Values were flagged "P" where polychlorinated diphenyl ethers were present. Concentrations above the calibration range were flagged "E" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 91-111% with relative percent differences of 1.1-8.2%. These results were within the target ranges for the method. Matrix spikes were not prepared with the extraction batch.

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Minnesota Laboratory Certifications

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

DRAFT

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

DRAFT

Report No....10499556_1613FC_DFR

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

WO# : 10499556

10499556

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tr:	
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-121709-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 11/14/2019			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
Preservation Code:									
DU1 (240-121709-1)	10/15/19	10:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU2 (240-121709-2)	10/22/19	12:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU3 (240-121709-3)	10/22/19	16:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU4 (240-121709-4)	10/23/19	11:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU5 (240-121709-5)	10/23/19	14:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

DU1 DU2 DU3 DU4 DU5

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed* 1.4°C	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by: Charles B	Date/Time: 11-11-19 1451	Company 240	Received by: Lon	Date/Time: 11.12.19 1125	Company PACE
Relinquished by: Lon PACE	Date/Time: 11.12.19 1400	Company	Received by: Conv pace	Date/Time: 11/13/19 900	Company pace
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: T = 4.3°C	

Ver: 01/16/2019

DRAFT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

10499556

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-113552.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-121863-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 11/15/2019			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU8 (240-121863-1)	10/25/19	12:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU9 (240-121863-2)	10/25/19	14:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed 1.4°C	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Charles D	11-11-19 1451	240		11.12.19 1115	PACE
2	Lex PACE	11.12.19 1400		Courspace T=4.3	11/13/19 900	Pace
3						

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 4-3°C

Ver: 01/16/2019

Report No....10499556_1613FC_DFR

Pace Analytical
www.pacelabs.com

2-4/3-1

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Ransom Consulting, Inc.
Address:	12 Kent Way, Suite 100
	Byfield, MA 01922
Email To:	nmarshall@ransomenv.com
Phone: 978-465-1822	Fax:
Requested Due Date/TAT:	STD See emails

Section B Required Project Information:

Report To:	Nancy Marshall
Copy To:	tsnay@ransomenv.com
	chris.williams@ransomenv.com
Purchase Order No.:	TBD
Project Name:	New England Log Homes, Great Barrington, MA
Project Number:	021.01074.012

Section C Invoice Information:

Attention:	
Company Name:	See Section A
Address:	See Section A
Pace Quote Reference:	
Pace Project Manager:	Nathan Boberg
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Y/N	Analysis Test: Dioxins - 1613	Residu	Pace Project No./ Lab I.D.
1	DU1	SL	C	-	-	10/15/19	10:00	-	1	X								X	X	N	
2	DU2	SL	C	—	—	10/22/19	12:00	-	1	X								X	X	N	
3	DU3	SL	C	—	—	10/22/19	16:00	-	1	X								X	X	N	
4	DU4	SL	C	—	—	10/23/19	11:30	-	1	X								X	X	N	
5	DU5	SL	C	—	—	10/23/19	14:00	-	1	X								X	X	N	
6																					
7																					
8																					
9																					
10																					
11																					
12																					

240-121709 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Christ Williams /Ransom Consulting	11/1/2019	13:00	A Garrett	11-5-19	0835	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Christ Williams DATE Signed (MM/DD/YY): 11/01/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical
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21/C2.8

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Ransom Consulting, Inc.
Address:	12 Kent Way, Suite 100
	Byfield, MA 01922
Email To:	nmarshall@ransomenv.com
Phone: 978-465-1822	Fax:
Requested Due Date/TAT:	STD See emails

Section B Required Project Information:

Report To:	Nancy Marshall
Copy To:	tsnay@ransomenv.com
	chris.williams@ransomenv.com
Purchase Order No.:	TBD
Project Name:	New England Log Homes, Great Barrington, MA
Project Number:	021.01074.012

Section C Invoice Information:

Attention:	
Company Name:	See Section A
Address:	See Section A
Pace Quote Reference:	
Pace Project Manager:	Nathan Boberg
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Y/N	Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DU8	SL	C	-	-	10/25/19	12:30	-	1	X							Y	X	N	
2	DU9	SL	C	~~10/25/19~~	~~12:30~~	10/25/19	14:30	-	1	X							Y	X	N	
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

240-121863 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Chris Williams / Ransom Consulting	11/4/2019	16:00	TJC8	11-7-19	950	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Chris Williams DATE Signed (MM/DD/YY): 11/4/2019

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 23Aug2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.29**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Eurofins Test America

Project #: WO#: 10499556

PM: NB3 Due Date: 11/27/19

CLIENT: Ransom Consu

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial See Exceptions ☐

Tracking Number: 1348 2461 7918

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☒Other: BOX **Temp Blank?** ☐Yes ☒No

Thermometer: ☐T1(0461) ☐T2(1336) ☒T3(0459) ☐T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** _____ °C

Correction Factor: -0.2 **Cooler Temp Corrected w/temp blank:** _____ °C

Average Corrected Temp (no temp blank only): 4.3 °C ☒See Exceptions ☐1 Container

USDA Regulated Soil: (☒ N/A, water sample/Other: Solid)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

Date/Initials of Person Examining Contents: CMN2 11/13/19

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☒No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☒Yes	☐No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☐Yes	☒No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☐Water ☐Soil ☐Oil ☒Other Solid				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Peters **Date:** 11/18/19

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

Labeled by: _____

DRAFT

Pace Analytical	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.02	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:** 10499556

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
3.8	3.6	4.3
4.2	4.0	
5.2	5.0	
4.9	4.7	

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

DRAFT

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

DRAFT

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Appendix B

Sample Analysis Summary

DRAFT

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU1 (240-121709-1)		
Lab Sample ID	10499556001		
Filename	F191121B_08		
Injected By	SMT		
Total Amount Extracted	10.1 g	Matrix	Solid
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	10/15/2019 10:00
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 02:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.3	-----	1.0		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	11	-----	1.0		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	100
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	3.8	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	110
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	55	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	89
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	8.8	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	80
					1,2,3,4,7,8,9-HpCDF-13C	2.00	85
1,2,3,4,7,8-HxCDF	8.0	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	-----	27	5.0	P	OCDD-13C	4.00	108
2,3,4,6,7,8-HxCDF	10	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	250	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	5.2	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	33	-----	5.0				
1,2,3,7,8,9-HxCDD	12	-----	5.0				
Total HxCDD	180	-----	5.0				
1,2,3,4,6,7,8-HpCDF	250	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	13	-----	5.0		Equivalence: 190 ng/Kg		
Total HpCDF	770	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	1100	-----	5.0				
Total HpCDD	2100	-----	5.0		Using DEP 2025 TEFs: 30.1 ng/kg		
OCDF	680	-----	10				
OCDD	22000	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU2 (240-121709-2)		
Lab Sample ID	10499556002		
Filename	F191121B_09		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	10/22/2019 12:00
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 03:04

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.2	-----	1.0		2,3,7,8-TCDF-13C	2.00	80
Total TCDF	27	-----	1.0		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	96
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	5.6	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	106
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	55	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	12	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	7.6	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	-----	30	5.0	P	OCDD-13C	4.00	82
2,3,4,6,7,8-HxCDF	10	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	310	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	35	-----	5.0				
1,2,3,7,8,9-HxCDD	12	-----	5.0				
Total HxCDD	180	-----	5.0				
1,2,3,4,6,7,8-HpCDF	480	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	15	-----	5.0		Equivalence: 210 ng/Kg		
Total HpCDF	1200	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	1200	-----	5.0				
Total HpCDD	2000	-----	5.0		Using DEP 2025 TEFs: 30.5 ng/kg		
OCDF	1100	-----	10				
OCDD	11000	-----	10	E			

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

ND = Not Detected
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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU3 (240-121709-3)		
Lab Sample ID	10499556003		
Filename	F191121B_10		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Solid
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	10/22/2019 16:00
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 03:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	5.9	-----	1.0		2,3,7,8-TCDF-13C	2.00	77
Total TCDF	13	-----	1.0		2,3,7,8-TCDD-13C	2.00	76
					1,2,3,7,8-PeCDF-13C	2.00	94
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	6.3	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	105
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	36	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	44	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	68
					1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	ND	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	-----	27	5.0	P	OCDD-13C	4.00	85
2,3,4,6,7,8-HxCDF	6.6	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	390	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	37	-----	5.0				
1,2,3,7,8,9-HxCDD	9.0	-----	5.0				
Total HxCDD	310	-----	5.0				
1,2,3,4,6,7,8-HpCDF	390	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	18	-----	5.0		Equivalence: 260 ng/Kg		
Total HpCDF	1700	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	1600	-----	5.0		Using DEP 2025 TEFs: 32.8 ng/kg		
Total HpCDD	2600	-----	5.0				
OCDF	2000	-----	10				
OCDD	16000	-----	10	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU4 (240-121709-4)		
Lab Sample ID	10499556004		
Filename	F191121B_11		
Injected By	SMT		
Total Amount Extracted	10.1 g	Matrix	Solid
% Moisture	1.0	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	10/23/2019 11:30
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 04:30

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.3	-----	1.0	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	2.8	-----	1.0	2,3,7,8-TCDD-13C	2.00	77
				1,2,3,7,8-PeCDF-13C	2.00	95
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	103
				1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	6.8	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	85
				1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	75
				1,2,3,4,7,8,9-HpCDF-13C	2.00	84
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	79
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	20	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	6.4	-----	5.0			
1,2,3,4,6,7,8-HpCDF	20	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 12 ng/Kg		
Total HpCDF	56	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	77	-----	5.0	Using DEP 2025 TEFs: 1.3 ng/kg		
Total HpCDD	130	-----	5.0			
OCDF	44	-----	10			
OCDD	710	-----	10			

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

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Minneapolis, MN 55414

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Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU5 (240-121709-5)		
Lab Sample ID	10499556005		
Filename	F191121B_12		
Injected By	SMT		
Total Amount Extracted	10.1 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	10/23/2019 14:00
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 05:13

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.7	-----	1.0	2,3,7,8-TCDF-13C	2.00	89
Total TCDF	35	-----	1.0	2,3,7,8-TCDD-13C	2.00	88
				1,2,3,7,8-PeCDF-13C	2.00	96
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	85
Total TCDD	4.2	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	105
				1,2,3,4,7,8-HxCDF-13C	2.00	95
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	6.4	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	92	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	81
				1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
				1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	5.0	-----	5.0	OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	5.9	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	150	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	13	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	51	-----	5.0			
1,2,3,4,6,7,8-HpCDF	120	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	7.6	-----	5.0	Equivalence: 78 ng/Kg		
Total HpCDF	410	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	430	-----	5.0			
Total HpCDD	740	-----	5.0	Using DEP 2025 TEFs: 11.5 ng/kg		
OCDF	370	-----	10			
OCDD	4100	-----	10			

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU8 (240-121863-1)		
Lab Sample ID	10499556006		
Filename	F191121B_13		
Injected By	SMT		
Total Amount Extracted	10.3 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	10/25/2019 12:30
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 05:56

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	5.1	-----	1.0		2,3,7,8-TCDF-13C	2.00	71
Total TCDF	13	-----	1.0		2,3,7,8-TCDD-13C	2.00	73
					1,2,3,7,8-PeCDF-13C	2.00	91
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	87
Total TCDD	4.1	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	103
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	44	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	5.2	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	80
1,2,3,4,7,8-HxCDF	6.0	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	ND	-----	5.0		OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	8.9	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	200	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	29	-----	5.0				
1,2,3,7,8,9-HxCDD	15	-----	5.0				
Total HxCDD	160	-----	5.0				
1,2,3,4,6,7,8-HpCDF	180	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	13	-----	5.0		Equivalence: 140 ng/Kg		
Total HpCDF	570	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	920	-----	5.0		Using DEP 2025 TEFs: 20.5 ng/kg		
Total HpCDD	1600	-----	5.0				
OCDF	510	-----	10				
OCDD	9300	-----	10	E			

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

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Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU9 (240-121863-2)		
Lab Sample ID	10499556007		
Filename	F191121B_14		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Solid
% Moisture	1.0	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	10/25/2019 14:30
ICAL ID	F191121	Received	11/13/2019 09:00
CCal Filename(s)	F191121B_01	Extracted	11/19/2019 15:30
Method Blank ID	BLANK-74917	Analyzed	11/22/2019 06:40

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.8	-----	1.0		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	32	-----	1.0		2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	85
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	11	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	89
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	29	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	6.6	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	62
					1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	73
1,2,3,6,7,8-HxCDF	-----	13	5.0	P	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	6.2	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	120	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	13	-----	5.0				
1,2,3,7,8,9-HxCDD	7.4	-----	5.0				
Total HxCDD	94	-----	5.0				
1,2,3,4,6,7,8-HpCDF	120	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.6	-----	5.0		Equivalence: 85 ng/Kg		
Total HpCDF	370	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	520	-----	5.0				
Total HpCDD	880	-----	5.0		Using DEP 2025 TEFs: 12.4 ng/kg		
OCDF	330	-----	10				
OCDD	5500	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
P = PCDE Interference
E = Exceeds calibration range

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKSA		
Lab Sample ID	BLANK-74917	Matrix	Solid
Filename	F191121B_07	Dilution	NA
Total Amount Extracted	10.4 g	Extracted	11/19/2019 15:30
ICAL ID	F191121	Analyzed	11/22/2019 01:38
CCal Filename(s)	F191121B_01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	69
				1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	85
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	96
				1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	77
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	82
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	69
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Minneapolis, MN 55414

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-74918		
Filename	Y191121A_14	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	Y191104	Extracted	11/19/2019 15:30
CCal Filename	Y191120A_20	Analyzed	11/21/2019 13:57
Method Blank ID	BLANK-74917	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.3	7.5	15.8	93
2,3,7,8-TCDD	10	9.5	6.7	15.8	95
1,2,3,7,8-PeCDF	50	45	40.0	67.0	91
2,3,4,7,8-PeCDF	50	47	34.0	80.0	94
1,2,3,7,8-PeCDD	50	46	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	49	36.0	67.0	99
1,2,3,6,7,8-HxCDF	50	48	42.0	65.0	95
2,3,4,6,7,8-HxCDF	50	47	35.0	78.0	93
1,2,3,7,8,9-HxCDF	50	46	39.0	65.0	92
1,2,3,4,7,8-HxCDD	50	49	35.0	82.0	97
1,2,3,6,7,8-HxCDD	50	52	38.0	67.0	103
1,2,3,7,8,9-HxCDD	50	49	32.0	81.0	98
1,2,3,4,6,7,8-HpCDF	50	48	41.0	61.0	97
1,2,3,4,7,8,9-HpCDF	50	47	39.0	69.0	93
1,2,3,4,6,7,8-HpCDD	50	47	35.0	70.0	93
OCDF	100	110	63.0	170.0	111
OCDD	100	110	78.0	144.0	109
2,3,7,8-TCDD-37Cl4	10	6.8	3.1	19.1	68
2,3,7,8-TCDF-13C	100	77	22.0	152.0	77
2,3,7,8-TCDD-13C	100	70	20.0	175.0	70
1,2,3,7,8-PeCDF-13C	100	78	21.0	192.0	78
2,3,4,7,8-PeCDF-13C	100	77	13.0	328.0	77
1,2,3,7,8-PeCDD-13C	100	78	21.0	227.0	78
1,2,3,4,7,8-HxCDF-13C	100	72	19.0	202.0	72
1,2,3,6,7,8-HxCDF-13C	100	74	21.0	159.0	74
2,3,4,6,7,8-HxCDF-13C	100	77	22.0	176.0	77
1,2,3,7,8,9-HxCDF-13C	100	70	17.0	205.0	70
1,2,3,4,7,8-HxCDD-13C	100	71	21.0	193.0	71
1,2,3,6,7,8-HxCDD-13C	100	67	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	65	21.0	158.0	65
1,2,3,4,7,8,9-HpCDF-13C	100	60	20.0	186.0	60
1,2,3,4,6,7,8-HpCDD-13C	100	59	26.0	166.0	59
OCDD-13C	200	93	26.0	397.0	46

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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Minneapolis, MN 55414

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-74919		
Filename	Y191121A_15	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	Y191104	Extracted	11/19/2019 15:30
CCal Filename	Y191120A_20	Analyzed	11/21/2019 14:39
Method Blank ID	BLANK-74917	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.8	7.5	15.8	98
2,3,7,8-TCDD	10	10.0	6.7	15.8	100
1,2,3,7,8-PeCDF	50	46	40.0	67.0	92
2,3,4,7,8-PeCDF	50	49	34.0	80.0	97
1,2,3,7,8-PeCDD	50	47	35.0	71.0	95
1,2,3,4,7,8-HxCDF	50	52	36.0	67.0	104
1,2,3,6,7,8-HxCDF	50	48	42.0	65.0	97
2,3,4,6,7,8-HxCDF	50	48	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	49	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	53	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	56	38.0	67.0	111
1,2,3,7,8,9-HxCDD	50	52	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	103
1,2,3,4,7,8,9-HpCDF	50	47	39.0	69.0	95
1,2,3,4,6,7,8-HpCDD	50	51	35.0	70.0	101
OCDF	100	100	63.0	170.0	104
OCDD	100	110	78.0	144.0	106
2,3,7,8-TCDD-37Cl4	10	7.0	3.1	19.1	70
2,3,7,8-TCDF-13C	100	77	22.0	152.0	77
2,3,7,8-TCDD-13C	100	70	20.0	175.0	70
1,2,3,7,8-PeCDF-13C	100	78	21.0	192.0	78
2,3,4,7,8-PeCDF-13C	100	76	13.0	328.0	76
1,2,3,7,8-PeCDD-13C	100	74	21.0	227.0	74
1,2,3,4,7,8-HxCDF-13C	100	78	19.0	202.0	78
1,2,3,6,7,8-HxCDF-13C	100	84	21.0	159.0	84
2,3,4,6,7,8-HxCDF-13C	100	83	22.0	176.0	83
1,2,3,7,8,9-HxCDF-13C	100	76	17.0	205.0	76
1,2,3,4,7,8-HxCDD-13C	100	75	21.0	193.0	75
1,2,3,6,7,8-HxCDD-13C	100	71	25.0	163.0	71
1,2,3,4,6,7,8-HpCDF-13C	100	64	21.0	158.0	64
1,2,3,4,7,8,9-HpCDF-13C	100	58	20.0	186.0	58
1,2,3,4,6,7,8-HpCDD-13C	100	55	26.0	166.0	55
OCDD-13C	200	84	26.0	397.0	42

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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Minneapolis, MN 55414

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

Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Ransom Consulting Inc		
Spike 1 ID	LCS-74918	Spike 2 ID	LCSD-74919
Spike 1 Filename	Y191121A_14	Spike 2 Filename	Y191121A_15

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	93	98	5.2
2,3,7,8-TCDD	95	100	5.1
1,2,3,7,8-PeCDF	91	92	1.1
2,3,4,7,8-PeCDF	94	97	3.1
1,2,3,7,8-PeCDD	92	95	3.2
1,2,3,4,7,8-HxCDF	99	104	4.9
1,2,3,6,7,8-HxCDF	95	97	2.1
2,3,4,6,7,8-HxCDF	93	96	3.2
1,2,3,7,8,9-HxCDF	92	98	6.3
1,2,3,4,7,8-HxCDD	97	105	7.9
1,2,3,6,7,8-HxCDD	103	111	7.5
1,2,3,7,8,9-HxCDD	98	104	5.9
1,2,3,4,6,7,8-HpCDF	97	103	6.0
1,2,3,4,7,8,9-HpCDF	93	95	2.1
1,2,3,4,6,7,8-HpCDD	93	101	8.2
OCDF	111	104	6.5
OCDD	109	106	2.8

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10499556

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU1, DU2, DU3, DU4, DU5, DU8, and DU9

Sample Integrity

- ☒ Custody Seal
- ☒ Temperature 4.3 ºC
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within preferred range of below 6 degrees Celsius. 1,2,3,6,7,8-HxCDF had interferance in several samples and OCDD had the estimated flag in several samples due to concentrations being above the calibration range - not anticipated to have a significant impact on the findings of this report.

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www.pacelabs.com

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1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

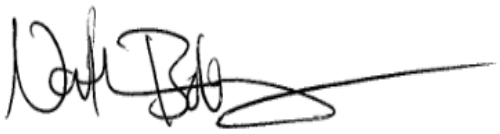
Pace Project #: 10499606
Sample Receipt Date: 11/15/2019
Client Project #: 24023589
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:



December 03, 2019

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

Report Prepared Date:
December 3, 2019

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 33-129%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

Values were flagged "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates. Values obtained from analyses of diluted extracts were flagged "D" and "N2".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 99-124%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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Minneapolis, MN 55414

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

Minnesota Laboratory Certifications

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-113743.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-122057-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 11/20/2019			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU10 (240-122057-1)	10/29/19	13:30 Eastern		Solid			X	001 3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU11 (240-122057-2)	10/30/19	10:30 Eastern		Solid			X	002 3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

WO#: 10499606
10499606

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Charles D	Date/Time: 11-14-19 1445	Company 240	Received by: Pace	Date/Time: 11.15.19/850 T-2.1-	Company PACE MN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Pace Analytical
www.pacelabs.com

3.1 / 3.9

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Ransom Consulting, Inc.	Report To: Nancy Marshall	Attention:
Address: 12 Kent Way, Suite 100	Copy To: tsnay@ransomenv.com	Company Name: See Section A
Byfield, MA 01922	chris.williams@ransomenv.com	Address: See Section A
Email To: nmarshall@ransomenv.com	Purchase Order No.: TBD	Pace Quote Reference:
Phone: 978-465-1822 Fax:	Project Name: New England Log Homes, Great Barrington, MA	Pace Project Manager: Nathan Boberg
Requested Due Date/TAT: STD See emails	Project Number: 021.01074.012	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N		
1	DU10	SL	C	-	-	10/29/19	13:30	-	1	X									X	N	
2	DU11	SL	C	—	—	10/30/19	10:30	—	1	X									X	N	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

240-122057 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Christ Williams / Ransom Consulting	11/7/2019	12:00				
				TJDC	11-11-19	830	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Christ Williams DATE Signed (MM/DD/YY): 11/07/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

DRAFT

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 23Aug2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.29	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Eurofins Test America **Project #:** WO#: 10499606

PM: NB3 Due Date: 12/10/19

CLIENT: Ransom Consu

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial See Exceptions ☐

Tracking Number: 1103 6125 6470

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☒Other: cardboard box/pb **Temp Blank?** ☐Yes ☐No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.3 °C **Average Corrected Temp (no temp blank only):** ☐See Exceptions °C ☐1 Container

Correction Factor: -0.2 **Cooler Temp Corrected w/temp blank:** 2.1 °C

USDA Regulated Soil: (☐ N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** AUM 11.15.19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☒No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☒No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☒Yes	☐No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☐Water ☐Soil ☐Oil ☒Other Solid				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine / 0-6 Roll / 0-6 Strip / 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boberg **Date:** 11/18/19

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

Labeled by: AUM 3

DRAFT

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU10 (240-122057-1)		
Lab Sample ID	10499606001		
Filename	Y191122B_08		
Injected By	BAL		
Total Amount Extracted	11.0 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.9 g	Collected	10/29/2019 13:30
ICAL ID	Y191104	Received	11/15/2019 08:50
CCal Filename(s)	Y191122A_18	Extracted	11/20/2019 15:00
Method Blank ID	BLANK-74973	Analyzed	11/23/2019 06:32

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.0	-----	1.0	2,3,7,8-TCDF-13C	2.00	86
Total TCDF	17	-----	1.0	2,3,7,8-TCDD-13C	2.00	79
				1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	5.0	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	90
				1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	24	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	79
				1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	68
				1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	99	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,6,7,8-HxCDD	14	-----	5.0			
1,2,3,7,8,9-HxCDD	5.4	-----	5.0			
Total HxCDD	68	-----	5.0			
1,2,3,4,6,7,8-HpCDF	97	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.4	-----	5.0	Equivalence: 58 ng/Kg		
Total HpCDF	280	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	360	-----	5.0			
Total HpCDD	580	-----	5.0	7.7 using DEP's 2025 TEFs		
OCDF	270	-----	10			
OCDD	2800	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU11 (240-122057-2)		
Lab Sample ID	10499606002		
Filename	Y191122B_09		
Injected By	BAL		
Total Amount Extracted	10.7 g	Matrix	Solid
% Moisture	1.2	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	10/30/2019 10:30
ICAL ID	Y191104	Received	11/15/2019 08:50
CCal Filename(s)	Y191122A_18	Extracted	11/20/2019 15:00
Method Blank ID	BLANK-74973	Analyzed	11/23/2019 07:14

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	2.4	-----	1.0	JDN2	2,3,7,8-TCDF-13C	2.00	74	DN2
Total TCDF	34	-----	1.0	DN2	2,3,7,8-TCDD-13C	2.00	75	DN2
					1,2,3,7,8-PeCDF-13C	2.00	89	DN2
2,3,7,8-TCDD	ND	-----	1.0	DN2	2,3,4,7,8-PeCDF-13C	2.00	86	DN2
Total TCDD	49	-----	1.0	DN2	1,2,3,7,8-PeCDD-13C	2.00	106	DN2
					1,2,3,4,7,8-HxCDF-13C	2.00	71	DN2
1,2,3,7,8-PeCDF	11	-----	5.0	JDN2	1,2,3,6,7,8-HxCDF-13C	2.00	66	DN2
2,3,4,7,8-PeCDF	24	-----	5.0	DN2	2,3,4,6,7,8-HxCDF-13C	2.00	65	DN2
Total PeCDF	550	-----	5.0	DN2	1,2,3,7,8,9-HxCDF-13C	2.00	33	DN2
					1,2,3,4,7,8-HxCDD-13C	2.00	77	DN2
1,2,3,7,8-PeCDD	12	-----	5.0	JDN2	1,2,3,6,7,8-HxCDD-13C	2.00	71	DN2
Total PeCDD	120	-----	5.0	DN2	1,2,3,4,6,7,8-HpCDF-13C	2.00	85	DN2
					1,2,3,4,7,8,9-HpCDF-13C	2.00	104	DN2
1,2,3,4,7,8-HxCDF	-----	120	5.0	PDN2	1,2,3,4,6,7,8-HpCDD-13C	2.00	109	DN2
1,2,3,6,7,8-HxCDF	160	-----	5.0	DN2	OCDD-13C	4.00	129	DN2
2,3,4,6,7,8-HxCDF	98	-----	5.0	DN2				
1,2,3,7,8,9-HxCDF	66	-----	5.0	DN2	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	10000	-----	5.0	DN2	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	63	-----	5.0	DN2	2,3,7,8-TCDD-37Cl4	0.20	67	DN2
1,2,3,6,7,8-HxCDD	1200	-----	5.0	DN2				
1,2,3,7,8,9-HxCDD	200	-----	5.0	DN2				
Total HxCDD	3400	-----	5.0	DN2				
1,2,3,4,6,7,8-HpCDF	12000	-----	5.0	EDN2	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	1000	-----	5.0	DN2	Equivalence: 8100 ng/Kg			
Total HpCDF	54000	-----	5.0	EDN2	(Lower-bound - Using MADEP Factors)			
1,2,3,4,6,7,8-HpCDD	54000	-----	5.0	EDN2				
Total HpCDD	78000	-----	5.0	EDN2	994.5 using DEP's 2025 TEFs			
OCDF	70000	-----	10	EDN2				
OCDD	350000	-----	10					

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
P = PCDE Interference
E = Exceeds calibration range
D = Result obtained from analysis of diluted sample
Nn = Value obtained from additional analysis

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKSP		
Lab Sample ID	BLANK-74973	Matrix	Solid
Filename	F191122A_05	Dilution	NA
Total Amount Extracted	10.2 g	Extracted	11/20/2019 15:00
ICAL ID	F191121	Analyzed	11/22/2019 11:49
CCal Filename(s)	F191121B_15	Injected By	ZMS

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	70
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	73
				1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	93
				1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
				1,2,3,4,7,8,9-HpCDF-13C	2.00	81
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

DRAFT

REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-74974		
Filename	F191122A_13	Matrix	Solid
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	F191121	Extracted	11/20/2019 15:00
CCal Filename	F191121B_15	Analyzed	11/22/2019 17:33
Method Blank ID	BLANK-74973	Injected By	ZMS

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	103
2,3,7,8-TCDD	10	10	6.7	15.8	104
1,2,3,7,8-PeCDF	50	52	40.0	67.0	105
2,3,4,7,8-PeCDF	50	56	34.0	80.0	112
1,2,3,7,8-PeCDD	50	50	35.0	71.0	99
1,2,3,4,7,8-HxCDF	50	58	36.0	67.0	116
1,2,3,6,7,8-HxCDF	50	54	42.0	65.0	109
2,3,4,6,7,8-HxCDF	50	55	35.0	78.0	111
1,2,3,7,8,9-HxCDF	50	55	39.0	65.0	109
1,2,3,4,7,8-HxCDD	50	54	35.0	82.0	108
1,2,3,6,7,8-HxCDD	50	62	38.0	67.0	124
1,2,3,7,8,9-HxCDD	50	56	32.0	81.0	111
1,2,3,4,6,7,8-HpCDF	50	56	41.0	61.0	111
1,2,3,4,7,8,9-HpCDF	50	57	39.0	69.0	114
1,2,3,4,6,7,8-HpCDD	50	52	35.0	70.0	104
OCDF	100	110	63.0	170.0	108
OCDD	100	120	78.0	144.0	124
2,3,7,8-TCDD-37Cl4	10	7.6	3.1	19.1	76
2,3,7,8-TCDF-13C	100	79	22.0	152.0	79
2,3,7,8-TCDD-13C	100	76	20.0	175.0	76
1,2,3,7,8-PeCDF-13C	100	96	21.0	192.0	96
2,3,4,7,8-PeCDF-13C	100	100	13.0	328.0	100
1,2,3,7,8-PeCDD-13C	100	110	21.0	227.0	109
1,2,3,4,7,8-HxCDF-13C	100	89	19.0	202.0	89
1,2,3,6,7,8-HxCDF-13C	100	87	21.0	159.0	87
2,3,4,6,7,8-HxCDF-13C	100	74	22.0	176.0	74
1,2,3,7,8,9-HxCDF-13C	100	79	17.0	205.0	79
1,2,3,4,7,8-HxCDD-13C	100	72	21.0	193.0	72
1,2,3,6,7,8-HxCDD-13C	100	76	25.0	163.0	76
1,2,3,4,6,7,8-HpCDF-13C	100	84	21.0	158.0	84
1,2,3,4,7,8,9-HpCDF-13C	100	83	20.0	186.0	83
1,2,3,4,6,7,8-HpCDD-13C	100	85	26.0	166.0	85
OCDD-13C	200	150	26.0	397.0	75

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10499606

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU10 and DU11

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 2.1 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within preferred range of 6 degrees Celsius. DU11 had several estimated isomer concentrations due to being outside of the calibration range and/or dilutions. Estimated concentrations in DU11 not anticipated to have a significant impact on the findings of this report.

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10500585
Sample Receipt Date: 11/23/2019
Client Project #: 24023589
Client Sub PO #: 12165
State Cert #: M-MN064

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

December 12, 2019

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

Report Prepared Date:
December 12, 2019

Report of Laboratory Analysis

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

DRAFT

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

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 44-86%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. Concentrations above the calibration range were flagged "E" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 92-119%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-114193.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-122346-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 11/25/2019			Preservation Codes:
City: Minneapolis	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: MN, 55414				
Phone:	PO #:			Other:
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

WO# : 10500585

10500585

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU12 (240-122346-1)	11/1/19	16:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU13 (240-122346-2)	11/4/19	13:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU14 (240-122346-3)	11/5/19	10:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU15 (240-122346-4)	11/6/19	09:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU16 (240-122346-5)	11/6/19	11:45 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU17 (240-122346-6)	11/6/19	14:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: Charles H	Date/Time: 11-22-19 1421	Company: 240	Received by: PACE
Relinquished by:	Date/Time:	Company	Received by: Date/Time: 11/23/19 1030 Company: T=3.2
Relinquished by:	Date/Time:	Company	Received by: Date/Time: Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Report No.:...10500585_1613FC_DFR

3.0/C3.7

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Ransom Consulting, Inc.
Address:	12 Kent Way, Suite 100
	Byfield, MA 01922
Email To:	nmarshall@ransomenv.com
Phone: 978-465-1822	Fax:
Requested Due Date/TAT:	~~STD~~ See emails

Section B Required Project Information:

Report To:	Nancy Marshall
Copy To:	tsnay@ransomenv.com
	chris.williams@ransomenv.com
Purchase Order No.:	TBD
Project Name:	New England Log Homes, Great Barrington, MA
Project Number:	021.01074.012

Section C Invoice Information:

Attention:	
Company Name:	See Section A
Address:	See Section A
Pace Quote Reference:	
Pace Project Manager:	Nathan Boberg
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DU12	SL	C	-	-	11/1/19	16:00	-	1	X								X		N	
2	DU13	SL	C	—	—	11/4/19	13:00	-	1	X								X		N	
3	DU14	SL	C	—	—	11/5/19	10:30	-	1	X								X		N	
4	DU15	SL	C	—	—	11/6/19	9:30	-	1	X								X		N	
5	DU16	SL	C	—	—	11/6/19	11:45	-	1	X								X		N	
6	DU17	SL	C	—	—	11/6/19	14:00	-	1	X								X		N	
7																					
8																					
9																					
10																					
11																					
12																					

240-122346 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Christ Williams/Ransom Consulting	11/13/2019	8:30	FEDEX	11/15/19	8:30	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Christ Williams

DATE Signed (MM/DD/YY): 11/13/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 122346**
Canton Facility

Client Ranson Consulting Site Name _____ Cooler unpacked by: MM

Cooler Received on 11-15-19 Opened on 11-15-19

FedEx: 1st (Grd) Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.7 °C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____ Yes (No)
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No (NA)
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? Yes No (NA)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC991818
13. Were VOAs on the COC? Yes (No)
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes (No)
16. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: Martin

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Nov2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.30**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt **Client Name:** Eurofins Test America **Project #:** WO#: 10500585

12/2/19, NB3

~~Enviodyne~~

PM: NB3 Due Date: 12/18/19

CLIENT: Ransom Consu

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: 1103 6125 7844

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other: box **Temp Blank?** ☑ Yes ☐ No

Thermometer: ☑ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 3.2 °C **Average Corrected Temp (no temp blank only):** ☐ See Exceptions

Correction Factor: +0.2 **Cooler Temp Corrected w/temp blank:** 3.2 °C ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** SD 11/23/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑ Yes	☐ No		1.
Chain of Custody Relinquished?	☑ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☐ Yes	☑ No	☐ N/A	3.
Samples Arrived within Hold Time?	☑ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☑ No		6.
Sufficient Volume?	☑ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☑ Yes ☑ Yes	☐ No ☐ No		8.
Containers Intact?	☑ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☑ Soil ☐ Oil ☐ Other	☑ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☑ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☑ N/A	13. **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☑ N/A	
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boberg **Date:** 12/2/19

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

Labeled by: SD

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU12 (240-122346-1)		
Lab Sample ID	10500585001		
Filename	Y191210B_13		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	1.0	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	11/01/2019 16:00
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 05:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.2	-----	1.0	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	2.6	-----	1.0	2,3,7,8-TCDD-13C	2.00	60
				1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	59
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	65
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF	18	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	61
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	55
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
				1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	82	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	58
1,2,3,6,7,8-HxCDD	16	-----	5.0			
1,2,3,7,8,9-HxCDD	5.8	-----	5.0			
Total HxCDD	54	-----	5.0			
1,2,3,4,6,7,8-HpCDF	79	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	6.3	-----	5.0	Equivalence: 64 ng/Kg		
Total HpCDF	280	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	430	-----	5.0	9 ng/kg using DEP's 2025 TEFs		
Total HpCDD	640	-----	5.0			
OCDF	310	-----	10			
OCDD	3900	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU13 (240-122346-2)		
Lab Sample ID	10500585002		
Filename	Y191210B_14		
Injected By	SMT		
Total Amount Extracted	10.6 g	Matrix	Soil
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	11/04/2019 13:00
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 06:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.6	-----	1.0		2,3,7,8-TCDF-13C	2.00	51
Total TCDF	25	-----	1.0		2,3,7,8-TCDD-13C	2.00	49
					1,2,3,7,8-PeCDF-13C	2.00	48
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	44
Total TCDD	11	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	49
					1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	6.7	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	50
2,3,4,7,8-PeCDF	17	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	49
Total PeCDF	400	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	49
					1,2,3,4,7,8-HxCDD-13C	2.00	49
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	46
Total PeCDD	22	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	57
					1,2,3,4,7,8,9-HpCDF-13C	2.00	62
1,2,3,4,7,8-HxCDF	52	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	27	-----	5.0		OCDD-13C	4.00	76
2,3,4,6,7,8-HxCDF	28	-----	5.0				
1,2,3,7,8,9-HxCDF	33	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	2200	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	11	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	51
1,2,3,6,7,8-HxCDD	420	-----	5.0				
1,2,3,7,8,9-HxCDD	34	-----	5.0				
Total HxCDD	1100	-----	5.0				
1,2,3,4,6,7,8-HpCDF	1700	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	120	-----	5.0		Equivalence: 1500 ng/Kg		
Total HpCDF	7100	-----	5.0	E	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	10000	-----	5.0	E			
Total HpCDD	15000	-----	5.0	E			
OCDF	6400	-----	10	E			
OCDD	88000	-----	10	E			

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

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU14 (240-122346-3)		
Lab Sample ID	10500585003		
Filename	Y191210B_15		
Injected By	SMT		
Total Amount Extracted	12.5 g	Matrix	Soil
% Moisture	16.6	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	11/05/2019 10:30
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 06:47

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.0	-----	1.0		2,3,7,8-TCDF-13C	2.00	65
Total TCDF	22	-----	1.0		2,3,7,8-TCDD-13C	2.00	61
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	52
Total TCDD	35	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	57
					1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	110	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	61
1,2,3,7,8-PeCDD	5.2	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	54
Total PeCDD	38	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	64
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	15	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	18	-----	5.0		OCDD-13C	4.00	70
2,3,4,6,7,8-HxCDF	6.6	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	450	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	13	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,6,7,8-HxCDD	61	-----	5.0				
1,2,3,7,8,9-HxCDD	28	-----	5.0				
Total HxCDD	260	-----	5.0				
1,2,3,4,6,7,8-HpCDF	370	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	27	-----	5.0		Equivalence: 240 ng/Kg		
Total HpCDF	1200	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	1400	-----	5.0				
Total HpCDD	2100	-----	5.0				
OCDF	1000	-----	10				
OCDD	11000	-----	10	E			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU15 (240-122346-4)		
Lab Sample ID	10500585004		
Filename	Y191210B_16		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	0.5	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	11/06/2019 09:30
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 07:29

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	5.1	-----	1.0	2,3,7,8-TCDD-13C	2.00	59
				1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	55
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	61
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	58
Total PeCDF	22	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	59
				1,2,3,4,7,8-HxCDD-13C	2.00	57
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	55	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	57
1,2,3,6,7,8-HxCDD	8.2	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	24	-----	5.0			
1,2,3,4,6,7,8-HpCDF	56	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 28 ng/Kg		
Total HpCDF	150	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	160	-----	5.0	3 ng/kg using DEP's 2025 TEFs		
Total HpCDD	270	-----	5.0			
OCDF	140	-----	10			
OCDD	1200	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU16 (240-122346-5)		
Lab Sample ID	10500585005		
Filename	Y191210B_17		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	11/06/2019 11:45
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 08:10

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	3.5	-----	1.0	2,3,7,8-TCDD-13C	2.00	60
				1,2,3,7,8-PeCDF-13C	2.00	60
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	56
Total TCDD	1.0	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	60
				1,2,3,4,7,8-HxCDF-13C	2.00	60
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	17	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	60
				1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	55
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	61	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	11	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	38	-----	5.0			
1,2,3,4,6,7,8-HpCDF	50	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 33 ng/Kg		
Total HpCDF	140	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	210	-----	5.0			
Total HpCDD	330	-----	5.0	4 ng/kg using DEP's 2025 TEFs		
OCDF	110	-----	10			
OCDD	1900	-----	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU17 (240-122346-6)		
Lab Sample ID	10500585006		
Filename	Y191210B_18		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	0.6	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	11/06/2019 14:00
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_01	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 08:52

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.3	-----	1.0		2,3,7,8-TCDF-13C	2.00	61
Total TCDF	15	-----	1.0		2,3,7,8-TCDD-13C	2.00	61
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	8.8	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	61
					1,2,3,4,7,8-HxCDF-13C	2.00	62
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	64
2,3,4,7,8-PeCDF	8.7	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	62
Total PeCDF	230	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	59
					1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	18	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	41	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	32	-----	5.0		OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	14	-----	5.0				
1,2,3,7,8,9-HxCDF	14	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1200	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	12	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	63
1,2,3,6,7,8-HxCDD	140	-----	5.0				
1,2,3,7,8,9-HxCDD	22	-----	5.0				
Total HxCDD	360	-----	5.0				
1,2,3,4,6,7,8-HpCDF	1000	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	110	-----	5.0		Equivalence: 640 ng/Kg		
Total HpCDF	3800	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	3900	-----	5.0	E			
Total HpCDD	5600	-----	5.0	E			
OCDF	3000	-----	10				
OCDD	33000	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

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REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKVA		
Lab Sample ID	BLANK-75223	Matrix	Solid
Filename	Y191210B_09	Dilution	NA
Total Amount Extracted	15.1 g	Extracted	12/04/2019 13:20
ICAL ID	Y191210	Analyzed	12/11/2019 02:38
CCal Filename(s)	Y191210B_01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	58
				1,2,3,4,7,8-HxCDF-13C	2.00	51
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	51
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	57
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	58
				1,2,3,4,7,8-HxCDD-13C	2.00	55
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	51
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	61
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	57
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-75224		
Filename	Y191210B_04	Matrix	Solid
Total Amount Extracted	15.5 g	Dilution	NA
ICAL ID	Y191210	Extracted	12/04/2019 13:20
CCal Filename	Y191210B_01	Analyzed	12/10/2019 23:10
Method Blank ID	BLANK-75223	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	105
2,3,7,8-TCDD	10	9.9	6.7	15.8	99
1,2,3,7,8-PeCDF	50	49	40.0	67.0	99
2,3,4,7,8-PeCDF	50	55	34.0	80.0	110
1,2,3,7,8-PeCDD	50	46	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	53	36.0	67.0	107
1,2,3,6,7,8-HxCDF	50	51	42.0	65.0	102
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	98
1,2,3,7,8,9-HxCDF	50	49	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	52	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	54	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	53	32.0	81.0	105
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	102
1,2,3,4,7,8,9-HpCDF	50	52	39.0	69.0	104
1,2,3,4,6,7,8-HpCDD	50	48	35.0	70.0	95
OCDF	100	120	63.0	170.0	119
OCDD	100	110	78.0	144.0	113
2,3,7,8-TCDD-37Cl4	10	6.1	3.1	19.1	61
2,3,7,8-TCDF-13C	100	60	22.0	152.0	60
2,3,7,8-TCDD-13C	100	58	20.0	175.0	58
1,2,3,7,8-PeCDF-13C	100	62	21.0	192.0	62
2,3,4,7,8-PeCDF-13C	100	59	13.0	328.0	59
1,2,3,7,8-PeCDD-13C	100	65	21.0	227.0	65
1,2,3,4,7,8-HxCDF-13C	100	62	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	65	21.0	159.0	65
2,3,4,6,7,8-HxCDF-13C	100	65	22.0	176.0	65
1,2,3,7,8,9-HxCDF-13C	100	62	17.0	205.0	62
1,2,3,4,7,8-HxCDD-13C	100	61	21.0	193.0	61
1,2,3,6,7,8-HxCDD-13C	100	58	25.0	163.0	58
1,2,3,4,6,7,8-HpCDF-13C	100	68	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	69	26.0	166.0	69
OCDD-13C	200	110	26.0	397.0	53

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10500585

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU12, DU13, DU14, DU15, DU16, and DU17

Sample Integrity

- ☒ Custody Seal
- ☒ Temperature 3.2 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within preferred range of 6 degrees Celsius. E flags present for several isomers in DU13, DU14, and DU17 samples due to elevated concentrations. Not anticipated to have a significant impact on the findings of this report.

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

www.pacelabs.com

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10500586
Sample Receipt Date: 11/23/2019
Client Project #: 24023589
Client Sub PO #: 12165
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

December 12, 2019

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

Report Prepared Date:
December 12, 2019

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 53-78%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. Concentrations above the calibration range were flagged "E" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 92-119%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

DRAFT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-114217.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-122640-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 12/2/2019			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

WO# : 10500586

10500586

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Ye	SUB (Dioxin - 1613)	Total Number of cont	Special Instructions/Note:
			Preservation Code:						
DU18 (240-122640-1)	11/14/19	09:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU19 (240-122640-2)	11/14/19	14:15 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Charles P	12-22-19 1421	240	DACH	11/23/19 1030	T=3.2
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

DRAFT

1.5/2.2

Pace Analytical™ www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100
Byfield, MA 01922
Email To: nmarshall@ransomenv.com
Phone: 978-465-1822 Fax:
Requested Due Date/TAT: ~~STD~~ See emails

Section B Required Project Information:

Report To: Nancy Marshall
Copy To: tsnay@ransomenv.com
chris.williams@ransomenv.com
Purchase Order No.: TBD
Project Name: New England Log Homes, Great Barrington, MA
Project Number: 021.01074.012

Section C Invoice Information:

Attention:
Company Name: See Section A
Address: See Section A
Pace Quote Reference:
Pace Project Manager: Nathan Boberg
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DU18	SL	C	-	-	11/4/19	9:00	-	1	X								X	X	N	
2	DU19	SL	C	—	—	11/4/19	14:15	—	1	X								X	X	N	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

240-122640 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Chris Williams / Ransom Consulting	11/19/19	13:00	A Gannett	11/21/19	0800	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams
SIGNATURE of SAMPLER: Chris Williams
DATE Signed (MM/DD/YY): 11/19/2019

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 122640

Client: Ransom Consulting Site Name:

Cooler Received on: 11-21-19 Opened on: 11-21-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: Adam Genrett

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 1-5 °C Corrected Cooler Temp. 2.2 °C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — Yes No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# HC995364
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # — Yes No
16. Was a LL Hg or Me Hg trip blank present? — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: Ryan

18. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

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Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Nov2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.30	Pace Analytical Services - Minneapolis

Sample Condition Upon Receipt

Client Name: Eurofins Test America ~~Enviroclyne~~ 12/2/19, NB3

Project #: WO#: 10500586

PM: NB3 Due Date: 12/18/19

CLIENT: Ransom Consu

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: 1103 6125 7844

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other: box **Temp Blank?** ☑ Yes ☐ No

Thermometer: ☑ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 3.2 °C **Average Corrected Temp (no temp blank only):** ☐ See Exceptions

Correction Factor: TRUE **Cooler Temp Corrected w/temp blank:** 3.2 °C ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** SS 11/23/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑ Yes	☐ No		1.
Chain of Custody Relinquished?	☑ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☐ Yes	☑ No	☐ N/A	3.
Samples Arrived within Hold Time?	☑ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☑ No		6.
Sufficient Volume?	☑ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☑ Yes ☑ Yes	☐ No ☐ No		8.
Containers Intact?	☑ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☑ Soil ☐ Oil ☐ Other	☑ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☑ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☑ N/A	13. **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☑ N/A	
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boberg **Date:** 12/2/19

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

Labeled by: SS 2

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU18 (240-122640-1)		
Lab Sample ID	10500586001		
Filename	Y191211A_05		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Soil
% Moisture	0.6	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	11/14/2019 09:00
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_21	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 14:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	61
Total TCDF	1.3	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				1,2,3,7,8-PeCDF-13C	2.00	62
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	64
				1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	25	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	62
				1,2,3,4,7,8-HxCDD-13C	2.00	61
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	59
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	89	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	15	-----	5.0			
1,2,3,7,8,9-HxCDD	8.1	-----	5.0			
Total HxCDD	79	-----	5.0			
1,2,3,4,6,7,8-HpCDF	79	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.2	-----	5.0	Equivalence: 55 ng/Kg		
Total HpCDF	210	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	350	-----	5.0	7 ng/kg using DEP's 2025 TEFs		
Total HpCDD	590	-----	5.0			
OCDF	180	-----	10			
OCDD	2400	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU19 (240-122640-2)		
Lab Sample ID	10500586002		
Filename	Y191211A_06		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Soil
% Moisture	1.1	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	11/14/2019 14:15
ICAL ID	Y191210	Received	11/23/2019 10:30
CCal Filename(s)	Y191210B_21	Extracted	12/04/2019 13:20
Method Blank ID	BLANK-75223	Analyzed	12/11/2019 15:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	2.00	62
Total TCDF	5.0	-----	1.0		2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	61
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	1.1	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	60
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	66
Total PeCDF	55	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	61
					1,2,3,4,7,8-HxCDD-13C	2.00	62
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	57
Total PeCDD	5.1	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	58
1,2,3,4,7,8-HxCDF	6.8	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	7.4	-----	5.0		OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	ND	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	210	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	60
1,2,3,6,7,8-HxCDD	33	-----	5.0				
1,2,3,7,8,9-HxCDD	9.5	-----	5.0				
Total HxCDD	140	-----	5.0				
1,2,3,4,6,7,8-HpCDF	140	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	10	-----	5.0		Equivalence: 110 ng/Kg		
Total HpCDF	440	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	680	-----	5.0				
Total HpCDD	1100	-----	5.0		16 ng/kg using DEP's 2025 TEFs		
OCDF	370	-----	10				
OCDD	7500	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKVA		
Lab Sample ID	BLANK-75223	Matrix	Solid
Filename	Y191210B_09	Dilution	NA
Total Amount Extracted	15.1 g	Extracted	12/04/2019 13:20
ICAL ID	Y191210	Analyzed	12/11/2019 02:38
CCal Filename(s)	Y191210B_01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	56
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				1,2,3,7,8-PeCDF-13C	2.00	56
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	58
				1,2,3,4,7,8-HxCDF-13C	2.00	51
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	51
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	57
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	58
				1,2,3,4,7,8-HxCDD-13C	2.00	55
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	51
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	61
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	57
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-75224		
Filename	Y191210B_04	Matrix	Solid
Total Amount Extracted	15.5 g	Dilution	NA
ICAL ID	Y191210	Extracted	12/04/2019 13:20
CCal Filename	Y191210B_01	Analyzed	12/10/2019 23:10
Method Blank ID	BLANK-75223	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	105
2,3,7,8-TCDD	10	9.9	6.7	15.8	99
1,2,3,7,8-PeCDF	50	49	40.0	67.0	99
2,3,4,7,8-PeCDF	50	55	34.0	80.0	110
1,2,3,7,8-PeCDD	50	46	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	53	36.0	67.0	107
1,2,3,6,7,8-HxCDF	50	51	42.0	65.0	102
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	98
1,2,3,7,8,9-HxCDF	50	49	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	52	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	54	38.0	67.0	109
1,2,3,7,8,9-HxCDD	50	53	32.0	81.0	105
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	102
1,2,3,4,7,8,9-HpCDF	50	52	39.0	69.0	104
1,2,3,4,6,7,8-HpCDD	50	48	35.0	70.0	95
OCDF	100	120	63.0	170.0	119
OCDD	100	110	78.0	144.0	113
2,3,7,8-TCDD-37Cl4	10	6.1	3.1	19.1	61
2,3,7,8-TCDF-13C	100	60	22.0	152.0	60
2,3,7,8-TCDD-13C	100	58	20.0	175.0	58
1,2,3,7,8-PeCDF-13C	100	62	21.0	192.0	62
2,3,4,7,8-PeCDF-13C	100	59	13.0	328.0	59
1,2,3,7,8-PeCDD-13C	100	65	21.0	227.0	65
1,2,3,4,7,8-HxCDF-13C	100	62	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	65	21.0	159.0	65
2,3,4,6,7,8-HxCDF-13C	100	65	22.0	176.0	65
1,2,3,7,8,9-HxCDF-13C	100	62	17.0	205.0	62
1,2,3,4,7,8-HxCDD-13C	100	61	21.0	193.0	61
1,2,3,6,7,8-HxCDD-13C	100	58	25.0	163.0	58
1,2,3,4,6,7,8-HpCDF-13C	100	68	21.0	158.0	68
1,2,3,4,7,8,9-HpCDF-13C	100	62	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	69	26.0	166.0	69
OCDD-13C	200	110	26.0	397.0	53

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10500586

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU18 and DU19

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 3.2 ºC
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within the preferred 6 degrees Celsius. E flag for estimated concentration of OCDD in DU19 sample, due to concentrations being outside of calibration range. Not anticipated to have a significant impact on the findings of this report.

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10503735
Sample Receipt Date: 12/24/2019
Client Project #: 24023589
Client Sub PO #: 12165
State Cert #: M-MN064

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

January 09, 2020

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

Report Prepared Date:
January 9, 2020

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Ransom Consulting, Inc. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 23-56%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. Concentrations above the calibration range were flagged "E" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 94-112%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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4.1/4.8

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Ransom Consulting, Inc.	Report To: Nancy Marshall	Attention:
Address: 12 Kent Way, Suite 100	Copy To: tsney@ransomenv.com	Company Name: See Section A
Byfield, MA 01922	chris.williams@ransomenv.com	Address: See Section A
Email To: nmarshall@ransomenv.com	Purchase Order No.: TBD	Pace Quote Reference:
Phone: 978-465-1822 Fax:	Project Name: New England Log Homes, Great Barrington, MA	Pace Project Manager: Nathan Boberg
Requested Due Date/TAT: STD See emails	Project Number: 021.01074.012	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DU17-S2	SL	C	-	-	12/16/19	13:15	-	1	x								N	X	N	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

240-123989 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Chris Williams / Ransom Consulting	12/16/19	13:30		12-18-19	840	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Chris Williams DATE Signed (MM/DD/YY): 12/16/19

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-115760.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-123989-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 12/27/2019			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU17-S2 (240-123989-1)	12/16/19	13:15 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

WO#: 10503735
10503735

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Charles H	12-23-19 1722	240		12/24/19 850	PACE
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Nov2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.30	Pace Analytical Services - Minneapolis

Sample Condition Upon Receipt **Client Name:** EUROFINS **Project #:** WO#: 10503735

PM: NB3 Due Date: 01/16/20

CLIENT: Ransom Consu

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial See Exceptions ☐

Tracking Number: 1103 6126 3758

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: _____ °C	Average Corrected Temp (no temp blank only): ☒ See Exceptions
Correction Factor: +0.2	Cooler Temp Corrected w/temp blank: _____ °C	1.6 °C ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** 12/24/19 CMY

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other _____
Rush Turn Around Time Requested? 12/24/19	☒ Yes	☐ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☐ Soil ☐ Oil ☒ Other SL	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Boberg **Date:** 12/24/19

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

Labeled by: CMY

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Pace Analytical®	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.02	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
1.7	1.9	1.6
1.0	1.2	
1.4	1.6	
1.5	1.7	

Tracking Number/Temperature	

Other Issues		
Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU17-S2 (240-123989-1)		
Lab Sample ID	10503735001		
Filename	U200108B_12		
Injected By	SMT		
Total Amount Extracted	10.3 g	Matrix	Solid
% Moisture	1.0	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	12/16/2019 13:15
ICAL ID	U200107	Received	12/24/2019 08:50
CCal Filename(s)	U200108A_24	Extracted	12/30/2019 15:15
Method Blank ID	BLANK-75826	Analyzed	01/09/2020 08:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.3	-----	1.0		2,3,7,8-TCDF-13C	2.00	54
Total TCDF	19	-----	1.0		2,3,7,8-TCDD-13C	2.00	53
					1,2,3,7,8-PeCDF-13C	2.00	55
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	49
Total TCDD	ND	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	51
					1,2,3,4,7,8-HxCDF-13C	2.00	56
1,2,3,7,8-PeCDF	7.8	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	56
Total PeCDF	240	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	49
					1,2,3,4,7,8-HxCDD-13C	2.00	53
1,2,3,7,8-PeCDD	5.5	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	11	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	41
					1,2,3,4,7,8,9-HpCDF-13C	2.00	34
1,2,3,4,7,8-HxCDF	34	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	41
1,2,3,6,7,8-HxCDF	ND	-----	5.0		OCDD-13C	4.00	23
2,3,4,6,7,8-HxCDF	41	-----	5.0				
1,2,3,7,8,9-HxCDF	8.5	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	770	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	21	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	52
1,2,3,6,7,8-HxCDD	110	-----	5.0				
1,2,3,7,8,9-HxCDD	46	-----	5.0				
Total HxCDD	380	-----	5.0				
1,2,3,4,6,7,8-HpCDF	530	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	43	-----	5.0		Equivalence: 410 ng/Kg		
Total HpCDF	1300	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	2600	-----	5.0		69 ng/kg using DEP's 2025 TEFs		
Total HpCDD	3900	-----	5.0				
OCDF	660	-----	10				
OCDD	18000	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKBN		
Lab Sample ID	BLANK-75826	Matrix	Solid
Filename	Y200103B_08	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	12/30/2019 15:15
ICAL ID	Y200103	Analyzed	01/03/2020 20:42
CCal Filename(s)	Y200103A_08	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	63
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	64
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	71
				1,2,3,4,7,8-HxCDF-13C	2.00	78
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	75
				1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-75827		
Filename	Y200103B_01	Matrix	Solid
Total Amount Extracted	20.4 g	Dilution	NA
ICAL ID	Y200103	Extracted	12/30/2019 15:15
CCal Filename	Y200103A_08	Analyzed	01/03/2020 16:02
Method Blank ID	BLANK-75826	Injected By	BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	103
2,3,7,8-TCDD	10	10	6.7	15.8	102
1,2,3,7,8-PeCDF	50	50	40.0	67.0	100
2,3,4,7,8-PeCDF	50	54	34.0	80.0	107
1,2,3,7,8-PeCDD	50	47	35.0	71.0	94
1,2,3,4,7,8-HxCDF	50	53	36.0	67.0	106
1,2,3,6,7,8-HxCDF	50	49	42.0	65.0	99
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	97
1,2,3,7,8,9-HxCDF	50	48	39.0	65.0	96
1,2,3,4,7,8-HxCDD	50	52	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	56	38.0	67.0	111
1,2,3,7,8,9-HxCDD	50	52	32.0	81.0	104
1,2,3,4,6,7,8-HpCDF	50	52	41.0	61.0	105
1,2,3,4,7,8,9-HpCDF	50	51	39.0	69.0	103
1,2,3,4,6,7,8-HpCDD	50	52	35.0	70.0	104
OCDF	100	110	63.0	170.0	108
OCDD	100	110	78.0	144.0	112
2,3,7,8-TCDD-37Cl4	10	6.7	3.1	19.1	67
2,3,7,8-TCDF-13C	100	72	22.0	152.0	72
2,3,7,8-TCDD-13C	100	70	20.0	175.0	70
1,2,3,7,8-PeCDF-13C	100	72	21.0	192.0	72
2,3,4,7,8-PeCDF-13C	100	66	13.0	328.0	66
1,2,3,7,8-PeCDD-13C	100	75	21.0	227.0	75
1,2,3,4,7,8-HxCDF-13C	100	82	19.0	202.0	82
1,2,3,6,7,8-HxCDF-13C	100	86	21.0	159.0	86
2,3,4,6,7,8-HxCDF-13C	100	84	22.0	176.0	84
1,2,3,7,8,9-HxCDF-13C	100	78	17.0	205.0	78
1,2,3,4,7,8-HxCDD-13C	100	79	21.0	193.0	79
1,2,3,6,7,8-HxCDD-13C	100	77	25.0	163.0	77
1,2,3,4,6,7,8-HpCDF-13C	100	76	21.0	158.0	76
1,2,3,4,7,8,9-HpCDF-13C	100	69	20.0	186.0	69
1,2,3,4,6,7,8-HpCDD-13C	100	72	26.0	166.0	72
OCDD-13C	200	120	26.0	397.0	60

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 1050375

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU17-S2

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 1.6 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within preferred range of 6 degrees Celsius. E flag for OCDD should be estimated b/c concentrations were outside of calibration range. Not anticipated to have a significant impact on the findings of this report.

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10505524
Sample Receipt Date: 01/16/2020
Client Project #: 021.01074.012
Client Sub PO #: 12165
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

January 28, 2020

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

Report Prepared Date:
January 28, 2020

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Ransom Consulting, Inc. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 51-82%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 103-122%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Report No....10505524_1613FC_DFR

Page 5 of 11

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100
Byfield, MA 01922
Email To: nmarshall@ransomenv.com
Phone: 978-465-1822 Fax:
Requested Due Date/TAT: STD See emails

Section B Required Project Information:

Report To: Nancy Marshall
Copy To: tsnay@ransomenv.com
chris.williams@ransomenv.com
Purchase Order No.: TBD
Project Name: New England Log Homes, Great Barrington, MA
Project Number: 021.01074.012

Section C Invoice Information:

Attention:
Company Name: See Section A
Address: See Section A
Pace Quote Reference:
Pace Project Manager: Nathan Boberg
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
										Y/N								N	
1	DU20	SL	C	-	-	1/14/20	13:45	-	1	X								X	N	001
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

WO# : 10505524
10505524

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
VSM prep to be done by Test America	Christ Williams / Ransom Consulting	1/15/2020	13:00	RACE	1.16.20	855	1.2	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams
SIGNATURE of SAMPLER: Christ Williams
DATE Signed (MM/DD/YY): 01/15/20

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Nov2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.30**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt **Client Name:** Ransom Consulting **Project #:** WO# : 10505524

PM: NB3 Due Date: 02/06/20
CLIENT: Ransom Consu

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: 7774 8672 0660

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C **Average Corrected Temp (no temp blank only):** ☐ See Exceptions ☒ Container

Correction Factor: +0.2 **Cooler Temp Corrected w/temp blank :**_____ °C 1.2 °C

USDA Regulated Soil: (☒ N/A, water sample/Other:_____)
Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No
Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No
If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

Date/Initials of Person Examining Contents: 1.16.20

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: Nathan Boberg **Date:** 1/16/20

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

Labeled by: RNC

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU20		
Lab Sample ID	10505524001		
Filename	U200121B_07		
Injected By	SMT		
Total Amount Extracted	35.5 g	Matrix	Solid
% Moisture	35.7	Dilution	NA
Dry Weight Extracted	22.8 g	Collected	01/14/2020 13:45
ICAL ID	U200107	Received	01/16/2020 08:50
CCal Filename(s)	U200121A_19	Extracted	01/17/2020 13:00
Method Blank ID	BLANK-76372	Analyzed	01/22/2020 03:38

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	2.2	-----	1.0	2,3,7,8-TCDF-13C	2.00	70
Total TCDF	65	-----	1.0	2,3,7,8-TCDD-13C	2.00	69
				1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	51
Total TCDD	11	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	51
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	41	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	70
				1,2,3,4,7,8-HxCDD-13C	2.00	69
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	7.3	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	21	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	20	-----	5.0			
1,2,3,4,6,7,8-HpCDF	22	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 14 ng/Kg		
Total HpCDF	52	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	63	-----	5.0			
Total HpCDD	100	-----	5.0	2005: 1		
OCDF	39	-----	10			
OCDD	510	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKIF		
Lab Sample ID	BLANK-76372	Matrix	Solid
Filename	F200121B_07	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	01/17/2020 13:00
ICAL ID	F200116	Analyzed	01/21/2020 20:20
CCal Filename(s)	F200121B_01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	83
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	76
				1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	77
				1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	77
				1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
				1,2,3,4,7,8,9-HpCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	78
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-76373		
Filename	F200121B_02	Matrix	Solid
Total Amount Extracted	10.2 g	Dilution	NA
ICAL ID	F200116	Extracted	01/17/2020 13:00
CCal Filename	F200121B_01	Analyzed	01/21/2020 16:45
Method Blank ID	BLANK-76372	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	110
2,3,7,8-TCDD	10	11	6.7	15.8	106
1,2,3,7,8-PeCDF	50	54	40.0	67.0	108
2,3,4,7,8-PeCDF	50	55	34.0	80.0	111
1,2,3,7,8-PeCDD	50	52	35.0	71.0	103
1,2,3,4,7,8-HxCDF	50	60	36.0	67.0	121
1,2,3,6,7,8-HxCDF	50	55	42.0	65.0	111
2,3,4,6,7,8-HxCDF	50	53	35.0	78.0	106
1,2,3,7,8,9-HxCDF	50	57	39.0	65.0	114
1,2,3,4,7,8-HxCDD	50	58	35.0	82.0	117
1,2,3,6,7,8-HxCDD	50	61	38.0	67.0	122
1,2,3,7,8,9-HxCDD	50	59	32.0	81.0	117
1,2,3,4,6,7,8-HpCDF	50	57	41.0	61.0	114
1,2,3,4,7,8,9-HpCDF	50	56	39.0	69.0	113
1,2,3,4,6,7,8-HpCDD	50	54	35.0	70.0	108
OCDF	100	120	63.0	170.0	117
OCDD	100	120	78.0	144.0	118
2,3,7,8-TCDD-37Cl4	10	6.8	3.1	19.1	68
2,3,7,8-TCDF-13C	100	74	22.0	152.0	74
2,3,7,8-TCDD-13C	100	67	20.0	175.0	67
1,2,3,7,8-PeCDF-13C	100	83	21.0	192.0	83
2,3,4,7,8-PeCDF-13C	100	82	13.0	328.0	82
1,2,3,7,8-PeCDD-13C	100	84	21.0	227.0	84
1,2,3,4,7,8-HxCDF-13C	100	73	19.0	202.0	73
1,2,3,6,7,8-HxCDF-13C	100	78	21.0	159.0	78
2,3,4,6,7,8-HxCDF-13C	100	78	22.0	176.0	78
1,2,3,7,8,9-HxCDF-13C	100	65	17.0	205.0	65
1,2,3,4,7,8-HxCDD-13C	100	75	21.0	193.0	75
1,2,3,6,7,8-HxCDD-13C	100	70	25.0	163.0	70
1,2,3,4,6,7,8-HpCDF-13C	100	71	21.0	158.0	71
1,2,3,4,7,8,9-HpCDF-13C	100	70	20.0	186.0	70
1,2,3,4,6,7,8-HpCDD-13C	100	75	26.0	166.0	75
OCDD-13C	200	140	26.0	397.0	69

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

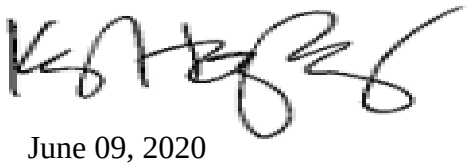
Pace Project #: 10518214
Sample Receipt Date: 05/16/2020
Client Project #: 24023589
Client Sub PO #: 12165
State Cert #: M-MN064

Invoicing & Reporting Options:

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

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

This report has been reviewed by:



June 09, 2020

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com

Report Prepared Date:
June 9, 2020

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on four samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 42-83%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates. Values obtained from an analysis of a diluted extract were flagged "D" and "N2".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 80-92%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota - Pet	1240
Alabama	40770	Mississippi	MN00064
Alaska - DW	MN00064	Missouri - DW	10100
Alaska - UST	17-009	Montana	CERT0092
Arizona	AZ0014	Nebraska	NE-OS-18-06
Arkansas - DW	MN00064	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
CNMI Saipan	MP0003	New Jersey (NE	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina -	27700
Connecticut	PH-0256	North Carolina -	530
EPA Region 8+	via MN 027-053	North Dakota	R-036
Florida (NELAP	E87605	Ohio - DW	41244
Georgia	959	Ohio - VAP	CL101
Guam	20-00.R	Oklahoma	9507
Hawaii	MN00064	Oregon - Primar	MN300001
Idaho	MN00064	Oregon - Secon	MN200001
Illinois	200011	Pennsylvania	68-00563
Indiana	C-MN-01	Puerto Rico	MN00064
Iowa	368	South Carolina	74003
Kansas	E-10167	Tennessee	TN02818
Kentucky - DW	90062	Texas	T104704192
Kentucky - WW	90062	Utah (NELAP)	MN00064
Louisiana - DE	84596	Vermont	VT-027053137
Louisiana - DW	MN00064	Virginia	460163
Maine	MN00064	Washington	C486
Maryland	322	West Virginia -	382
Massachusetts	M-MN064	West Virginia -	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming - UST	2926.01
Minnesota - De	via MN 027-053		

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-120638.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: opal.johnson@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-130179-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 5/21/2020			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU21 (240-130179-1)	5/11/20	08:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU22 (240-130179-2)	5/11/20	09:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DUA-South-52 (240-130179-3)	5/11/20	10:30 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414
DU-B (240-130179-4)	5/11/20	14:45 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414

WO# : 10518214
10518214

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	5-15-20 1230	240	Pace	5/16/20 0930	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.0

Ver: 01/16/2019

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.25/3.2

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Ransom Consulting, Inc.	Report To: Nancy Marshall	Attention:
Address: 12 Kent Way, Suite 100	Copy To: tsnay@ransomenv.com	Company Name: See Section A
Byfield, MA 01922	chris.williams@ransomenv.com	Address: See Section A
Email To: nmarshall@ransomenv.com	Purchase Order No.: TBD	Pace Quote Reference:
Phone: 978-465-1822 Fax:	Project Name: New England Log Homes, Great Barrington, MA	Pace Project Manager: Nathan Boberg
Requested Due Date/TAT: ~~STD~~ See emails	Project Number: 021.01074.012	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N		
1	DU21	SL	C	-	-	5/11/20	8:30	-	1	X								X		N
2	DU22	SL	C	—	—	5/11/20	9:30	-	1	X								X		N
3	DU-A-South-S2	SL	C	—	—	5/11/20	10:30	-	1	X								X		N
4	DU-B	SL	C	—	—	5/11/20	14:45	-	1	X								X		N
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

240-130179 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Christ Q Williams Ransom Consulting	5/11/2020	15:15	Adam Garrett	5/13/20	1010	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Christ Q Williams DATE Signed (MM/DD/YY): 05/11/20

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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Pace Analytical®	Document Name: . **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 27Mar2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.00**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Ensr Cons

Project #: WO#: 10518214

PM: NB3 Due Date: 06/09/20

CLIENT: Ransom Consu

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: 1103 6128 8968

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☒ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.0 °C **Average Corrected Temp (no temp blank only):** ☐ See Exceptions

Correction Factor: True **Cooler Temp Corrected w/temp blank :** 1.0 °C _____ °C ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Date/Initials of Person Examining Contents: CEL 5/16/20

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☐ Yes	☒ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review:_____ **Date:**_____

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

Labeled by: CEL

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

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Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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Minneapolis, MN 55414

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Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU21 (240-130179-1)		
Lab Sample ID	10518214001		
Filename	U200605A_12		
Injected By	SMT		
Total Amount Extracted	10.6 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	05/11/2020 08:30
ICAL ID	U200419	Received	05/16/2020 09:30
CCal Filename(s)	U200604B_18	Extracted	05/26/2020 13:15
Method Blank ID	BLANK-79608	Analyzed	06/05/2020 10:39

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.9	-----	1.0		2,3,7,8-TCDF-13C	2.00	79
Total TCDF	18	-----	1.0		2,3,7,8-TCDD-13C	2.00	73
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	77
Total TCDD	2.1	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	83
					1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF	50	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	75
					1,2,3,4,7,8-HxCDD-13C	2.00	62
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	ND	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	54
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	7.2	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	70
1,2,3,6,7,8-HxCDF	5.5	-----	5.0		OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	11	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	220	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	7.1	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	28	-----	5.0				
1,2,3,7,8,9-HxCDD	12	-----	5.0				
Total HxCDD	130	-----	5.0				
1,2,3,4,6,7,8-HpCDF	170	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	13	-----	5.0		Equivalence: 130 ng/Kg		
Total HpCDF	530	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	810	-----	5.0		2005: 20		
Total HpCDD	1300	-----	5.0				
OCDF	470	-----	10				
OCDD	7100	-----	10	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
E = Exceeds calibration range

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU22 (240-130179-2)		
Lab Sample ID	10518214002		
Filename	U200605A_13		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Solid
% Moisture	0.9	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	05/11/2020 09:30
ICAL ID	U200419	Received	05/16/2020 09:30
CCal Filename(s)	U200604B_18	Extracted	05/26/2020 13:15
Method Blank ID	BLANK-79608	Analyzed	06/05/2020 11:21

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	32	-----	1.0	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	79	-----	1.0	2,3,7,8-TCDD-13C	2.00	63
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	61
Total TCDD	2.3	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	65
				1,2,3,4,7,8-HxCDF-13C	2.00	61
1,2,3,7,8-PeCDF	6.9	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	6.9	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	60
Total PeCDF	36	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	47
				1,2,3,4,7,8-HxCDD-13C	2.00	61
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	55
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	42
				1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	9.0	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	55
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	140	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,6,7,8-HxCDD	24	-----	5.0			
1,2,3,7,8,9-HxCDD	9.1	-----	5.0			
Total HxCDD	100	-----	5.0			
1,2,3,4,6,7,8-HpCDF	73	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	5.9	-----	5.0	Equivalence: 89 ng/Kg		
Total HpCDF	200	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	530	-----	5.0			
Total HpCDD	890	-----	5.0	2005: 17		
OCDF	150	-----	10			
OCDD	4700	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DUA-South-52 (240-130179-3)		
Lab Sample ID	10518214003		
Filename	U200605A_14		
Injected By	SMT		
Total Amount Extracted	10.6 g	Matrix	Solid
% Moisture	1.4	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	05/11/2020 10:30
ICAL ID	U200419	Received	05/16/2020 09:30
CCal Filename(s)	U200604B_18	Extracted	05/26/2020 13:15
Method Blank ID	BLANK-79608	Analyzed	06/05/2020 12:03

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	1.1	-----	1.0	2,3,7,8-TCDF-13C	2.00	73
Total TCDF	1.1	-----	1.0	2,3,7,8-TCDD-13C	2.00	68
				1,2,3,7,8-PeCDF-13C	2.00	74
2,3,7,8-TCDD	4.4	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	4.4	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	76
				1,2,3,4,7,8-HxCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	73
				1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	51
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	24	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,6,7,8-HxCDD	6.4	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	27	-----	5.0			
1,2,3,4,6,7,8-HpCDF	23	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 24 ng/Kg		
Total HpCDF	79	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	130	-----	5.0	2005: 7		
Total HpCDD	220	-----	5.0			
OCDF	81	-----	10			
OCDD	1100	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU-B (240-130179-4)		
Lab Sample ID	10518214004		
Filename	U200605A_15		
Injected By	SMT		
Total Amount Extracted	10.3 g	Matrix	Solid
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	05/11/2020 14:45
ICAL ID	U200419	Received	05/16/2020 09:30
CCal Filename(s)	U200604B_18	Extracted	05/26/2020 13:15
Method Blank ID	BLANK-79608	Analyzed	06/05/2020 12:45

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	2.00	79	
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	2.00	75	
					1,2,3,7,8-PeCDF-13C	2.00	78	
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	77	
Total TCDD	ND	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	80	
					1,2,3,4,7,8-HxCDF-13C	2.00	73	DN2
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	77	DN2
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	74	DN2
Total PeCDF	ND	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	57	DN2
					1,2,3,4,7,8-HxCDD-13C	2.00	67	DN2
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	64	DN2
Total PeCDD	ND	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	67	DN2
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71	DN2
1,2,3,4,7,8-HxCDF	ND	-----	5.0	DN2	1,2,3,4,6,7,8-HpCDD-13C	2.00	80	DN2
1,2,3,6,7,8-HxCDF	ND	-----	5.0	DN2	OCDD-13C	4.00	80	DN2
2,3,4,6,7,8-HxCDF	ND	-----	5.0	DN2				
1,2,3,7,8,9-HxCDF	ND	-----	5.0	DN2	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	25	-----	5.0	JDN2	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	5.0	DN2	2,3,7,8-TCDD-37Cl4	0.20	65	
1,2,3,6,7,8-HxCDD	6.3	-----	5.0	JDN2				
1,2,3,7,8,9-HxCDD	ND	-----	5.0	DN2				
Total HxCDD	16	-----	5.0	JDN2				
1,2,3,4,6,7,8-HpCDF	22	-----	5.0	JDN2	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	DN2	Equivalence: 25 ng/Kg			
Total HpCDF	89	-----	5.0	DN2	(Lower-bound - Using MADEP Factors)			
1,2,3,4,6,7,8-HpCDD	170	-----	5.0	DN2	3.2 using 2005 MassDEP TEFs			
Total HpCDD	290	-----	5.0	DN2				
OCDF	97	-----	10	JDN2				
OCDD	2100	-----	10	DN2				

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
D = Result obtained from analysis of diluted sample
Nn = Value obtained from additional analysis

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Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKXC		
Lab Sample ID	BLANK-79608	Matrix	Solid
Filename	F200530B_12	Dilution	NA
Total Amount Extracted	20.1 g	Extracted	05/26/2020 13:15
ICAL ID	F200528	Analyzed	05/30/2020 19:07
CCal Filename(s)	F200530B_01	Injected By	JRH

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	81
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	74
				1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	82
				1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	80
				1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	71
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	72
				1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	69
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Tel: 612-607-1700
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-79609		
Filename	F200530B_03	Matrix	Solid
Total Amount Extracted	20.6 g	Dilution	NA
ICAL ID	F200528	Extracted	05/26/2020 13:15
CCal Filename	F200530B_01	Analyzed	05/30/2020 12:48
Method Blank ID	BLANK-79608	Injected By	JRH

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	8.6	7.5	15.8	86
2,3,7,8-TCDD	10	8.4	6.7	15.8	84
1,2,3,7,8-PeCDF	50	41	40.0	67.0	82
2,3,4,7,8-PeCDF	50	41	34.0	80.0	83
1,2,3,7,8-PeCDD	50	40	35.0	71.0	80
1,2,3,4,7,8-HxCDF	50	43	36.0	67.0	85
1,2,3,6,7,8-HxCDF	50	42	42.0	65.0	85
2,3,4,6,7,8-HxCDF	50	41	35.0	78.0	82
1,2,3,7,8,9-HxCDF	50	42	39.0	65.0	84
1,2,3,4,7,8-HxCDD	50	43	35.0	82.0	87
1,2,3,6,7,8-HxCDD	50	45	38.0	67.0	91
1,2,3,7,8,9-HxCDD	50	45	32.0	81.0	90
1,2,3,4,6,7,8-HpCDF	50	43	41.0	61.0	87
1,2,3,4,7,8,9-HpCDF	50	42	39.0	69.0	85
1,2,3,4,6,7,8-HpCDD	50	41	35.0	70.0	81
OCDF	100	91	63.0	170.0	91
OCDD	100	92	78.0	144.0	92
2,3,7,8-TCDD-37Cl4	10	6.7	3.1	19.1	67
2,3,7,8-TCDF-13C	100	65	22.0	152.0	65
2,3,7,8-TCDD-13C	100	61	20.0	175.0	61
1,2,3,7,8-PeCDF-13C	100	71	21.0	192.0	71
2,3,4,7,8-PeCDF-13C	100	67	13.0	328.0	67
1,2,3,7,8-PeCDD-13C	100	68	21.0	227.0	68
1,2,3,4,7,8-HxCDF-13C	100	68	19.0	202.0	68
1,2,3,6,7,8-HxCDF-13C	100	70	21.0	159.0	70
2,3,4,6,7,8-HxCDF-13C	100	71	22.0	176.0	71
1,2,3,7,8,9-HxCDF-13C	100	67	17.0	205.0	67
1,2,3,4,7,8-HxCDD-13C	100	63	21.0	193.0	63
1,2,3,6,7,8-HxCDD-13C	100	60	25.0	163.0	60
1,2,3,4,6,7,8-HpCDF-13C	100	59	21.0	158.0	59
1,2,3,4,7,8,9-HpCDF-13C	100	61	20.0	186.0	61
1,2,3,4,6,7,8-HpCDD-13C	100	61	26.0	166.0	61
OCDD-13C	200	97	26.0	397.0	48

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10536076
Sample Receipt Date: 10/20/2020
Client Project #: 021.01074.012
Client Sub PO #: 12165
State Cert #: via MN 027-053-137

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

November 11, 2020

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com

Report Prepared Date:
November 11, 2020

Report of Laboratory Analysis

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

DRAFT

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

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Ransom Consulting, Inc. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 61-101%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 98-118%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Mississippi	MN00064
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio - VAP	CL101
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Massachusetts-	via MN 027-053	West Virginia-D	382
Michigan	9909	West Virginia-D	9952C
Minnesota	027-053-137	Wisconsin	999407970
Minnesota-Ag	via MN 027-053	Wyoming-UST	via A2LA 2926.
Minnesota-Petr	1240		

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-126760.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Opal.Johnson@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-138139-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 10/21/2020			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DU14-SOUTH-S2 (240-138139-1)	10/9/20	12:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414, ATTN:

WO#:10536076
10536076

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10-19-20 1158	240			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: -PACE	Date/Time: 10/20/20 8:50	Company PACE

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: T=4.7

Ver: 01/16/2019

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt **Client Name:** Eurofins **Project #:** WO#: 10536076

PM: KNH Due Date: 11/10/20

CLIENT: Ransom Consu

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9148 7501 8003 **See Exceptions** ☐ **ENV-FRM-MIN4-0142**

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☐ T3(0459) ☒ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C **Average Corrected Temp (no temp blank only):** 4.7 °C ☒ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank:**_____ °C

USDA Regulated Soil: (☐ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Date/Initials of Person Examining Contents: 10/20/20 LJ

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested? 10/20/20 LJ	☒ Yes	☐ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14. Pace Trip Blank Lot # (if purchased):_____
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: Kirsten Hoffing **Date:** 10/20/2020

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

Labeled by: LJ

DRAFT

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #: 10536076

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
3.6	3.7	4.7
4.6	4.7	
5.6	5.7	

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

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3.6/4.5

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Ransom Consulting, Inc.	Report To: Nancy Marshall	Attention:
Address: 12 Kent Way, Suite 100	Copy To: tansy@ransomenv.com	Company Name: See Section A
Byfield, MA 01922	chris.williams@ransomenv.com	Address: See Section A
Email To: nmarshall@ransomenv.com	Purchase Order No.: TBD	Pace Quote Reference:
Phone: 978-465-1822 Fax:	Project Name: New England Log Homes, Great Barrington, MA	Pace Project Manager: Nathan Boberg
Requested Due Date/TAT: STD See emails	Project Number: 021.01074.012	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: Dioxins - 1613	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N		
1	DU14-South-S2	SL	C	-	-	10/9/20	12:00	-	1	X								J		N	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					



ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Chris Williams / Ransom Consulting	10/9/2020	13:30	[illegible] / ETAC	10-13-20	915	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Chris Williams DATE Signed (MM/DD/YY): 10/09/20

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	DU14-SOUTH-S2 (240-138139-1)		
Lab Sample ID	10536076001		
Filename	U201111A_09		
Injected By	SMT		
Total Amount Extracted	10.1 g	Matrix	Solid
% Moisture	0.7	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	10/09/2020 12:00
ICAL ID	U201013	Received	10/20/2020 08:50
CCal Filename(s)	U201111A_02	Extracted	11/06/2020 13:40
Method Blank ID	BLANK-83815	Analyzed	11/11/2020 13:42

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	77
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	76
				1,2,3,7,8-PeCDF-13C	2.00	94
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	97
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	101
				1,2,3,4,7,8-HxCDF-13C	2.00	84
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	85
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	80
				1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	80
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	84
				1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	95
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	61
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	72
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.020 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0	0 ng/kg using DEP's 2025 TEFs		
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	20	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKHE		
Lab Sample ID	BLANK-83815	Matrix	Solid
Filename	F201110B_04	Dilution	NA
Total Amount Extracted	10.0 g	Extracted	11/06/2020 13:40
ICAL ID	F200714	Analyzed	11/11/2020 01:02
CCal Filename(s)	F201110B_01	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	80
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	72
				1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	89
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	92
				1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	93
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	75
				1,2,3,4,7,8-HxCDD-13C	2.00	80
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	75
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-83816		
Filename	U201111A_04	Matrix	Solid
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	U201013	Extracted	11/06/2020 13:40
CCal Filename	U201111A_02	Analyzed	11/11/2020 10:19
Method Blank ID	BLANK-83815	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	109
2,3,7,8-TCDD	10	11	6.7	15.8	107
1,2,3,7,8-PeCDF	50	55	40.0	67.0	109
2,3,4,7,8-PeCDF	50	53	34.0	80.0	107
1,2,3,7,8-PeCDD	50	50	35.0	71.0	101
1,2,3,4,7,8-HxCDF	50	58	36.0	67.0	116
1,2,3,6,7,8-HxCDF	50	54	42.0	65.0	107
2,3,4,6,7,8-HxCDF	50	54	35.0	78.0	107
1,2,3,7,8,9-HxCDF	50	52	39.0	65.0	104
1,2,3,4,7,8-HxCDD	50	59	35.0	82.0	117
1,2,3,6,7,8-HxCDD	50	59	38.0	67.0	118
1,2,3,7,8,9-HxCDD	50	56	32.0	81.0	111
1,2,3,4,6,7,8-HpCDF	50	53	41.0	61.0	106
1,2,3,4,7,8,9-HpCDF	50	53	39.0	69.0	106
1,2,3,4,6,7,8-HpCDD	50	49	35.0	70.0	98
OCDF	100	100	63.0	170.0	104
OCDD	100	110	78.0	144.0	108
2,3,7,8-TCDD-37Cl4	10	6.7	3.1	19.1	67
2,3,7,8-TCDF-13C	100	68	22.0	152.0	68
2,3,7,8-TCDD-13C	100	68	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	84	21.0	192.0	84
2,3,4,7,8-PeCDF-13C	100	91	13.0	328.0	91
1,2,3,7,8-PeCDD-13C	100	92	21.0	227.0	92
1,2,3,4,7,8-HxCDF-13C	100	73	19.0	202.0	73
1,2,3,6,7,8-HxCDF-13C	100	77	21.0	159.0	77
2,3,4,6,7,8-HxCDF-13C	100	77	22.0	176.0	77
1,2,3,7,8,9-HxCDF-13C	100	75	17.0	205.0	75
1,2,3,4,7,8-HxCDD-13C	100	71	21.0	193.0	71
1,2,3,6,7,8-HxCDD-13C	100	73	25.0	163.0	73
1,2,3,4,6,7,8-HpCDF-13C	100	77	21.0	158.0	77
1,2,3,4,7,8,9-HpCDF-13C	100	71	20.0	186.0	71
1,2,3,4,6,7,8-HpCDD-13C	100	90	26.0	166.0	90
OCDD-13C	200	130	26.0	397.0	66

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10536076

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: DU14-South-S2 sample

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 4.7 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within preferred range of 6 degrees Celsius. Results anticipated to be representative.

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Pace Analytical™
www.pacelabs.com

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

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10542447
Sample Receipt Date: 12/16/2020
Client Project #: 24023589; NEHL Great Barring
Client Sub PO #: 12165
State Cert #: via MN 027-053-137

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

January 14, 2021

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com

Report Prepared Date:
January 13, 2021

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on four samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount or dilution, may be somewhat higher or lower than the reporting limits provided in this report. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 45-94%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 109-130%. These results were within the target ranges for the method. Matrix spikes were prepared with the extraction batch using sample material from a separate project; results from these analyses will be provided upon request.

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Mississippi	MN00064
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio - VAP	CL101
Georgia	959	Ohio-DW	41244
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.

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REPORT OF LABORATORY ANALYSIS

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Report No.....10542447

Appendix A

Sample Management

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Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Report No....10542447_1613FC_DFR

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Johnson, Opal	Carrier Tracking No(s):	COC No: 240-129702.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Opal.Johnson@Eurofinset.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note):		Job #: 240-141770-1
Address: 1700 Elm Street, Suite 200,	Due Date Requested: 12/22/2020			
City: Minneapolis	TAT Requested (days):			
State, Zip: MN, 55414				
Phone:	PO #:			
Email:	WO #:			
Project Name: NEHL, Great Barrington, MA	Project #: 24023589			
Site:	SSOW#:			

Analysis Requested

WO# : 10542447

10542447

Preservation Codes:

A - HCL
NaOH
n Acetate
itric Acid
aHSO4
leOH
mchlor
scorbic Acid
e
I Water
EDTA
L - EDA

M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Dioxin - 1613)	Total Number of contain	Special Instructions/Note:
			Preservation Code:						
RF1 (240-141770-1)	12/8/20	11:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414, ATTN:
RF2 (240-141770-2)	12/8/20	13:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414, ATTN:
RF3 (240-141770-3)	12/9/20	10:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414, ATTN:
RF4 (240-141770-4)	12/9/20	11:00 Eastern		Solid			X	3	Send ISM aliquot to PACE, 1700 Elm St SE Suite 200, Minneapolis MN 55414, ATTN:

Qu 1
Qu 2
Qu 3
QC4

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 0	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Conn	12-15-20 17:34	ZLJ	Conn / PACE	12/16/20 8:50	
2						
3						

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes X No		4.5

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Ver: 11/01/2020

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt **Client Name:** Eurofins TestAmerica **Project #:** WO#: 10542447

PM: KNH Due Date: 01/08/21
CLIENT: Ransom Consu

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 914875026505 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C **Average Corrected Temp (no temp blank only):** 4.5 °C ☒ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: _____ **Cooler Temp Corrected w/temp blank:**_____ °C

USDA Regulated Soil: (☐ N/A, water sample/Other:_____)
Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Date/Initials of Person Examining Contents: ED 12/16/20
Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2. ED 12/16/20
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☐ Yes	☒ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: Kristen Hoffberg **Date:** 12/16/2020

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

Labeled by: ED

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #: 10542447

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
5.5	5.7	4.5
3.6	3.8	
4.0	4.2	
4.2	4.4	

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

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Pace Analytical™ www.pacelabs.com

1.5124

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100
Byfield, MA 01922
Email To: nmarshall@ransomenv.com
Phone: 978-465-1822 Fax:
Requested Due Date/TAT: STD See emails

Section B Required Project Information:

Report To: Nancy Marshall
Copy To: tansay@ransomenv.com
chris.williams@ransomenv.com
Purchase Order No.: TBD
Project Name: New England Log Homes, Great Barrington, MA
Project Number: 021.01074.012

Section C Invoice Information:

Attention:
Company Name: See Section A
Address: See Section A
Pace Quote Reference:
Pace Project Manager: Nathen Boberg
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER MA DEP

Site Location STATE: 100 Bridge St, Great Barrington, MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: Dioxins - 1613	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	RF1	SL	C	-	-	12/8/20	11:00	-	1	X							X	N	N	
2	RF2	SL	C	—	—	12/8/20	13:00	-	1	X							X	N	N	
3	RF3	SL	C	—	—	12/9/20	10:00	-	1	X							X	N	N	
4	RF4	SL	C	—	—	12/9/20	11:00	-	1	X							X	N	N	
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

240-141770 Chain of Custody

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ISM prep to be done by Test America	Chris Williams / Ransom Consulting	12/9/2020	13:60		12-1-20	9970	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams
SIGNATURE of SAMPLER: Chris Williams
DATE Signed (MM/DD/YY): 12/09/20

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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

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

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	RF1 (240-141770-1)		
Lab Sample ID	10542447001		
Filename	U201224B_10		
Injected By	SMT		
Total Amount Extracted	10.6 g	Matrix	Solid
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.6 g	Collected	12/08/2020 11:00
ICAL ID	U201013	Received	12/16/2020 08:50
CCal Filename(s)	U201224B_03	Extracted	12/17/2020 12:20
Method Blank ID	BLANK-85044	Analyzed	12/24/2020 16:45

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	59
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	64
				1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	84
				1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	52
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	51
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	60
				1,2,3,4,7,8-HxCDD-13C	2.00	56
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	63
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	8.4	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 4.8 ng/Kg		
Total HpCDF	8.4	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	34	-----	5.0	1 ng/kg using DEP's 2025 TEFs		
Total HpCDD	57	-----	5.0			
OCDF	20	-----	10			
OCDD	310	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	RF2 (240-141770-2)		
Lab Sample ID	10542447002		
Filename	U201224B_11		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Solid
% Moisture	0.8	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	12/08/2020 13:00
ICAL ID	U201013	Received	12/16/2020 08:50
CCal Filename(s)	U201224B_03	Extracted	12/17/2020 12:20
Method Blank ID	BLANK-85044	Analyzed	12/24/2020 17:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	69
				1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	94
				1,2,3,4,7,8-HxCDF-13C	2.00	50
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	51
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	52
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	64
				1,2,3,4,7,8-HxCDD-13C	2.00	55
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	7.0	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 4.5 ng/Kg		
Total HpCDF	13	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	33	-----	5.0	0 ng/kg using DEP's 2025 TEFs		
Total HpCDD	52	-----	5.0			
OCDF	25	-----	10			
OCDD	280	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	RF3 (240-141770-3)		
Lab Sample ID	10542447003		
Filename	U201224B_12		
Injected By	SMT		
Total Amount Extracted	10.4 g	Matrix	Solid
% Moisture	1.3	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	12/09/2020 10:00
ICAL ID	U201013	Received	12/16/2020 08:50
CCal Filename(s)	U201224B_03	Extracted	12/17/2020 12:20
Method Blank ID	BLANK-85044	Analyzed	12/24/2020 18:05

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	62
				1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	88
				1,2,3,4,7,8-HxCDF-13C	2.00	46
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	45
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	46
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	63
				1,2,3,4,7,8-HxCDD-13C	2.00	51
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	47
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	57
				1,2,3,4,7,8,9-HpCDF-13C	2.00	69
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	6.0	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	5.9	-----	5.0			
1,2,3,4,6,7,8-HpCDF	15	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 9.9 ng/Kg		
Total HpCDF	15	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	72	-----	5.0			
Total HpCDD	120	-----	5.0	1 ng/kg using DEP's 2025 TEFs		
OCDF	39	-----	10			
OCDD	620	-----	10			

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

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NA = Not Applicable
NC = Not Calculated

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	RF4 (240-141770-4)		
Lab Sample ID	10542447004		
Filename	U201224B_13		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	Solid
% Moisture	1.3	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	12/09/2020 11:00
ICAL ID	U201013	Received	12/16/2020 08:50
CCal Filename(s)	U201224B_03	Extracted	12/17/2020 12:20
Method Blank ID	BLANK-85044	Analyzed	12/24/2020 18:45

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	8.2	-----	1.0	2,3,7,8-TCDF-13C	2.00	64
Total TCDF	12	-----	1.0	2,3,7,8-TCDD-13C	2.00	57
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	85
				1,2,3,4,7,8-HxCDF-13C	2.00	53
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	51
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	63
				1,2,3,4,7,8-HxCDD-13C	2.00	58
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	76
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	11	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 12 ng/Kg		
Total HpCDF	11	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	88	-----	5.0			
Total HpCDD	150	-----	5.0	2 ng/kg using DEP's 2025 TEFs		
OCDF	29	-----	10			
OCDD	720	-----	10			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKWJ		
Lab Sample ID	BLANK-85044	Matrix	Solid
Filename	F201224B_13	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	12/17/2020 12:20
ICAL ID	F201117	Analyzed	12/24/2020 20:04
CCal Filename(s)	F201224B_02	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	52
				1,2,3,7,8-PeCDF-13C	2.00	70
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	68
				1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	59
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	51
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

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

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-85045		
Filename	F201224B_05	Matrix	Solid
Total Amount Extracted	10.4 g	Dilution	NA
ICAL ID	F201117	Extracted	12/17/2020 12:20
CCal Filename	F201224B_02	Analyzed	12/24/2020 13:38
Method Blank ID	BLANK-85044	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	13	7.5	15.8	130
2,3,7,8-TCDD	10	12	6.7	15.8	124
1,2,3,7,8-PeCDF	50	59	40.0	67.0	117
2,3,4,7,8-PeCDF	50	57	34.0	80.0	113
1,2,3,7,8-PeCDD	50	56	35.0	71.0	112
1,2,3,4,7,8-HxCDF	50	62	36.0	67.0	125
1,2,3,6,7,8-HxCDF	50	56	42.0	65.0	113
2,3,4,6,7,8-HxCDF	50	57	35.0	78.0	113
1,2,3,7,8,9-HxCDF	50	60	39.0	65.0	120
1,2,3,4,7,8-HxCDD	50	61	35.0	82.0	121
1,2,3,6,7,8-HxCDD	50	64	38.0	67.0	129
1,2,3,7,8,9-HxCDD	50	62	32.0	81.0	124
1,2,3,4,6,7,8-HpCDF	50	57	41.0	61.0	115
1,2,3,4,7,8,9-HpCDF	50	59	39.0	69.0	118
1,2,3,4,6,7,8-HpCDD	50	54	35.0	70.0	109
OCDF	100	120	63.0	170.0	123
OCDD	100	120	78.0	144.0	124
2,3,7,8-TCDD-37Cl4	10	5.8	3.1	19.1	58
2,3,7,8-TCDF-13C	100	68	22.0	152.0	68
2,3,7,8-TCDD-13C	100	53	20.0	175.0	53
1,2,3,7,8-PeCDF-13C	100	72	21.0	192.0	72
2,3,4,7,8-PeCDF-13C	100	71	13.0	328.0	71
1,2,3,7,8-PeCDD-13C	100	70	21.0	227.0	70
1,2,3,4,7,8-HxCDF-13C	100	67	19.0	202.0	67
1,2,3,6,7,8-HxCDF-13C	100	71	21.0	159.0	71
2,3,4,6,7,8-HxCDF-13C	100	73	22.0	176.0	73
1,2,3,7,8,9-HxCDF-13C	100	71	17.0	205.0	71
1,2,3,4,7,8-HxCDD-13C	100	61	21.0	193.0	61
1,2,3,6,7,8-HxCDD-13C	100	65	25.0	163.0	65
1,2,3,4,6,7,8-HpCDF-13C	100	63	21.0	158.0	63
1,2,3,4,7,8,9-HpCDF-13C	100	59	20.0	186.0	59
1,2,3,4,6,7,8-HpCDD-13C	100	60	26.0	166.0	60
OCDD-13C	200	120	26.0	397.0	62

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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RANSOM Consulting Engineers and Scientists

Project No. 021.01074.012
File with Lab Data

LABORATORY REPORT CHECKLIST

Laboratory: Pace Analytical

Site: New England Log Homes Lab Job No.: 10542447

Report Reviewed by: CRW Date Reviewed: 1/22/2021

Sample Description: RF1, RF2, RF3, and RF4 samples

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 4.5 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☒ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Temp within the preferred range of 6 degrees Celsius. Results anticipated to be representative.

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APPENDIX E

Groundwater Sample Laboratory Chemical Analysis Reports – Dioxins/Furans Analyses

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November 15, 2021

Nancy Marshall
Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845

Project Location: Great Barrington, MA
Client Job Number:
Project Number: 021.01074.017
Laboratory Work Order Number: 21H1569

Enclosed are results of analyses for samples as received by the laboratory on August 30, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott C. Basal
Project Manager

DRAFT

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B289391 15

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Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845
ATTN: Nancy Marshall

REPORT DATE: 11/15/2021

PURCHASE ORDER NUMBER: 13228

PROJECT NUMBER: 021.01074.017

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21H1569

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Great Barrington, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW 601	21H1569-01	Ground Water		SW-846 8270E	
				SW-846 8290A	CT PH-0256/NY11647/MN00064
MW 602	21H1569-02	Ground Water		SW-846 8290A	CT PH-0256/NY11647/MN00064
MW 603	21H1569-03	Ground Water		SW-846 8270E	
				SW-846 8290A	CT PH-0256/NY11647/MN00064
MW 604	21H1569-04	Ground Water		SW-846 8270E	
				SW-846 8290A	CT PH-0256/NY11647/MN00064
MW 605	21H1569-05	Ground Water		SW-846 8270E	
				SW-846 8290A	CT PH-0256/NY11647/MN00064

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

REVISION: 9/22/2021 client requested a revised sub report to reflect MADEP regulatory standards
REVISION: 11/4/2021 client is requesting sub method code reflect the 8290 method that was run as opposed to 1613 currently showing up on the final report

DRAFT

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 601 | Sampled: 8/27/2021 07:37

Sample ID: 21H1569-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	8/31/21	9/1/21 14:57	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	36.6	15-110		9/1/21 14:57
Phenol-d6 (SIM)	34.2	15-110		9/1/21 14:57
Nitrobenzene-d5	72.7	30-130		9/1/21 14:57
2-Fluorobiphenyl	61.4	30-130		9/1/21 14:57
2,4,6-Tribromophenol (SIM)	82.3	15-110		9/1/21 14:57
p-Terphenyl-d14	67.7	30-130		9/1/21 14:57

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 601 | Sampled: 8/27/2021 07:37

Sample ID: 21H1569-01

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		pg/L	1		EPA 8290	9/3/21	9/8/21 12:42	PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 602 | Sampled: 8/27/2021 08:48

Sample ID: 21H1569-02

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		pg/L	1		EPA 8290	9/3/21	9/8/21 13:27	PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 603 | Sampled: 8/27/2021 09:26

Sample ID: 21H1569-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	8/31/21	9/1/21 15:26	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	34.7	15-110		9/1/21 15:26
Phenol-d6 (SIM)	31.8	15-110		9/1/21 15:26
Nitrobenzene-d5	72.1	30-130		9/1/21 15:26
2-Fluorobiphenyl	64.5	30-130		9/1/21 15:26
2,4,6-Tribromophenol (SIM)	80.4	15-110		9/1/21 15:26
p-Terphenyl-d14	69.3	30-130		9/1/21 15:26

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 603 | Sampled: 8/27/2021 09:26

Sample ID: 21H1569-03

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		pg/L	1		EPA 8290	9/3/21	9/8/21 14:13	PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 604 | Sampled: 8/27/2021 10:25

Sample ID: 21H1569-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.96	µg/L	1		SW-846 8270E	8/31/21	9/1/21 15:54	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	33.5	15-110		9/1/21 15:54
Phenol-d6 (SIM)	31.3	15-110		9/1/21 15:54
Nitrobenzene-d5	67.2	30-130		9/1/21 15:54
2-Fluorobiphenyl	60.7	30-130		9/1/21 15:54
2,4,6-Tribromophenol (SIM)	77.6	15-110		9/1/21 15:54
p-Terphenyl-d14	68.1	30-130		9/1/21 15:54

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 604 | Sampled: 8/27/2021 10:25

Sample ID: 21H1569-04

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		pg/L	1		EPA 8290	9/3/21	9/8/21 14:58	PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 605 | Sampled: 8/27/2021 11:16

Sample ID: 21H1569-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	8/31/21	9/1/21 16:23	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	35.4	15-110		9/1/21 16:23
Phenol-d6 (SIM)	32.8	15-110		9/1/21 16:23
Nitrobenzene-d5	70.2	30-130		9/1/21 16:23
2-Fluorobiphenyl	63.1	30-130		9/1/21 16:23
2,4,6-Tribromophenol (SIM)	79.3	15-110		9/1/21 16:23
p-Terphenyl-d14	69.7	30-130		9/1/21 16:23

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21H1569

Date Received: 8/30/2021

Field Sample #: MW 605 | Sampled: 8/27/2021 11:16

Sample ID: 21H1569-05

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached		pg/L	1		EPA 8290	9/3/21	9/8/21 15:43	PMN

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Sample Extraction Data

Prep Method: SW-846 3510C **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21H1569-01 [MW 601]	B289391	1030	1.00	08/31/21
21H1569-03 [MW 603]	B289391	1040	1.00	08/31/21
21H1569-04 [MW 604]	B289391	1040	1.00	08/31/21
21H1569-05 [MW 605]	B289391	1030	1.00	08/31/21

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B289391 - SW-846 3510C										
Blank (B289391-BLK1)				Prepared & Analyzed: 09/01/21						
Pentachlorophenol (SIM)	ND	1.0	µg/L							
Surrogate: 2-Fluorophenol (SIM)	*64.6*		µg/L	200		32.3	15-110			
Surrogate: Phenol-d6 (SIM)	*60.4*		µg/L	200		30.2	15-110			
Surrogate: Nitrobenzene-d5	*55.1*		µg/L	100		55.1	30-130			
Surrogate: 2-Fluorobiphenyl	*49.6*		µg/L	100		49.6	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*133*		µg/L	200		66.6	15-110			
Surrogate: p-Terphenyl-d14	*60.5*		µg/L	100		60.5	30-130			
LCS (B289391-BS1)				Prepared & Analyzed: 09/01/21						
Pentachlorophenol (SIM)	26.5	25	µg/L	50.0		53.0	40-140			
Surrogate: 2-Fluorophenol (SIM)	*72.4*		µg/L	200		36.2	15-110			
Surrogate: Phenol-d6 (SIM)	*69.7*		µg/L	200		34.8	15-110			
Surrogate: Nitrobenzene-d5	*62.6*		µg/L	100		62.6	30-130			
Surrogate: 2-Fluorobiphenyl	*60.8*		µg/L	100		60.8	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*161*		µg/L	200		80.5	15-110			
Surrogate: p-Terphenyl-d14	*65.6*		µg/L	100		65.6	30-130			
LCS Dup (B289391-BSD1)				Prepared & Analyzed: 09/01/21						
Pentachlorophenol (SIM)	28.8	25	µg/L	50.0		57.5	40-140	8.14	20	
Surrogate: 2-Fluorophenol (SIM)	*72.8*		µg/L	200		36.4	15-110			
Surrogate: Phenol-d6 (SIM)	*75.0*		µg/L	200		37.5	15-110			
Surrogate: Nitrobenzene-d5	*58.7*		µg/L	100		58.7	30-130			
Surrogate: 2-Fluorobiphenyl	*62.6*		µg/L	100		62.6	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*174*		µg/L	200		87.2	15-110			
Surrogate: p-Terphenyl-d14	*69.8*		µg/L	100		69.8	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
Nitrobenzene-d5	VA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

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21H1569

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Doc # 381 Rev 5_07/13/2021

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name:	Ransom Consulting, LLC
Address:	50 High Street, Suite 25, North Andover, MA
Phone:	978-465-1822
Project Name:	NELH
Project Location:	Great Barrington, MA
Project Number:	021.01074.017
Project Manager:	Nancy Marshall
Pace Quote Name/Number:	
Invoice Recipient:	Nancy Marshall
Sampled By:	CRW

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date: STD

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: nmarshall@ransomenv.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	Dioxins	PCB
01	MW601	8/27/21	7:37	G	GW			✓				✓	✓
02	MW602	8/27/21	8:48	G	GW			✓				✓	✓
03	MW603	8/27/21	9:26	G	GW			✓				✓	✓
04	MW604	8/27/21	10:25	G	GW			✓				✓	✓
05	MW605	8/27/21	11:16	G	GW			✓				✓	✓

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:	Client Comments: PO = 13228
Received by: (signature)	Date/Time: 8/30/21 4pm	
Relinquished by: (signature)	Date/Time: 8/30 5:55	
Received by: (signature) 5.5, 4.4 C	Date/Time: 8/30/21 1755	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client Ransom Consulting

Received By BLF Date 8/30/21 Time 1735

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 5.5, 4.4°C

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F _____

Were trip blanks received? F On COC? F

Do all samples have the proper pH? Acid NA Base NA

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	18	1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

DRAFT

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test, a Pace Analytical Laboratory	Project #: 21H1569
Project Location: Great Barrington, MA	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

21H1569-01 thru 21H1569-05

Matrices: Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	MassDEP VPH CAM IV A ( )	8082 PCB CAM V A ( )	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B (X)	7010 Metals CAM III C ( )	MassDEP VPH CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were all QC perfomance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes	☑ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Lisa Worthington Position: Technical Representative

Printed Name: Lisa A. Worthington Date: 09/21/21

DRAFT

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

www.pacelabs.com

Report Prepared for:

Scott Basal
Con-Test Laboratories

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10577296
Sample Receipt Date: 09/01/2021
Client Project #: 21H1569
Client Sub PO #: N/A
State Cert #: 2926.01

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

September 22, 2021

Ashley Williams, Project Manager
(612) 346-8158
(612) 607-6444 (fax)
ashley.williams@pacelabs.com

Report Prepared Date:
September 21, 2021

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

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

DRAFT

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

DISCUSSION

This report presents the results from the analyses performed on five samples submitted by a representative of Con-Test Analytical Laboratory. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The estimated detection limits (EDLs) were based on signal-to-noise measurements. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations. This report was revised to provided toxic equivalence results calculated usung the Massachusetts DEP toxic equivalence factors.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 58-103%. All of the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain a trace level of OCDD. This level was below the calibration range of the method. Sample levels similar to the corresponding blank level were flagged "B" on the results tables and may be, at least partially, attributed to the background.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 92-117% with relative percent differences of 0.0-11.9%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Report No....10577296_8290FC_R1_DFR
Revision 1

WO# : 10577296

10577296

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 21H1569 Workorder Name: Great Barrington Owner Received Date: 8/30/2021 Results Requested By: 9/9/2021

Report To:	Subcontract To:
Con-Test, a Pace Analytical Laboratory 39 Spruce Street East Longmeadow, MA 01028 Phone (413)-525-2332	Pace Analytical-MN 1700 Elm St. Minneapolis, MN 55414 Phone (612) 607-6444

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: none	Requested Analysis: Dioxins/Furans by 8290	LAB USE ONLY
1	MW 601	water	8/27/21 @ 07:37	21H1569-01	GW	2	x	001
2	MW 602	water	8/27/21 @ 08:48	21H1569-02	GW	2	x	002
3	MW 603	water	8/27/21 @ 09:26	21H1569-03	GW	2	x	003
4	MW 604	water	8/27/21 @ 10:25	21H1569-04	GW	2	x	004
5	MW 605	water	8/27/21 @ 11:16	21H1569-05	GW	2	x	005
6								
7								
8								
9								

Transfers	Released By	Date/Time	Reveived By	Date/Time	Comments
1	[illegible]	8/31/21 1600	[illegible] pace	9/1/21 1400	7 day TAT- sampled in VT
2					
3					

Cooler Temperature on Receipt 1.2 °C	Custody Seal Y or N	Received on Ice Y or N	Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

DRAFT

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14A **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Con-test

Project #:

WO#: 10577296

PM: AW1 **Due Date: 09/16/21**

CLIENT: CON-TEST

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 7746 8852 8335

See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ OS418-LS ☐ T4(0254) ☐ T5(0489) ☐ 160285052

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C

Correction Factor: +1.2 **Cooler Temp Corrected w/temp blank:** +1.2 manual °C

Average Corrected Temp (no temp blank only): 1.2 °C

☒ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

USDA Regulated Soil: (☒ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Date/Initials of Person Examining Contents: 9/2/21

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☒ Yes	☐ No		6. 9/9
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: Ashley Williamson **Date:** 9/3/21

Note: Whenever there is a discrepancy affe[cting] [t]his form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: RNC (2)

DRAFT

Pace Analytical	Document Name: Sample Condition Upon Receipt (SCUR) Exception Form	Page 1 of 1
	Document No.: ENV-FRM-MIN4-0142 Rev.01	Pace Analytical Services - Minneapolis

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
1.5		1.2
1.4	HW	
1.3		
0.0		

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

DRAFT

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

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

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

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

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

Method 8290 Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW 601		
Lab Sample ID	10577296001		
Filename	U210908A_09		
Injected By	SMT		
Total Amount Extracted	993 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	08/27/2021 07:37
ICAL ID	U210629	Received	09/01/2021 16:00
CCal Filename(s)	U210908A_01 & U210908A_18	Extracted	09/03/2021 12:00
Method Blank ID	BLANK-92812	Analyzed	09/08/2021 12:42

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.45		2,3,7,8-TCDF-13C	2.00	88
Total TCDF	ND	-----	0.45		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	ND	-----	0.87		2,3,4,7,8-PeCDF-13C	2.00	89
Total TCDD	ND	-----	0.87		1,2,3,7,8-PeCDD-13C	2.00	94
					1,2,3,4,7,8-HxCDF-13C	2.00	76
1,2,3,7,8-PeCDF	ND	-----	0.37		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.27		2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	ND	-----	0.27		1,2,3,7,8,9-HxCDF-13C	2.00	86
					1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	ND	-----	0.65		1,2,3,6,7,8-HxCDD-13C	2.00	83
Total PeCDD	ND	-----	0.65		1,2,3,4,6,7,8-HpCDF-13C	2.00	74
					1,2,3,4,7,8,9-HpCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	ND	-----	0.55		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.53		OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	ND	-----	0.49				
1,2,3,7,8,9-HxCDF	ND	-----	0.37		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.37		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.31		2,3,7,8-TCDD-37Cl4	0.20	112
1,2,3,6,7,8-HxCDD	ND	-----	0.57				
1,2,3,7,8,9-HxCDD	ND	-----	0.59				
Total HxCDD	ND	-----	0.31				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.69		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.1		Equivalence: 0.29 pg/L		
Total HpCDF	ND	-----	0.69		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	-----	2.5	1.3	IJ	0.03 using MassDEP 2005 TEFs		
Total HpCDD	3.0	-----	1.3	J			
OCDF	ND	-----	2.6				
OCDD	18	-----	3.4	BJ			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

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

Method 8290 Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW 602		
Lab Sample ID	10577296002		
Filename	U210908A_10		
Injected By	SMT		
Total Amount Extracted	992 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	08/27/2021 08:48
ICAL ID	U210629	Received	09/01/2021 16:00
CCal Filename(s)	U210908A_01 & U210908A_18	Extracted	09/03/2021 12:00
Method Blank ID	BLANK-92812	Analyzed	09/08/2021 13:27

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.43		2,3,7,8-TCDF-13C	2.00	94
Total TCDF	ND	-----	0.43		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	96
2,3,7,8-TCDD	ND	-----	0.61		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	-----	0.61		1,2,3,7,8-PeCDD-13C	2.00	103
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	ND	-----	0.64		1,2,3,6,7,8-HxCDF-13C	2.00	88
2,3,4,7,8-PeCDF	ND	-----	0.21		2,3,4,6,7,8-HxCDF-13C	2.00	86
Total PeCDF	ND	-----	0.21		1,2,3,7,8,9-HxCDF-13C	2.00	92
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	0.40		1,2,3,6,7,8-HxCDD-13C	2.00	86
Total PeCDD	ND	-----	0.40		1,2,3,4,6,7,8-HpCDF-13C	2.00	81
					1,2,3,4,7,8,9-HpCDF-13C	2.00	81
1,2,3,4,7,8-HxCDF	ND	-----	0.36		1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	ND	-----	0.50		OCDD-13C	4.00	67
2,3,4,6,7,8-HxCDF	ND	-----	0.44				
1,2,3,7,8,9-HxCDF	ND	-----	0.44		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.36		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.38		2,3,7,8-TCDD-37Cl4	0.20	103
1,2,3,6,7,8-HxCDD	ND	-----	0.47				
1,2,3,7,8,9-HxCDD	ND	-----	0.28				
Total HxCDD	ND	-----	0.28				
1,2,3,4,6,7,8-HpCDF	ND	-----	1.5		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.8		Equivalence: 0.18 pg/L		
Total HpCDF	ND	-----	1.5		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	-----	1.6	1.1	IJ	0.02 using MassDEP 2005 TEFs		
Total HpCDD	ND	-----	1.1				
OCDF	ND	-----	2.6				
OCDD	-----	16	2.8	IJ			

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

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Tel: 612-607-1700
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Method 8290 Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW 603		
Lab Sample ID	10577296003		
Filename	U210908A_11		
Injected By	SMT		
Total Amount Extracted	988 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	08/27/2021 09:26
ICAL ID	U210629	Received	09/01/2021 16:00
CCal Filename(s)	U210908A_01 & U210908A_18	Extracted	09/03/2021 12:00
Method Blank ID	BLANK-92812	Analyzed	09/08/2021 14:13

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.48		2,3,7,8-TCDF-13C	2.00	95
Total TCDF	ND	-----	0.48		2,3,7,8-TCDD-13C	2.00	91
					1,2,3,7,8-PeCDF-13C	2.00	96
2,3,7,8-TCDD	ND	-----	0.48		2,3,4,7,8-PeCDF-13C	2.00	98
Total TCDD	ND	-----	0.48		1,2,3,7,8-PeCDD-13C	2.00	103
					1,2,3,4,7,8-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDF	ND	-----	0.54		1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	ND	-----	0.47		2,3,4,6,7,8-HxCDF-13C	2.00	87
Total PeCDF	ND	-----	0.47		1,2,3,7,8,9-HxCDF-13C	2.00	93
					1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	ND	-----	0.36		1,2,3,6,7,8-HxCDD-13C	2.00	84
Total PeCDD	ND	-----	0.36		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	83
1,2,3,4,7,8-HxCDF	ND	-----	1.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	ND	-----	0.62		OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	ND	-----	0.58				
1,2,3,7,8,9-HxCDF	ND	-----	0.41		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.41		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.45		2,3,7,8-TCDD-37Cl4	0.20	107
1,2,3,6,7,8-HxCDD	ND	-----	0.60				
1,2,3,7,8,9-HxCDD	ND	-----	0.22				
Total HxCDD	ND	-----	0.22				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.76		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0		Equivalence: 0.45 pg/L		
Total HpCDF	ND	-----	0.76		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	4.3	-----	0.91	J	0.05 using MassDEP 2005 TEFs		
Total HpCDD	4.3	-----	0.91	J			
OCDF	ND	-----	1.4				
OCDD	23	-----	2.5	BJ			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
B = Less than 10x higher than method blank level

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Method 8290 Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW 604		
Lab Sample ID	10577296004		
Filename	U210908A_12		
Injected By	SMT		
Total Amount Extracted	995 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	08/27/2021 10:25
ICAL ID	U210629	Received	09/01/2021 16:00
CCal Filename(s)	U210908A_01 & U210908A_18	Extracted	09/03/2021 12:00
Method Blank ID	BLANK-92812	Analyzed	09/08/2021 14:58

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.32		2,3,7,8-TCDF-13C	2.00	89
Total TCDF	ND	-----	0.32		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	0.70		2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	ND	-----	0.70		1,2,3,7,8-PeCDD-13C	2.00	94
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.38		1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	0.24		2,3,4,6,7,8-HxCDF-13C	2.00	78
Total PeCDF	ND	-----	0.24		1,2,3,7,8,9-HxCDF-13C	2.00	83
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	ND	-----	0.73		1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	ND	-----	0.73		1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	ND	-----	0.24		1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	-----	0.29		OCDD-13C	4.00	66
2,3,4,6,7,8-HxCDF	ND	-----	0.23				
1,2,3,7,8,9-HxCDF	ND	-----	0.51		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.23		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.44		2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,6,7,8-HxCDD	ND	-----	0.51				
1,2,3,7,8,9-HxCDD	ND	-----	0.43				
Total HxCDD	ND	-----	0.43				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.67		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.0		Equivalence: 0.0063 pg/L		
Total HpCDF	ND	-----	0.67		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.79		0.00 using MassDEP 2005 TEFs		
Total HpCDD	ND	-----	0.79				
OCDF	ND	-----	2.3				
OCDD	-----	6.3	2.5	IJ			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
I = Interference present

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Tel: 612-607-1700
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Method 8290 Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW 605		
Lab Sample ID	10577296005		
Filename	U210908A_13		
Injected By	SMT		
Total Amount Extracted	987 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	08/27/2021 11:16
ICAL ID	U210629	Received	09/01/2021 16:00
CCal Filename(s)	U210908A_01 & U210908A_18	Extracted	09/03/2021 12:00
Method Blank ID	BLANK-92812	Analyzed	09/08/2021 15:43

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.37	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	ND	-----	0.37	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.58	2,3,4,7,8-PeCDF-13C	2.00	85
Total TCDD	ND	-----	0.58	1,2,3,7,8-PeCDD-13C	2.00	91
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	-----	0.43	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	-----	0.40	2,3,4,6,7,8-HxCDF-13C	2.00	76
Total PeCDF	ND	-----	0.40	1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.71	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	ND	-----	0.71	1,2,3,4,6,7,8-HpCDF-13C	2.00	76
				1,2,3,4,7,8,9-HpCDF-13C	2.00	79
1,2,3,4,7,8-HxCDF	ND	-----	0.32	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	-----	0.38	OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	ND	-----	0.39			
1,2,3,7,8,9-HxCDF	ND	-----	0.32	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.32	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.79	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	0.61			
1,2,3,7,8,9-HxCDD	ND	-----	0.71			
Total HxCDD	ND	-----	0.61			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.51	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.68	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	0.51	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	1.2			
Total HpCDD	ND	-----	1.2			
OCDF	ND	-----	2.4			
OCDD	ND	-----	2.5			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Method 8290 Blank Analysis Results

Lab Sample Name	DFBLKPK		
Lab Sample ID	BLANK-92812	Matrix	Water
Filename	U210908A_08	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	09/03/2021 12:00
ICAL ID	U210629	Analyzed	09/08/2021 11:57
CCal Filename(s)	U210908A_01 & U210908A_18	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.28	2,3,7,8-TCDF-13C	2.00	79
Total TCDF	ND	-----	0.28	2,3,7,8-TCDD-13C	2.00	76
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	ND	-----	0.59	2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	0.59	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	-----	0.35	1,2,3,6,7,8-HxCDF-13C	2.00	66
2,3,4,7,8-PeCDF	ND	-----	0.31	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	ND	-----	0.31	1,2,3,7,8,9-HxCDF-13C	2.00	76
				1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	0.43	1,2,3,6,7,8-HxCDD-13C	2.00	68
Total PeCDD	ND	-----	0.43	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
				1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	-----	0.46	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	0.36	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	ND	-----	0.32			
1,2,3,7,8,9-HxCDF	ND	-----	0.49	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.32	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.51	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	0.54			
1,2,3,7,8,9-HxCDD	ND	-----	0.53			
Total HxCDD	ND	-----	0.51			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.46	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.91	Equivalence: 0.11 pg/L		
Total HpCDF	ND	-----	0.46	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	-----	1.1	0.86 IJ			
Total HpCDD	ND	-----	0.86			
OCDF	ND	-----	2.6			
OCDD	5.0	-----	3.4 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-92797		
Filename	U210908A_02	Matrix	Water
Total Amount Extracted	1010 mL	Dilution	NA
ICAL ID	U210629	Extracted	09/03/2021 12:00
CCal Filename(s)	U210908A_01 & U210908A_18	Analyzed	09/08/2021 07:28
Method Blank ID	BLANK-92812	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.20	99	2,3,7,8-TCDF-13C	2.0	113
Total TCDF				2,3,7,8-TCDD-13C	2.0	111
				1,2,3,7,8-PeCDF-13C	2.0	114
2,3,7,8-TCDD	0.20	0.21	107	2,3,4,7,8-PeCDF-13C	2.0	117
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	124
				1,2,3,4,7,8-HxCDF-13C	2.0	91
1,2,3,7,8-PeCDF	1.0	0.97	97	1,2,3,6,7,8-HxCDF-13C	2.0	112
2,3,4,7,8-PeCDF	1.0	1.0	102	2,3,4,6,7,8-HxCDF-13C	2.0	107
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	113
				1,2,3,4,7,8-HxCDD-13C	2.0	98
1,2,3,7,8-PeCDD	1.0	0.94	94	1,2,3,6,7,8-HxCDD-13C	2.0	102
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	106
				1,2,3,4,7,8,9-HpCDF-13C	2.0	112
1,2,3,4,7,8-HxCDF	1.0	1.1	113	1,2,3,4,6,7,8-HpCDD-13C	2.0	117
1,2,3,6,7,8-HxCDF	1.0	0.99	99	OCDD-13C	4.0	100
2,3,4,6,7,8-HxCDF	1.0	1.0	104			
1,2,3,7,8,9-HxCDF	1.0	1.0	100	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	0.98	98	2,3,7,8-TCDD-37Cl4	0.20	127
1,2,3,6,7,8-HxCDD	1.0	1.2	116			
1,2,3,7,8,9-HxCDD	1.0	1.2	117			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.00	100			
1,2,3,4,7,8,9-HpCDF	1.0	1.0	103			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.96	96			
Total HpCDD						
OCDF	2.0	2.0	102			
OCDD	2.0	2.2	109			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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

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

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCSD-92798		
Filename	U210908A_03	Matrix	Water
Total Amount Extracted	1030 mL	Dilution	NA
ICAL ID	U210629	Extracted	09/03/2021 12:00
CCal Filename(s)	U210908A_01 & U210908A_18	Analyzed	09/08/2021 08:11
Method Blank ID	BLANK-92812	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.19	95	2,3,7,8-TCDF-13C	2.0	102
Total TCDF				2,3,7,8-TCDD-13C	2.0	97
				1,2,3,7,8-PeCDF-13C	2.0	103
2,3,7,8-TCDD	0.20	0.22	108	2,3,4,7,8-PeCDF-13C	2.0	107
Total TCDD				1,2,3,7,8-PeCDD-13C	2.0	113
				1,2,3,4,7,8-HxCDF-13C	2.0	85
1,2,3,7,8-PeCDF	1.0	0.98	98	1,2,3,6,7,8-HxCDF-13C	2.0	90
2,3,4,7,8-PeCDF	1.0	0.94	94	2,3,4,6,7,8-HxCDF-13C	2.0	92
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.0	100
				1,2,3,4,7,8-HxCDD-13C	2.0	84
1,2,3,7,8-PeCDD	1.0	0.92	92	1,2,3,6,7,8-HxCDD-13C	2.0	96
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.0	90
				1,2,3,4,7,8,9-HpCDF-13C	2.0	96
1,2,3,4,7,8-HxCDF	1.0	1.0	105	1,2,3,4,6,7,8-HpCDD-13C	2.0	103
1,2,3,6,7,8-HxCDF	1.0	0.96	96	OCDD-13C	4.0	80
2,3,4,6,7,8-HxCDF	1.0	0.99	99			
1,2,3,7,8,9-HxCDF	1.0	0.97	97	1,2,3,4-TCDD-13C	2.0	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.0	NA
1,2,3,4,7,8-HxCDD	1.0	1.0	101	2,3,7,8-TCDD-37Cl4	0.20	114
1,2,3,6,7,8-HxCDD	1.0	1.0	103			
1,2,3,7,8,9-HxCDD	1.0	1.1	108			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.0	1.0	105			
1,2,3,4,7,8,9-HpCDF	1.0	0.99	99			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.0	0.96	96			
Total HpCDD						
OCDF	2.0	2.0	99			
OCDD	2.0	2.2	108			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

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Minneapolis, MN 55414

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

Method 8290

Spike Recovery Relative Percent Difference (RPD) Results

Client	Con-Test Laboratories		
Spike 1 ID	LCS-92797	Spike 2 ID	LCSD-92798
Spike 1 Filename	U210908A_02	Spike 2 Filename	U210908A_03

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	99	95	4.1
2,3,7,8-TCDD	107	108	0.9
1,2,3,7,8-PeCDF	97	98	1.0
2,3,4,7,8-PeCDF	102	94	8.2
1,2,3,7,8-PeCDD	94	92	2.2
1,2,3,4,7,8-HxCDF	113	105	7.3
1,2,3,6,7,8-HxCDF	99	96	3.1
2,3,4,6,7,8-HxCDF	104	99	4.9
1,2,3,7,8,9-HxCDF	100	97	3.0
1,2,3,4,7,8-HxCDD	98	101	3.0
1,2,3,6,7,8-HxCDD	116	103	11.9
1,2,3,7,8,9-HxCDD	117	108	8.0
1,2,3,4,6,7,8-HpCDF	100	105	4.9
1,2,3,4,7,8,9-HpCDF	103	99	4.0
1,2,3,4,6,7,8-HpCDD	96	96	0.0
OCDF	102	99	3.0
OCDD	109	108	0.9

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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December 15, 2021

Nancy Marshall
Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845

Project Location: Great Barrington, MA
Client Job Number:
Project Number: 021.01074.017
Laboratory Work Order Number: 21K0303

Enclosed are results of analyses for samples as received by the laboratory on November 4, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott C. Basal
Project Manager

DRAFT

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Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845
ATTN: Nancy Marshall

REPORT DATE: 12/15/2021

PURCHASE ORDER NUMBER: 13378

PROJECT NUMBER: 021.01074.017

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21K0303

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Great Barrington, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW601-W1-110221	21K0303-01	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW602-W1-110221	21K0303-02	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
MW603-W1-110321	21K0303-03	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW604-W1-110321	21K0303-04	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW605-W1-110321	21K0303-05	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

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The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW601-W1-110221 | Sampled: 11/2/2021 13:06

Sample ID: 21K0303-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	11/9/21	11/19/21 15:42	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	26.8	15-110		11/19/21 15:42
Phenol-d6 (SIM)	24.4	15-110		11/19/21 15:42
Nitrobenzene-d5	48.3	30-130		11/19/21 15:42
2-Fluorobiphenyl	46.7	30-130		11/19/21 15:42
2,4,6-Tribromophenol (SIM)	71.2	15-110		11/19/21 15:42
p-Terphenyl-d14	78.3	30-130		11/19/21 15:42

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW601-W1-110221 | Sampled: 11/2/2021 13:06

Sample ID: 21K0303-01

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached	see attached	see attached	1		1613B			PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW602-W1-110221 | Sampled: 11/2/2021 14:13

Sample ID: 21K0303-02

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached	see attached	see attached	1		1613B			PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW603-W1-110321 | Sampled: 11/3/2021 09:14

Sample ID: 21K0303-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	11/9/21	11/22/21 23:20	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	30.6	15-110		11/22/21 23:20
Phenol-d6 (SIM)	25.8	15-110		11/22/21 23:20
Nitrobenzene-d5	54.4	30-130		11/22/21 23:20
2-Fluorobiphenyl	49.8	30-130		11/22/21 23:20
2,4,6-Tribromophenol (SIM)	64.8	15-110		11/22/21 23:20
p-Terphenyl-d14	76.2	30-130		11/22/21 23:20

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW603-W1-110321 | Sampled: 11/3/2021 09:14

Sample ID: 21K0303-03

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached	see attached	see attached	1		1613B			PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW604-W1-110321 | Sampled: 11/3/2021 10:09

Sample ID: 21K0303-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	11/9/21	11/22/21 23:48	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	29.5	15-110		11/22/21 23:48
Phenol-d6 (SIM)	25.0	15-110		11/22/21 23:48
Nitrobenzene-d5	51.8	30-130		11/22/21 23:48
2-Fluorobiphenyl	48.4	30-130		11/22/21 23:48
2,4,6-Tribromophenol (SIM)	65.0	15-110		11/22/21 23:48
p-Terphenyl-d14	73.8	30-130		11/22/21 23:48

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW604-W1-110321 | Sampled: 11/3/2021 10:09

Sample ID: 21K0303-04

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached	see attached	see attached	1		1613B			PMN

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW605-W1-110321 | Sampled: 11/3/2021 11:08

Sample ID: 21K0303-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.98	µg/L	1		SW-846 8270E	11/9/21	11/27/21 13:22	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	22.0	15-110		11/27/21 13:22
Phenol-d6 (SIM)	19.4	15-110		11/27/21 13:22
Nitrobenzene-d5	36.6	30-130		11/27/21 13:22
2-Fluorobiphenyl	36.9	30-130		11/27/21 13:22
2,4,6-Tribromophenol (SIM)	59.8	15-110		11/27/21 13:22
p-Terphenyl-d14	59.6	30-130		11/27/21 13:22

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Project Location: Great Barrington, MA | Sample Description: | Work Order: 21K0303

Date Received: 11/4/2021

Field Sample #: MW605-W1-110321 | Sampled: 11/3/2021 11:08

Sample ID: 21K0303-05

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	see attached	see attached	see attached	1		1613B			PMN

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Sample Extraction Data

Prep Method: SW-846 3510C **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21K0303-01 [MW601-W1-110221]	B294322	1030	1.00	11/09/21
21K0303-03 [MW603-W1-110321]	B294322	1040	1.00	11/09/21
21K0303-04 [MW604-W1-110321]	B294322	1030	1.00	11/09/21
21K0303-05 [MW605-W1-110321]	B294322	1020	1.00	11/09/21

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B294322 - SW-846 3510C										
Blank (B294322-BLK1)				Prepared: 11/09/21 Analyzed: 11/11/21						
Pentachlorophenol (SIM)	ND	1.0	µg/L							
Surrogate: 2-Fluorophenol (SIM)	*82.0*		µg/L	200		41.0	15-110			
Surrogate: Phenol-d6 (SIM)	*68.2*		µg/L	200		34.1	15-110			
Surrogate: Nitrobenzene-d5	*60.4*		µg/L	100		60.4	30-130			
Surrogate: 2-Fluorobiphenyl	*56.4*		µg/L	100		56.4	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*189*		µg/L	200		94.4	15-110			
Surrogate: p-Terphenyl-d14	*94.7*		µg/L	100		94.7	30-130			
LCS (B294322-BS1)				Prepared: 11/09/21 Analyzed: 11/11/21						
Pentachlorophenol (SIM)	33.8	20	µg/L	50.0		67.6	40-140			
Surrogate: 2-Fluorophenol (SIM)	*64.9*		µg/L	200		32.4	15-110			
Surrogate: Phenol-d6 (SIM)	*55.9*		µg/L	200		28.0	15-110			
Surrogate: Nitrobenzene-d5	*44.9*		µg/L	100		44.9	30-130			
Surrogate: 2-Fluorobiphenyl	*50.9*		µg/L	100		50.9	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*144*		µg/L	200		71.9	15-110			
Surrogate: p-Terphenyl-d14	*75.3*		µg/L	100		75.3	30-130			
LCS Dup (B294322-BSD1)				Prepared: 11/09/21 Analyzed: 11/11/21						
Pentachlorophenol (SIM)	34.5	20	µg/L	50.0		69.1	40-140	2.17	20	
Surrogate: 2-Fluorophenol (SIM)	*68.3*		µg/L	200		34.1	15-110			
Surrogate: Phenol-d6 (SIM)	*58.7*		µg/L	200		29.4	15-110			
Surrogate: Nitrobenzene-d5	*47.4*		µg/L	100		47.4	30-130			
Surrogate: 2-Fluorobiphenyl	*51.0*		µg/L	100		51.0	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*151*		µg/L	200		75.5	15-110			
Surrogate: p-Terphenyl-d14	*87.6*		µg/L	100		87.6	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
Nitrobenzene-d5	VA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

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21L0303

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	Ransom Consulting, LLC
Address:	50 High Street, Suite 25, North Andover, MA
Phone:	978-465-1822
Project Name:	NELH
Project Location:	Great Barrington, MA
Project Number:	021.01074.017
Project Manager:	Nancy Marshall
Pace Quote Name/Number:	
Invoice Recipient:	Nancy Marshall
Sampled By:	CRW

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date: STD

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: nmarshall@ransomenv.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PCP via 8270	Dioxins via 1613											
1	MWG01-WI-110221	11/2/2021	13:06	G	GW			✓				✓	✓											
2	MWG02-WI-110221	11/2/2021	14:13	G	GW			✓					✓											
3	MWG03-WI-110321	11/3/2021	9:14	G	GW			✓				✓	✓											
4	MWG04-WI-110321	11/3/2021	10:09	G	GW			✓				✓	✓											
5	MWG05-WI-110321	11/3/2021	11:08	G	GW			✓				✓	✓											

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:	Received by: (signature)	Date/Time:
	11/4/2021 13:47		11/4/21 1347
	11/4/21 1705		11.4.21 1705

Client Comments: PO = 13378

Detection Limit Requirements
MA
CT

Special Requirements
☑ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client Ransom

Received By LR Date 11-4-21 Time 1705

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 2.3, 3.1, 2.0
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA
Was COC Relinquished ? T Does Chain Agree With Samples? T
Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all pertinent Information? Client T Analysis ID's T Sampler Name T
Project T Collection Dates/Times T
Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified? _____
Are there Rushes? F Who was notified? _____
Are there Short Holds? F Who was notified? _____
Is there enough Volume? T
Is there Headspace where applicable? NA MS/MSD? F
Proper Media/Containers Used? T Is splitting samples required? F
Were trip blanks received? F On COC? F
Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	20	1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

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

Pace Analytical™

www.pacelabs.com

Report Prepared for:

Kerry McGee
Con-Test Laboratories
39 Spruce Street
East Longmeadow MA 01028

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10586732
Sample Receipt Date: 11/09/2021
Client Project #: 21K0303
Client Sub PO #: N/A
State Cert #: 2926.01

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

December 10, 2021

Nick Gilmartin, Project Manager
(612) 656-2262
(612) 607-6444 (fax)
Nicholas.Gilmartin@pacelabs.com

Report Prepared Date:
December 10, 2021

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on five samples submitted by a representative of Con-Test Analytical Laboratory. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The estimated detection limits (EDLs) were based on signal-to-noise measurements. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 41-91%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

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

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 89-115% with relative percent differences of 0.0-10.3%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 21K0303 Workorder Name: NELH Owner Received Date: 11/4/2021 Results Requested By: 11/26/2021

Report To:	Subcontract To:
Scott Basal Con-Test, a Pace Analytical Laboratory 39 Spruce Street East Longmeadow, MA 01028 Phone (413)-525-2332	Pace Analytical-MN 1700 Elm St. Minneapolis, MN 55414 Phone (612) 607-6444

WO# : 10586732

10586732

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: none	Requested Analysis: Dioxins via method 1613	LAB USE ONLY
1	MW601-W1-110221	water	11/2/21 @ 13:06	21K0303-01	GW	2	x	CC1
2	MW602-W1-110221	water	11/2/21 @ 14:13	21K0303-02	GW	2	x	CC2
3	MW603-W1-110221	water	11/3/21 @ 09:14	21K0303-03	GW	2	x	CC3
4	MW604-W1-110221	water	11/3/21 @ 10:09	21K0303-04	GW	2	x	CC4
5	MW605-W1-110221	water	11/3/21 @ 11:08	21K0303-05	GW	2	x	CC5
6								
7								
8								
9								

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1		11/8/21 1515		11/9/21 850	15 day TAT- sampled in MA MA MCP
2					
3					

Cooler Temperature on Receipt 0.8, 3.8 °C | **Custody Seal Y or N** | **Received on Ice Y or N** | **Sample Intact Y or N**

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC
This chain of custody is considered complete as is since this information is available in the owner laboratory.

DRAFT

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Con-Test **Project #:** **WO#: 10586732**

PM: AW1 Due Date: 12/02/21
CLIENT: CON-TEST

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: _____ See Exceptions ☒ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ OS418-LS ☐ T4(0254) ☐ T5(0489) ☐ 160285052 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** _____ °C **Average Corrected Temp (no temp blank only):** 0.8, 3.8 °C ☒ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: -0.1 **Cooler Temp Corrected w/temp blank:** _____ °C

USDA Regulated Soil: (☒ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** HB 11/9/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☐ Yes	☐ No	☒ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Ashley Williams **Date:** 11/9/21

Note: Whenever there is a discrepancy affec… his form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: HB 2

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
1.0	0.9	0.8
0.8	0.7	
0.8	0.7	T3
0.9	0.8	

Tracking Number/Temperature	
7751 4972 9992	0.8
7751 4973 0757	3.8

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
2.6	2.5	3.8
2.4	2.3	T3
5.5	5.4	
5.1	5.0	

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

DRAFT

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

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

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

0.000.03 using MassDEP 2005 TEFs using Mass

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW601-W1-110221		
Lab Sample ID	10586732001		
Filename	F211124C_13		
Injected By	CVS		
Total Amount Extracted	969 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/02/2021 13:06
ICAL ID	F211124	Received	11/09/2021 08:50
CCal Filename(s)	F211124C_01	Extracted	11/10/2021 10:20
Method Blank ID	BLANK-94221	Analyzed	11/24/2021 22:07

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.3	2,3,7,8-TCDF-13C	2.00	71
Total TCDF	ND	-----	1.3	2,3,7,8-TCDD-13C	2.00	68
				1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	-----	3.0	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	ND	-----	3.0	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	1.4	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	1.2	2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	1.2	1,2,3,7,8,9-HxCDF-13C	2.00	69
				1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	1.6	1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	ND	-----	1.6	1,2,3,4,6,7,8-HpCDF-13C	2.00	67
				1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	-----	2.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	1.9	OCDD-13C	4.00	49
2,3,4,6,7,8-HxCDF	ND	-----	2.4			
1,2,3,7,8,9-HxCDF	ND	-----	1.9	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	1.9	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.5	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	2.3			
1,2,3,7,8,9-HxCDD	ND	-----	1.6			
Total HxCDD	ND	-----	1.5			
1,2,3,4,6,7,8-HpCDF	ND	-----	2.1	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	2.9	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	2.1	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	2.0			
Total HpCDD	ND	-----	2.0			
OCDF	ND	-----	5.3			
OCDD	ND	-----	11			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW602-W1-110221		
Lab Sample ID	10586732002		
Filename	F211124C_14		
Injected By	CVS		
Total Amount Extracted	979 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/02/2021 14:13
ICAL ID	F211124	Received	11/09/2021 08:50
CCal Filename(s)	F211124C_01	Extracted	11/10/2021 10:20
Method Blank ID	BLANK-94221	Analyzed	11/24/2021 22:53

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.7		2,3,7,8-TCDF-13C	2.00	75
Total TCDF	1.8	-----	1.7	J	2,3,7,8-TCDD-13C	2.00	72
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	1.2		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	1.2		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	77
1,2,3,7,8-PeCDF	ND	-----	2.2		1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	ND	-----	0.98		2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	ND	-----	0.98		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	1.5		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	ND	-----	1.5		1,2,3,4,6,7,8-HpCDF-13C	2.00	70
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	1.6		1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	ND	-----	1.4		OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	ND	-----	1.2				
1,2,3,7,8,9-HxCDF	ND	-----	0.66		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.66		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.4		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	1.3				
1,2,3,7,8,9-HxCDD	ND	-----	1.0				
Total HxCDD	ND	-----	1.0				
1,2,3,4,6,7,8-HpCDF	ND	-----	1.3		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.5		Equivalence: 0.018 pg/L		
Total HpCDF	ND	-----	1.3		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	1.1		0.00 using MassDEP 2005 TEFs		
Total HpCDD	ND	-----	1.1				
OCDF	ND	-----	5.2				
OCDD	ND	-----	9.3				

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

J = Estimated value

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW603-W1-110221		
Lab Sample ID	10586732003		
Filename	F211124C_15		
Injected By	CVS		
Total Amount Extracted	961 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/03/2021 09:14
ICAL ID	F211124	Received	11/09/2021 08:50
CCal Filename(s)	F211124C_01	Extracted	11/10/2021 10:20
Method Blank ID	BLANK-94221	Analyzed	11/24/2021 23:40

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	2.00	70
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	2.00	69
					1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	87
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	1.3		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.72		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	0.72		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	ND	-----	1.1		1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	ND	-----	1.1		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	1.9		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	1.7		OCDD-13C	4.00	47
2,3,4,6,7,8-HxCDF	ND	-----	1.2				
1,2,3,7,8,9-HxCDF	ND	-----	1.00		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	1.00		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.4		2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	0.94				
1,2,3,7,8,9-HxCDD	ND	-----	0.81				
Total HxCDD	ND	-----	0.81				
1,2,3,4,6,7,8-HpCDF	-----	7.8	1.7	PJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.5		Equivalence: 1.3 pg/L		
Total HpCDF	ND	-----	1.5		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	5.2	-----	1.0	J	0.14 using MassDEP 2005 TEFs		
Total HpCDD	5.2	-----	1.0	BJ			
OCDF	ND	-----	8.2				
OCDD	-----	32	5.9	IJ			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
B = Less than 10x higher than method blank level
P = PCDE Interference
I = Interference present

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW604-W1-110221		
Lab Sample ID	10586732004		
Filename	F211124C_16		
Injected By	CVS		
Total Amount Extracted	983 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/03/2021 10:09
ICAL ID	F211124	Received	11/09/2021 08:50
CCal Filename(s)	F211124C_01	Extracted	11/10/2021 10:20
Method Blank ID	BLANK-94221	Analyzed	11/25/2021 00:26

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.4		2,3,7,8-TCDF-13C	2.00	63
Total TCDF	ND	-----	1.4		2,3,7,8-TCDD-13C	2.00	60
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	1.2		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	ND	-----	1.2		1,2,3,7,8-PeCDD-13C	2.00	74
					1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	1.5		1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	ND	-----	0.76		2,3,4,6,7,8-HxCDF-13C	2.00	68
Total PeCDF	ND	-----	0.76		1,2,3,7,8,9-HxCDF-13C	2.00	65
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	1.6		1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	ND	-----	1.6		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	53
1,2,3,4,7,8-HxCDF	ND	-----	1.2		1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	-----	1.1		OCDD-13C	4.00	43
2,3,4,6,7,8-HxCDF	ND	-----	1.2				
1,2,3,7,8,9-HxCDF	ND	-----	1.1		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	1.1		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.4		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	2.0				
1,2,3,7,8,9-HxCDD	ND	-----	1.1				
Total HxCDD	ND	-----	1.1				
1,2,3,4,6,7,8-HpCDF	ND	-----	1.2		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.5		Equivalence: 0.0063 pg/L		
Total HpCDF	ND	-----	1.2		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	1.5		0.00 using MassDEP 2005 TEFs		
Total HpCDD	ND	-----	1.5				
OCDF	ND	-----	4.9				
OCDD	-----	6.3	5.3	IJ			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
I = Interference present

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	MW605-W1-110221		
Lab Sample ID	10586732005		
Filename	F211125A_07		
Injected By	CVS		
Total Amount Extracted	981 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/03/2021 11:08
ICAL ID	F211124	Received	11/09/2021 08:50
CCal Filename(s)	F211124C_17	Extracted	11/10/2021 10:20
Method Blank ID	BLANK-94221	Analyzed	11/25/2021 06:34

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.7	2,3,7,8-TCDF-13C	2.00	60
Total TCDF	ND	-----	1.7	2,3,7,8-TCDD-13C	2.00	58
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	1.8	2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	ND	-----	1.8	1,2,3,7,8-PeCDD-13C	2.00	74
				1,2,3,4,7,8-HxCDF-13C	2.00	63
1,2,3,7,8-PeCDF	ND	-----	1.7	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	-----	0.90	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	ND	-----	0.90	1,2,3,7,8,9-HxCDF-13C	2.00	61
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	-----	1.8	1,2,3,6,7,8-HxCDD-13C	2.00	58
Total PeCDD	ND	-----	1.8	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	ND	-----	1.8	1,2,3,4,6,7,8-HpCDD-13C	2.00	61
1,2,3,6,7,8-HxCDF	ND	-----	1.7	OCDD-13C	4.00	41
2,3,4,6,7,8-HxCDF	ND	-----	1.2			
1,2,3,7,8,9-HxCDF	ND	-----	1.1	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	1.1	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.5	2,3,7,8-TCDD-37Cl4	0.20	70
1,2,3,6,7,8-HxCDD	ND	-----	1.1			
1,2,3,7,8,9-HxCDD	ND	-----	1.3			
Total HxCDD	ND	-----	1.1			
1,2,3,4,6,7,8-HpCDF	ND	-----	1.6	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	2.6	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	1.6	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	1.5			
Total HpCDD	ND	-----	1.5			
OCDF	ND	-----	6.5			
OCDD	ND	-----	4.2			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Method 1613B Blank Analysis Results

Lab Sample Name	MB		
Lab Sample ID	BLANK-94221	Matrix	Water
Filename	U211114A_05	Dilution	NA
Total Amount Extracted	1020 mL	Extracted	11/10/2021 10:20
ICAL ID	U211107	Analyzed	11/14/2021 13:22
CCal Filename(s)	U211114A_02	Injected By	JRH

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.53		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	ND	-----	0.53		2,3,7,8-TCDD-13C	2.00	79
					1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	1.2		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	-----	1.2		1,2,3,7,8-PeCDD-13C	2.00	103
					1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	1.4	-----	0.41	J	1,2,3,6,7,8-HxCDF-13C	2.00	65
2,3,4,7,8-PeCDF	-----	0.66	0.27	IJ	2,3,4,6,7,8-HxCDF-13C	2.00	90
Total PeCDF	1.4	-----	0.27	J	1,2,3,7,8,9-HxCDF-13C	2.00	85
					1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,7,8-PeCDD	-----	0.64	0.42	IJ	1,2,3,6,7,8-HxCDD-13C	2.00	88
Total PeCDD	ND	-----	0.42		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	59
1,2,3,4,7,8-HxCDF	1.5	-----	0.57	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	-----	0.71		OCDD-13C	4.00	75
2,3,4,6,7,8-HxCDF	ND	-----	0.57				
1,2,3,7,8,9-HxCDF	ND	-----	0.86		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.5	-----	0.57	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.7	-----	0.66	J	2,3,7,8-TCDD-37Cl4	0.20	109
1,2,3,6,7,8-HxCDD	ND	-----	0.80				
1,2,3,7,8,9-HxCDD	0.94	-----	0.69	J			
Total HxCDD	2.7	-----	0.66	J			
1,2,3,4,6,7,8-HpCDF	1.1	-----	0.75	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	1.3		Equivalence: 2.1 pg/L		
Total HpCDF	1.1	-----	0.75	J	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	-----	1.7	0.47	IJ			
Total HpCDD	1.1	-----	0.47	J			
OCDF	3.9	-----	1.4	J			
OCDD	19	-----	2.6	J			

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

J = Estimated value
I = Interference present

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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-94399		
Filename	U211112A_09	Matrix	Water
Total Amount Extracted	1010 mL	Dilution	NA
ICAL ID	U211107	Extracted	11/10/2021 10:20
CCal Filename	U211112A_01	Analyzed	11/12/2021 13:37
Method Blank ID	BLANK-94221	Injected By	JRH

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	103
2,3,7,8-TCDD	10	11	6.7	15.8	107
1,2,3,7,8-PeCDF	50	46	40.0	67.0	91
2,3,4,7,8-PeCDF	50	46	34.0	80.0	91
1,2,3,7,8-PeCDD	50	44	35.0	71.0	89
1,2,3,4,7,8-HxCDF	50	47	36.0	67.0	95
1,2,3,6,7,8-HxCDF	50	49	42.0	65.0	98
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	99
1,2,3,7,8,9-HxCDF	50	49	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	46	35.0	82.0	92
1,2,3,6,7,8-HxCDD	50	57	38.0	67.0	113
1,2,3,7,8,9-HxCDD	50	50	32.0	81.0	101
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	103
1,2,3,4,7,8,9-HpCDF	50	53	39.0	69.0	107
1,2,3,4,6,7,8-HpCDD	50	46	35.0	70.0	92
OCDF	100	110	63.0	170.0	109
OCDD	100	110	78.0	144.0	108
2,3,7,8-TCDD-37Cl4	10	9.0	3.1	19.1	90
2,3,7,8-TCDF-13C	100	70	22.0	152.0	70
2,3,7,8-TCDD-13C	100	64	20.0	175.0	64
1,2,3,7,8-PeCDF-13C	100	78	21.0	192.0	78
2,3,4,7,8-PeCDF-13C	100	82	13.0	328.0	82
1,2,3,7,8-PeCDD-13C	100	85	21.0	227.0	85
1,2,3,4,7,8-HxCDF-13C	100	62	19.0	202.0	62
1,2,3,6,7,8-HxCDF-13C	100	71	21.0	159.0	71
2,3,4,6,7,8-HxCDF-13C	100	77	22.0	176.0	77
1,2,3,7,8,9-HxCDF-13C	100	73	17.0	205.0	73
1,2,3,4,7,8-HxCDD-13C	100	81	21.0	193.0	81
1,2,3,6,7,8-HxCDD-13C	100	70	25.0	163.0	70
1,2,3,4,6,7,8-HpCDF-13C	100	60	21.0	158.0	60
1,2,3,4,7,8,9-HpCDF-13C	100	49	20.0	186.0	49
1,2,3,4,6,7,8-HpCDD-13C	100	68	26.0	166.0	68
OCDD-13C	200	110	26.0	397.0	57

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-94400		
Filename	U211112A_10	Matrix	Water
Total Amount Extracted	1010 mL	Dilution	NA
ICAL ID	U211107	Extracted	11/10/2021 10:20
CCal Filename	U211112A_01	Analyzed	11/12/2021 14:22
Method Blank ID	BLANK-94221	Injected By	JRH

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	103
2,3,7,8-TCDD	10	11	6.7	15.8	115
1,2,3,7,8-PeCDF	50	48	40.0	67.0	96
2,3,4,7,8-PeCDF	50	47	34.0	80.0	94
1,2,3,7,8-PeCDD	50	45	35.0	71.0	90
1,2,3,4,7,8-HxCDF	50	49	36.0	67.0	98
1,2,3,6,7,8-HxCDF	50	52	42.0	65.0	104
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	98
1,2,3,7,8,9-HxCDF	50	51	39.0	65.0	101
1,2,3,4,7,8-HxCDD	50	51	35.0	82.0	102
1,2,3,6,7,8-HxCDD	50	53	38.0	67.0	106
1,2,3,7,8,9-HxCDD	50	52	32.0	81.0	103
1,2,3,4,6,7,8-HpCDF	50	51	41.0	61.0	101
1,2,3,4,7,8,9-HpCDF	50	50	39.0	69.0	99
1,2,3,4,6,7,8-HpCDD	50	47	35.0	70.0	95
OCDF	100	110	63.0	170.0	114
OCDD	100	110	78.0	144.0	114
2,3,7,8-TCDD-37Cl4	10	10	3.1	19.1	102
2,3,7,8-TCDF-13C	100	88	22.0	152.0	88
2,3,7,8-TCDD-13C	100	76	20.0	175.0	76
1,2,3,7,8-PeCDF-13C	100	91	21.0	192.0	91
2,3,4,7,8-PeCDF-13C	100	92	13.0	328.0	92
1,2,3,7,8-PeCDD-13C	100	93	21.0	227.0	93
1,2,3,4,7,8-HxCDF-13C	100	76	19.0	202.0	76
1,2,3,6,7,8-HxCDF-13C	100	81	21.0	159.0	81
2,3,4,6,7,8-HxCDF-13C	100	93	22.0	176.0	93
1,2,3,7,8,9-HxCDF-13C	100	87	17.0	205.0	87
1,2,3,4,7,8-HxCDD-13C	100	92	21.0	193.0	92
1,2,3,6,7,8-HxCDD-13C	100	82	25.0	163.0	82
1,2,3,4,6,7,8-HpCDF-13C	100	67	21.0	158.0	67
1,2,3,4,7,8,9-HpCDF-13C	100	58	20.0	186.0	58
1,2,3,4,6,7,8-HpCDD-13C	100	73	26.0	166.0	73
OCDD-13C	200	130	26.0	397.0	63

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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Minneapolis, MN 55414

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

Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Con-Test Laboratories		
Spike 1 ID	LCS-94399	Spike 2 ID	LCSD-94400
Spike 1 Filename	U211112A_09	Spike 2 Filename	U211112A_10

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	103	103	0.0
2,3,7,8-TCDD	107	115	7.2
1,2,3,7,8-PeCDF	91	96	5.3
2,3,4,7,8-PeCDF	91	94	3.2
1,2,3,7,8-PeCDD	89	90	1.1
1,2,3,4,7,8-HxCDF	95	98	3.1
1,2,3,6,7,8-HxCDF	98	104	5.9
2,3,4,6,7,8-HxCDF	99	98	1.0
1,2,3,7,8,9-HxCDF	98	101	3.0
1,2,3,4,7,8-HxCDD	92	102	10.3
1,2,3,6,7,8-HxCDD	113	106	6.4
1,2,3,7,8,9-HxCDD	101	103	2.0
1,2,3,4,6,7,8-HpCDF	103	101	2.0
1,2,3,4,7,8,9-HpCDF	107	99	7.8
1,2,3,4,6,7,8-HpCDD	92	95	3.2
OCDF	109	114	4.5
OCDD	108	114	5.4

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test, a Pace Analytical Laboratory	Project #: 21K0303
Project Location: Great Barrington, MA	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

21K0303-01 thru 21K0303-05

Matrices: Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	MassDEP VPH (GC/PID/FID) CAM IV A ( )	8082 PCB CAM V A ( )	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B (X)	7010 Metals CAM III C ( )	MassDEP VPH (GC/MS) CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

<u>Data User Note:</u> Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were all QC perfomance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes	☑ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Lisa Worthington Position: Technical Representative

Printed Name: Lisa A. Worthington Date: 12/15/21

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

April 5, 2022

Nancy Marshall
Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845

Project Location: 100 Bridge St, Great Barrington, MA
Client Job Number:
Project Number: 021.01074.019
Laboratory Work Order Number: 22C0990

Enclosed are results of analyses for samples as received by the laboratory on March 15, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott C. Basal
Project Manager

DRAFT

0.00.19 using MassDEP 2005 TEFs9 using Mass

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Ransom Consulting, Inc. - North Andover
50 High Street, Suite 25
North Andover, MA 01845
ATTN: Nancy Marshall

REPORT DATE: 4/5/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 021.01074.019

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22C0990

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 100 Bridge St, Great Barrington, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW 601-W1-031122	22C0990-01	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW 602-W1-031122	22C0990-02	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
MW 603-W1-031122	22C0990-03	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW 604-W1-031122	22C0990-04	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	
MW 605-W1-031122	22C0990-05	Ground Water		EPA 1613B	CT PH-0256/NY11647/MN00064
				SW-846 8270E	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8270E

Qualifications:

H-06

Sample was extracted past the recommended holding time.

Analyte & Samples(s) Qualified:

22C0990-01[MW 601-W1-031122], 22C0990-03[MW 603-W1-031122], 22C0990-04[MW 604-W1-031122], 22C0990-05[MW 605-W1-031122]

DRAFT

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Tod E. Kopyscinski
Laboratory Director

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 601-W1-031122 Sampled: 3/11/2022 12:35

Sample ID: 22C0990-01

Sample Matrix: Ground Water

Sample Flags: H-06

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.97	µg/L	1		SW-846 8270E	3/21/22	3/31/22 13:57	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	28.7	15-110		3/31/22 13:57
Phenol-d6 (SIM)	25.5	15-110		3/31/22 13:57
Nitrobenzene-d5	52.6	30-130		3/31/22 13:57
2-Fluorobiphenyl	47.2	30-130		3/31/22 13:57
2,4,6-Tribromophenol (SIM)	72.4	15-110		3/31/22 13:57
p-Terphenyl-d14	68.2	30-130		3/31/22 13:57

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 601-W1-031122 Sampled: 3/11/2022 12:35

Sample ID: 22C0990-01

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	See Attache		pg/L	1		EPA 1613B	3/18/22	3/24/22 9:31	PMN

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 602-W1-031122 Sampled: 3/11/2022 17:25

Sample ID: 22C0990-02

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	See Attached		pg/L	1		EPA 1613B	3/18/22	3/24/22 10:18	PMN

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 603-W1-031122 Sampled: 3/11/2022 13:40

Sample ID: 22C0990-03

Sample Matrix: Ground Water

Sample Flags: H-06

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.95	µg/L	1		SW-846 8270E	3/21/22	3/31/22 14:25	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	22.9	15-110		3/31/22 14:25
Phenol-d6 (SIM)	20.4	15-110		3/31/22 14:25
Nitrobenzene-d5	45.3	30-130		3/31/22 14:25
2-Fluorobiphenyl	42.2	30-130		3/31/22 14:25
2,4,6-Tribromophenol (SIM)	60.7	15-110		3/31/22 14:25
p-Terphenyl-d14	61.7	30-130		3/31/22 14:25

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 603-W1-031122 Sampled: 3/11/2022 13:40

Sample ID: 22C0990-03

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	See Attached		pg/L	1		EPA 1613B	3/18/22	3/24/22 11:04	PMN

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 604-W1-031122 Sampled: 3/11/2022 16:20

Sample ID: 22C0990-04

Sample Matrix: Ground Water

Sample Flags: H-06

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.94	µg/L	1		SW-846 8270E	3/21/22	3/31/22 14:53	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	24.8	15-110		3/31/22 14:53
Phenol-d6 (SIM)	21.9	15-110		3/31/22 14:53
Nitrobenzene-d5	47.0	30-130		3/31/22 14:53
2-Fluorobiphenyl	47.0	30-130		3/31/22 14:53
2,4,6-Tribromophenol (SIM)	71.1	15-110		3/31/22 14:53
p-Terphenyl-d14	71.2	30-130		3/31/22 14:53

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 604-W1-031122 Sampled: 3/11/2022 16:20

Sample ID: 22C0990-04

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	See Attached		pg/L	1		EPA 1613B	3/18/22	3/24/22 11:51	PMN

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 605-W1-031122 Sampled: 3/11/2022 15:10

Sample ID: 22C0990-05

Sample Matrix: Ground Water

Sample Flags: H-06

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Pentachlorophenol (SIM)	ND	0.95	µg/L	1		SW-846 8270E	3/21/22	3/31/22 15:21	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol (SIM)	25.1	15-110		3/31/22 15:21
Phenol-d6 (SIM)	22.0	15-110		3/31/22 15:21
Nitrobenzene-d5	48.5	30-130		3/31/22 15:21
2-Fluorobiphenyl	44.8	30-130		3/31/22 15:21
2,4,6-Tribromophenol (SIM)	66.3	15-110		3/31/22 15:21
p-Terphenyl-d14	65.5	30-130		3/31/22 15:21

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Project Location: 100 Bridge St, Great Barrington, M Sample Description: Work Order: 22C0990

Date Received: 3/15/2022

Field Sample #: MW 605-W1-031122 Sampled: 3/11/2022 15:10

Sample ID: 22C0990-05

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	See Attached		pg/L	1		EPA 1613B	3/18/22	3/24/22 12:38	PMN

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Sample Extraction Data

Prep Method: SW-846 3510C **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22C0990-01 [MW 601-W1-031122]	B303787	1030	1.00	03/21/22
22C0990-03 [MW 603-W1-031122]	B303787	1050	1.00	03/21/22
22C0990-04 [MW 604-W1-031122]	B303787	1060	1.00	03/21/22
22C0990-05 [MW 605-W1-031122]	B303787	1050	1.00	03/21/22

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B303787 - SW-846 3510C										
Blank (B303787-BLK1)				Prepared: 03/21/22 Analyzed: 03/22/22						
Pentachlorophenol (SIM)	ND	1.0	µg/L							
Surrogate: 2-Fluorophenol (SIM)	*66.1*		µg/L	200		33.1	15-110			
Surrogate: Phenol-d6 (SIM)	*62.5*		µg/L	200		31.3	15-110			
Surrogate: Nitrobenzene-d5	*72.0*		µg/L	100		72.0	30-130			
Surrogate: 2-Fluorobiphenyl	*55.5*		µg/L	100		55.5	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*174*		µg/L	200		87.2	15-110			
Surrogate: p-Terphenyl-d14	*95.6*		µg/L	100		95.6	30-130			
LCS (B303787-BS1)				Prepared: 03/21/22 Analyzed: 03/22/22						
Pentachlorophenol (SIM)	40.3	20	µg/L	50.0		80.5	40-140			
Surrogate: 2-Fluorophenol (SIM)	*64.8*		µg/L	200		32.4	15-110			
Surrogate: Phenol-d6 (SIM)	*63.6*		µg/L	200		31.8	15-110			
Surrogate: Nitrobenzene-d5	*68.1*		µg/L	100		68.1	30-130			
Surrogate: 2-Fluorobiphenyl	*64.3*		µg/L	100		64.3	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*142*		µg/L	200		71.2	15-110			
Surrogate: p-Terphenyl-d14	*72.2*		µg/L	100		72.2	30-130			
LCS Dup (B303787-BSD1)				Prepared: 03/21/22 Analyzed: 03/22/22						
Pentachlorophenol (SIM)	42.0	20	µg/L	50.0		84.0	40-140	4.28	20	
Surrogate: 2-Fluorophenol (SIM)	*68.5*		µg/L	200		34.3	15-110			
Surrogate: Phenol-d6 (SIM)	*66.1*		µg/L	200		33.0	15-110			
Surrogate: Nitrobenzene-d5	*71.7*		µg/L	100		71.7	30-130			
Surrogate: 2-Fluorobiphenyl	*68.9*		µg/L	100		68.9	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	*148*		µg/L	200		74.1	15-110			
Surrogate: p-Terphenyl-d14	*83.5*		µg/L	100		83.5	30-130			

DRAFT

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-06	Sample was extracted past the recommended holding time.

DRAFT

con-test®
A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
Nitrobenzene-d5	VA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

DRAFT

22C0990

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	Ransom Consulting, LLC
Address:	50 High St. Suite 25 North Andover, MA
Phone:	(978) 465-1822
Project Name:	New England Log Homes
Project Location:	100 Bridge St Great Barrington, MA
Project Number:	021.01074.019
Project Manager:	Nancy Marshall
Pace Quote Name/Number:	
Invoice Recipient:	Ransom (Nancy Marshall)
Sampled By:	TRE

Requested Turnaround Time
7-Day ☐ 10-Day ☒
PFAS 10-Day (std) ☐ Due Date:

Rush Approval Required?
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To: nmarshall@ransomenv.com
Fax To #:

Preserved/Acetate Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	H PCB by 8270	H Dioxins by EDA 1613									
1	MW601-WI-031122	3/11/22	1235	Grab	GW	U		4				X	X									
2	MW602-WI-031122	3/11/22	1725	Grab	GW	U		2					X									
3	MW603-WI-031122	3/11/22	1340	Grab	GW	U		4				X	X									
4	MW604-WI-031122	3/11/22	1620	Grab	GW	U		4				X	X									
5	MW605-WI-031122	3/11/22	1510	Grab	GW	U		4				X	X									

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:	Client Comments:
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

3/15/22
3/15/22 1430
3/15/22 1906
3/15/22 1906

Detection Limit Requirements
MA
CT
Other

Special Requirements
☒ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client Ransom Consulting

Received By DR Date 3/15/22 Time 1906

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 2.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? _____

Did COC include all pertinent Information? Client T Analysis T Sampler Name _____

Project T ID's T Collection Dates/Times _____

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	18	1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

DRAFT

Archived: Monday, March 21, 2022 9:25:28 AM
From: Nancy Marshall
Sent: Mon, 21 Mar 2022 13:23:25
To: Scott Basal
Subject: RE: BW Order: New England Log Homes
Sensitivity: Normal

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.
Please proceed with the PCP analyses today.

Thanks,
Nancy

RANSOM Consulting, LLC

Nancy E. Marshall, P.E.
Project Manager
RANSOM CONSULTING, LLC
50 High Street | Suite 25 | North Andover, MA 01845
(978) 465-1822 x 112 | phone
(978) 766-0184 | mobile
nmarshall@ransomenv.com
website | vCard | map

From: Scott Basal <Scott.Basal@pacelabs.com>
Sent: Monday, March 21, 2022 9:09 AM
To: Nancy Marshall <nmarshall@ransomenv.com>
Subject: RE: BW Order: New England Log Homes

Hi Nancy,

The COC was attached, samples were taken 3/11 and have a 7day hold time.

NEW Courier Guidelines Nov 1st, 2021.docx

Scott Basal
Project Manager I
39 Spruce Street, East Longmeadow, MA 01028
Cell: 413.427.4513 | Lab: 413.525.2332 contestlabs.com

From: Nancy Marshall <nmarshall@ransomenv.com>
Sent: Monday, March 21, 2022 9:06 AM
To: Scott Basal <Scott.Basal@pacelabs.com>
Subject: RE: BW Order: New England Log Homes

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.
That's not good. How far out of hold are the PCP analyses?

Proceed with the dioxin analyses.

Thanks,
Nancy

Nancy E. Marshall, P.E.

DRAFT

Project Manager
RANSOM CONSULTING, LLC
50 High Street | Suite 25 | North Andover, MA 01845
(978) 465-1822 x 112 | phone
(978) 766-0184 | mobile
nmarshall@ransomenv.com
website | vCard | map

From: Scott Basal <Scott.Basal@pacelabs.com>
Sent: Monday, March 21, 2022 8:54 AM
To: Travis Eddy <travis.eddy@ransomenv.com>
Cc: Nancy Marshall <nmarshall@ransomenv.com>
Subject: RE: BW Order: New England Log Homes
Importance: High

Hello Travis,

The lab informed me that we missed the hold time for the 8270 samples and they are wondering if you'd like us to proceed with the analysis over the hold time?
We have already subbed out the dioxin samples, so please let me know if we should continue with the analysis of those as well.

I apologize for the oversight.

NEW Courier Guidelines Nov 1st, 2021.docx

Scott Basal
Project Manager I
39 Spruce Street, East Longmeadow, MA 01028
Cell: 413.427.4513 | Lab: 413.525.2332 contestlabs.com

From: Travis Eddy <travis.eddy@ransomenv.com>
Sent: Thursday, March 3, 2022 11:55 AM
To: Scott Basal <Scott.Basal@pacelabs.com>
Subject: RE: BW Order: New England Log Homes

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.
Good morning Scott,

Four wells MW601, MW603, MW604, MW605, for Pentachlorophenol (PCP) by 8270 ***and*** dioxins by EPA 1613. One well: ME602 will be analyzed only for dioxins by EPA 1613.

So four for PCP and five for dioxins.

Travis R. Eddy
Project Scientist / Geologist
RANSOM CONSULTING, LLC
50 High Street | Suite 25 | North Andover, MA 01845
(978) 465-1822 | phone
(631) 655-4500 | mobile
travis.eddy@ransomenv.com
website | my linkedin | vCard | map

This email may contain confidential and/or private information. If you received this email in error please delete and notify sender.

DRAFT

From: Scott Basal <Scott.Basal@pacelabs.com>
Sent: Wednesday, March 2, 2022 1:24 PM
To: Travis Eddy <travis.eddy@ransomenv.com>
Subject: RE: BW Order: New England Log Homes

Sorry, I meant 4 samples for Dioxins and 3 for PCP, correct?
I have placed the order for delivery Friday.
If you need pre-printed labels please let me know.

NEW Courier Guidelines Nov 1st, 2021.docx

Scott Basal
Project Manager I
39 Spruce Street, East Longmeadow, MA 01028
Cell: 413.427.4513 | Lab: 413.525.2332 contestlabs.com

From: Scott Basal
Sent: Wednesday, March 2, 2022 12:36 PM
To: Travis Eddy <travis.eddy@ransomenv.com>
Subject: RE: BW Order: New England Log Homes

Hi Travis,

Besides being crazy busy, everything is going fine, thanks.
Hope you are well as well

I will have the bottles delivered for Friday:
(5) samples for PCP & 1631 = (4) unpreserved 1-Liter Amber (per sample)

Were you looking for pre-printed labels?

NEW Courier Guidelines Nov 1st, 2021.docx

Scott Basal
Project Manager I
39 Spruce Street, East Longmeadow, MA 01028
Cell: 413.427.4513 | Lab: 413.525.2332 contestlabs.com

From: Travis Eddy <travis.eddy@ransomenv.com>
Sent: Wednesday, March 2, 2022 11:10 AM
To: Scott Basal <Scott.Basal@pacelabs.com>
Subject: BW Order: New England Log Homes

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.
Good morning Scott,

Long time no talk! Hope you are doing well. I am preparing to sample ground water over in Western MA and would like to place a bottleware order. The

DRAFT

project Name is new England Log Homes, and the project number is 021.01074. We will be sampling 4 wells: MW601, MW603, MW604, MW605, for Pentachlorophenol (PCP) by 8270 and dioxins by EPA 1613. One well: ME602 will be analyzed only for dioxins by EPA 1613. We will need the order delivered to our North Andover location at 50 High Street Suite 25 by the end of the day Friday if possible. Please don't hesitate to give me a call if you have any questions.

RANSOM Consulting, LLC

Travis R. Eddy
Project Scientist / Geologist
RANSOM CONSULTING, LLC
50 High Street | Suite 25 | North Andover, MA 01845
(978) 465-1822 | phone
(631) 655-4500 | mobile
travis.eddy@ransomenv.com
website | my linkedin | vCard | map

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DRAFT

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

www.pacelabs.com

Report Prepared for:

Kerry McGee
Con-Test Laboratories
39 Spruce Street
East Longmeadow MA 01028

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10600947
Sample Receipt Date: 03/17/2022
Client Project #: 22C0990 Ransom Consulting
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

March 30, 2022

Nick Gilmartin, Project Manager
(612) 656-2262
(612) 607-6444 (fax)
Nicholas.Gilmartin@pacelabs.com

Report Prepared Date:
March 30, 2022

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

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

DRAFT

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

DISCUSSION

This report presents the results from the analyses performed on five samples submitted by a representative of Con-Test Analytical Laboratory. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The estimated detection limits (EDLs) were based on signal-to-noise measurements. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 33-110%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

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

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 84-111% with relative percent differences of 0.0-4.7%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

DRAFT

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

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

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

DRAFT

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

DRAFT

SUBCONTRACT CHAIN OF CUSTODY

Con-Test, a Pace Analytical Laboratory

22C0990

SENDING LABORATORY:

Con-Test, a Pace Analytical Laboratory
39 Spruce Street
East Longmeadow, MA 01028
Phone: 413.525.2332
Fax: 413.525.6405
Project Manager: Scott C. Basal

RECEIVING LABORATORY:

Pace Analytical Laboratory - MN
1700 Elm Street
Minneapolis, MN 55414
Phone :(612) 607-170
Fax: (612) 607-6444

WO# : 10600947

10600947

Analysis	Due	Expires	Comments
Sample ID: 22C0990-01	**Water** **Sampled:**	**03/11/22 12:35**	**MA MCP** 001
S-Dioxins/Furans	04/05/22 15:30	03/18/22 12:35	results in accordance with the MassDEP TEFs
Containers Supplied:			
1 L amber (C) 1 L amber (D)			
Sample ID: 22C0990-02	**Water** **Sampled:**	**03/11/22 17:25**	**MA MCP** 002
S-Dioxins/Furans	04/05/22 15:30	03/18/22 17:25	results in accordance with the MassDEP TEFs
Containers Supplied:			
1 L amber (A) 1 L amber (B)			
Sample ID: 22C0990-03	**Water** **Sampled:**	**03/11/22 13:40**	**MA MCP** 003
S-Dioxins/Furans	04/05/22 15:30	03/18/22 13:40	results in accordance with the MassDEP TEFs
Containers Supplied:			
1 L amber (C) 1 L amber (D)			
Sample ID: 22C0990-04	**Water** **Sampled:**	**03/11/22 16:20**	**MA MCP** 004
S-Dioxins/Furans	04/05/22 15:30	03/18/22 16:20	results in accordance with the MassDEP TEFs
Containers Supplied:			
1 L amber (C) 1 L amber (D)			
Sample ID: 22C0990-05	**Water** **Sampled:**	**03/11/22 15:10**	**MA MCP** 005
S-Dioxins/Furans	04/05/22 15:30	03/18/22 15:10	results in accordance with the MassDEP TEFs
Containers Supplied:			
1 L amber (C) 1 L amber (D)			

Released By	Date	Received By	Date
[signature]	3/16/22 1600	Ruth/PACE	3-17-22 8:45
Released By	Date	Received By	Date

DRAFT

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: **06Jan2022** **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.04**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Con-Test

Project #: **WO#: 10600947**

PM: NEG **Due Date: 04/07/22**

CLIENT: CON-TEST

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 7763 1600 2828 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489) ☐ 01339252/1710 ☐ 122639816 ☐ 140792808 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☐ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C **Average Corrected Temp (no temp blank only):** 1.6 °C ☒ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: -0.2 **Cooler Temp Corrected w/temp blank:**_____ °C

USDA Regulated Soil: (☒ N/A water sample/Other:_____) **Date/Initials of Person Examining Contents:** 3-17-22 RAF

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): ☐ Duluth ☒ Minneapolis ☐ Virginia

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4. If Fecal: ☐ <8 hrs ☐ >8hr, <24 hrs, ☐ >24 hrs
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other-	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** ☐ See Exception ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** ☐ See Exception ENV-FRM-MIN4-0142
	AC3 03-17-22			Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in Methyl Mercury Container?	☐ Yes	☐ No	☒ N/A	
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. ☐ See Exception ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review:  **Date:** 3/17/22

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

Labeled by: RAF

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Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
0.8	0.6	1.6
1.3	1.2	
1.1	0.9	
3.7	3.7	

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

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

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Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	22C0990-01 601		
Lab Sample ID	10600947001		
Filename	U220324A_09		
Injected By	SMT		
Total Amount Extracted	974 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/11/2022 12:35
ICAL ID	U220123	Received	03/17/2022 08:45
CCal Filename(s)	U220323B_16	Extracted	03/18/2022 09:30
Method Blank ID	BLANK-97444	Analyzed	03/24/2022 09:31

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.88		2,3,7,8-TCDF-13C	2.00	67
Total TCDF	ND	-----	0.88		2,3,7,8-TCDD-13C	2.00	67
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	0.90		2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	-----	0.90		1,2,3,7,8-PeCDD-13C	2.00	78
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	0.60		1,2,3,6,7,8-HxCDF-13C	2.00	41
2,3,4,7,8-PeCDF	ND	-----	0.25		2,3,4,6,7,8-HxCDF-13C	2.00	71
Total PeCDF	ND	-----	0.25		1,2,3,7,8,9-HxCDF-13C	2.00	64
					1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	0.89		1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	ND	-----	0.89		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	41
1,2,3,4,7,8-HxCDF	ND	-----	0.42		1,2,3,4,6,7,8-HpCDD-13C	2.00	60
1,2,3,6,7,8-HxCDF	ND	-----	0.92		OCDD-13C	4.00	33
2,3,4,6,7,8-HxCDF	ND	-----	0.51				
1,2,3,7,8,9-HxCDF	ND	-----	1.7		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.42		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	1.8	0.85	IJ	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,6,7,8-HxCDD	ND	-----	1.6				
1,2,3,7,8,9-HxCDD	ND	-----	1.7				
Total HxCDD	ND	-----	0.85				
1,2,3,4,6,7,8-HpCDF	ND	-----	2.5		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	3.6		Equivalence: 0.20 pg/L		
Total HpCDF	ND	-----	2.5		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	2.5				
Total HpCDD	ND	-----	2.5		0.19 using MassDEP 2005 TEFs		
OCDF	ND	-----	3.8				
OCDD	17	-----	6.3	J			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

J = Estimated value
I = Interference present

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	22C0990-02 602		
Lab Sample ID	10600947002		
Filename	U220324A_10		
Injected By	SMT		
Total Amount Extracted	985 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/11/2022 17:25
ICAL ID	U220123	Received	03/17/2022 08:45
CCal Filename(s)	U220323B_16	Extracted	03/18/2022 09:30
Method Blank ID	BLANK-97444	Analyzed	03/24/2022 10:18

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.47		2,3,7,8-TCDF-13C	2.00	84
Total TCDF	6.0	-----	0.47	J	2,3,7,8-TCDD-13C	2.00	88
					1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	-----	0.98		2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	0.98		1,2,3,7,8-PeCDD-13C	2.00	102
					1,2,3,4,7,8-HxCDF-13C	2.00	101
1,2,3,7,8-PeCDF	ND	-----	0.46		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	-----	0.17		2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	ND	-----	0.17		1,2,3,7,8,9-HxCDF-13C	2.00	86
					1,2,3,4,7,8-HxCDD-13C	2.00	99
1,2,3,7,8-PeCDD	ND	-----	0.74		1,2,3,6,7,8-HxCDD-13C	2.00	100
Total PeCDD	ND	-----	0.74		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	0.94		1,2,3,4,6,7,8-HpCDD-13C	2.00	79
1,2,3,6,7,8-HxCDF	ND	-----	2.1		OCDD-13C	4.00	44
2,3,4,6,7,8-HxCDF	ND	-----	0.84				
1,2,3,7,8,9-HxCDF	ND	-----	0.48		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.48		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.3		2,3,7,8-TCDD-37Cl4	0.20	110
1,2,3,6,7,8-HxCDD	ND	-----	1.0				
1,2,3,7,8,9-HxCDD	ND	-----	1.1				
Total HxCDD	2.9	-----	1.0	J			
1,2,3,4,6,7,8-HpCDF	ND	-----	2.7		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	3.3		Equivalence: 0.92 pg/L		
Total HpCDF	ND	-----	2.7		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	6.9	-----	1.2	J	0.09 using MassDEP 2005 TEFs		
Total HpCDD	16	-----	1.2	J			
OCDF	ND	-----	1.8				
OCDD	56	-----	6.0	J			

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

J = Estimated value

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	22C0990-03 603		
Lab Sample ID	10600947003		
Filename	U220324A_11		
Injected By	SMT		
Total Amount Extracted	988 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/11/2022 13:40
ICAL ID	U220123	Received	03/17/2022 08:45
CCal Filename(s)	U220323B_16	Extracted	03/18/2022 09:30
Method Blank ID	BLANK-97444	Analyzed	03/24/2022 11:04

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.1		2,3,7,8-TCDF-13C	2.00	76
Total TCDF	ND	-----	1.1		2,3,7,8-TCDD-13C	2.00	77
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.72		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	0.72		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	94
1,2,3,7,8-PeCDF	ND	-----	1.6		1,2,3,6,7,8-HxCDF-13C	2.00	48
2,3,4,7,8-PeCDF	ND	-----	0.80		2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	ND	-----	0.80		1,2,3,7,8,9-HxCDF-13C	2.00	78
					1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	ND	-----	1.0		1,2,3,6,7,8-HxCDD-13C	2.00	92
Total PeCDD	ND	-----	1.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	66
					1,2,3,4,7,8,9-HpCDF-13C	2.00	46
1,2,3,4,7,8-HxCDF	ND	-----	0.79		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	0.80		OCDD-13C	4.00	38
2,3,4,6,7,8-HxCDF	ND	-----	0.73				
1,2,3,7,8,9-HxCDF	ND	-----	0.75		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.73		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.4		2,3,7,8-TCDD-37Cl4	0.20	94
1,2,3,6,7,8-HxCDD	ND	-----	1.3				
1,2,3,7,8,9-HxCDD	ND	-----	0.97				
Total HxCDD	ND	-----	0.97				
1,2,3,4,6,7,8-HpCDF	7.5	-----	3.1	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	2.8		Equivalence: 3.6 pg/L		
Total HpCDF	7.5	-----	2.8	J	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	25	-----	3.2	J	0.4 using MassDEP 2005 TEFs		
Total HpCDD	41	-----	3.2	J			
OCDF	21	-----	6.7	J			
OCDD	220	-----	8.7				

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

J = Estimated value

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	22C0990-04 604		
Lab Sample ID	10600947004		
Filename	U220324A_12		
Injected By	SMT		
Total Amount Extracted	975 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/11/2022 16:20
ICAL ID	U220123	Received	03/17/2022 08:45
CCal Filename(s)	U220323B_16	Extracted	03/18/2022 09:30
Method Blank ID	BLANK-97444	Analyzed	03/24/2022 11:51

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.83	2,3,7,8-TCDF-13C	2.00	75
Total TCDF	ND	-----	0.83	2,3,7,8-TCDD-13C	2.00	77
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	ND	-----	1.3	2,3,4,7,8-PeCDF-13C	2.00	79
Total TCDD	ND	-----	1.3	1,2,3,7,8-PeCDD-13C	2.00	90
				1,2,3,4,7,8-HxCDF-13C	2.00	95
1,2,3,7,8-PeCDF	ND	-----	0.45	1,2,3,6,7,8-HxCDF-13C	2.00	49
2,3,4,7,8-PeCDF	ND	-----	0.58	2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	ND	-----	0.45	1,2,3,7,8,9-HxCDF-13C	2.00	79
				1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	ND	-----	0.82	1,2,3,6,7,8-HxCDD-13C	2.00	94
Total PeCDD	ND	-----	0.82	1,2,3,4,6,7,8-HpCDF-13C	2.00	65
				1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	0.41	1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	1.5	OCDD-13C	4.00	40
2,3,4,6,7,8-HxCDF	ND	-----	0.54			
1,2,3,7,8,9-HxCDF	ND	-----	0.79	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.41	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.2	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	1.2			
1,2,3,7,8,9-HxCDD	ND	-----	1.2			
Total HxCDD	ND	-----	1.2			
1,2,3,4,6,7,8-HpCDF	ND	-----	3.6	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.1	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	3.6	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	1.6			
Total HpCDD	ND	-----	1.6			
OCDF	ND	-----	4.7			
OCDD	ND	-----	3.8			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Con-Test Laboratories

Client's Sample ID	22C0990-05		
Lab Sample ID	10600947005		
Filename	U220324A_13		
Injected By	SMT		
Total Amount Extracted	993 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/11/2022 15:10
ICAL ID	U220123	Received	03/17/2022 08:45
CCal Filename(s)	U220323B_16	Extracted	03/18/2022 09:30
Method Blank ID	BLANK-97444	Analyzed	03/24/2022 12:38

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.51	2,3,7,8-TCDF-13C	2.00	87
Total TCDF	ND	-----	0.51	2,3,7,8-TCDD-13C	2.00	90
				1,2,3,7,8-PeCDF-13C	2.00	93
2,3,7,8-TCDD	ND	-----	1.2	2,3,4,7,8-PeCDF-13C	2.00	93
Total TCDD	ND	-----	1.2	1,2,3,7,8-PeCDD-13C	2.00	107
				1,2,3,4,7,8-HxCDF-13C	2.00	110
1,2,3,7,8-PeCDF	ND	-----	0.55	1,2,3,6,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	ND	-----	0.35	2,3,4,6,7,8-HxCDF-13C	2.00	95
Total PeCDF	ND	-----	0.35	1,2,3,7,8,9-HxCDF-13C	2.00	93
				1,2,3,4,7,8-HxCDD-13C	2.00	105
1,2,3,7,8-PeCDD	ND	-----	0.75	1,2,3,6,7,8-HxCDD-13C	2.00	109
Total PeCDD	ND	-----	0.75	1,2,3,4,6,7,8-HpCDF-13C	2.00	77
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	0.52	1,2,3,4,6,7,8-HpCDD-13C	2.00	81
1,2,3,6,7,8-HxCDF	ND	-----	1.1	OCDD-13C	4.00	46
2,3,4,6,7,8-HxCDF	ND	-----	1.0			
1,2,3,7,8,9-HxCDF	ND	-----	1.1	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.52	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.5	2,3,7,8-TCDD-37Cl4	0.20	101
1,2,3,6,7,8-HxCDD	ND	-----	0.78			
1,2,3,7,8,9-HxCDD	ND	-----	0.81			
Total HxCDD	ND	-----	0.78			
1,2,3,4,6,7,8-HpCDF	ND	-----	2.3	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	4.3	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	2.3	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	2.3			
Total HpCDD	ND	-----	2.3			
OCDF	ND	-----	2.6			
OCDD	ND	-----	4.1			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKZD		
Lab Sample ID	BLANK-97444	Matrix	Water
Filename	U220322A_18	Dilution	NA
Total Amount Extracted	969 mL	Extracted	03/18/2022 09:30
ICAL ID	U220123	Analyzed	03/22/2022 22:02
CCal Filename(s)	U220322A_06	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	EDL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.68	2,3,7,8-TCDF-13C	2.00	72
Total TCDF	ND	-----	0.68	2,3,7,8-TCDD-13C	2.00	73
				1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	1.7	2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	ND	-----	1.7	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	0.91	1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	ND	-----	0.60	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	ND	-----	0.60	1,2,3,7,8,9-HxCDF-13C	2.00	81
				1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	1.0	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND	-----	1.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	77
				1,2,3,4,7,8,9-HpCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	ND	-----	1.6	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	ND	-----	2.2	OCDD-13C	4.00	87
2,3,4,6,7,8-HxCDF	ND	-----	1.3			
1,2,3,7,8,9-HxCDF	ND	-----	1.7	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	1.3	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	2.7	2,3,7,8-TCDD-37Cl4	0.20	100
1,2,3,6,7,8-HxCDD	ND	-----	2.8			
1,2,3,7,8,9-HxCDD	ND	-----	2.9			
Total HxCDD	ND	-----	2.7			
1,2,3,4,6,7,8-HpCDF	ND	-----	3.6	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	3.6	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	2.6			
Total HpCDD	ND	-----	2.6			
OCDF	ND	-----	4.0			
OCDD	ND	-----	6.1			

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

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-97445		
Filename	U220322A_12	Matrix	Water
Total Amount Extracted	992 mL	Dilution	NA
ICAL ID	U220123	Extracted	03/18/2022 09:30
CCal Filename	U220322A_06	Analyzed	03/22/2022 17:22
Method Blank ID	BLANK-97444	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	106
2,3,7,8-TCDD	10	11	6.7	15.8	111
1,2,3,7,8-PeCDF	50	46	40.0	67.0	92
2,3,4,7,8-PeCDF	50	46	34.0	80.0	91
1,2,3,7,8-PeCDD	50	44	35.0	71.0	88
1,2,3,4,7,8-HxCDF	50	47	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	42	42.0	65.0	84
2,3,4,6,7,8-HxCDF	50	48	35.0	78.0	97
1,2,3,7,8,9-HxCDF	50	47	39.0	65.0	95
1,2,3,4,7,8-HxCDD	50	51	35.0	82.0	102
1,2,3,6,7,8-HxCDD	50	47	38.0	67.0	94
1,2,3,7,8,9-HxCDD	50	47	32.0	81.0	95
1,2,3,4,6,7,8-HpCDF	50	45	41.0	61.0	91
1,2,3,4,7,8,9-HpCDF	50	44	39.0	69.0	89
1,2,3,4,6,7,8-HpCDD	50	44	35.0	70.0	88
OCDF	100	87	63.0	170.0	87
OCDD	100	100	78.0	144.0	101
2,3,7,8-TCDD-37Cl4	10	7.8	3.1	19.1	78
2,3,7,8-TCDF-13C	100	61	22.0	152.0	61
2,3,7,8-TCDD-13C	100	62	20.0	175.0	62
1,2,3,7,8-PeCDF-13C	100	69	21.0	192.0	69
2,3,4,7,8-PeCDF-13C	100	74	13.0	328.0	74
1,2,3,7,8-PeCDD-13C	100	83	21.0	227.0	83
1,2,3,4,7,8-HxCDF-13C	100	74	19.0	202.0	74
1,2,3,6,7,8-HxCDF-13C	100	46	21.0	159.0	46
2,3,4,6,7,8-HxCDF-13C	100	66	22.0	176.0	66
1,2,3,7,8,9-HxCDF-13C	100	70	17.0	205.0	70
1,2,3,4,7,8-HxCDD-13C	100	74	21.0	193.0	74
1,2,3,6,7,8-HxCDD-13C	100	76	25.0	163.0	76
1,2,3,4,6,7,8-HpCDF-13C	100	73	21.0	158.0	73
1,2,3,4,7,8,9-HpCDF-13C	100	65	20.0	186.0	65
1,2,3,4,6,7,8-HpCDD-13C	100	86	26.0	166.0	86
OCDD-13C	200	150	26.0	397.0	77

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-97446		
Filename	U220322A_13	Matrix	Water
Total Amount Extracted	991 mL	Dilution	NA
ICAL ID	U220123	Extracted	03/18/2022 09:30
CCal Filename	U220322A_06	Analyzed	03/22/2022 18:09
Method Blank ID	BLANK-97444	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	105
2,3,7,8-TCDD	10	11	6.7	15.8	109
1,2,3,7,8-PeCDF	50	46	40.0	67.0	92
2,3,4,7,8-PeCDF	50	46	34.0	80.0	92
1,2,3,7,8-PeCDD	50	44	35.0	71.0	87
1,2,3,4,7,8-HxCDF	50	47	36.0	67.0	94
1,2,3,6,7,8-HxCDF	50	44	42.0	65.0	88
2,3,4,6,7,8-HxCDF	50	48	35.0	78.0	96
1,2,3,7,8,9-HxCDF	50	46	39.0	65.0	92
1,2,3,4,7,8-HxCDD	50	51	35.0	82.0	102
1,2,3,6,7,8-HxCDD	50	46	38.0	67.0	91
1,2,3,7,8,9-HxCDD	50	45	32.0	81.0	91
1,2,3,4,6,7,8-HpCDF	50	46	41.0	61.0	91
1,2,3,4,7,8,9-HpCDF	50	44	39.0	69.0	87
1,2,3,4,6,7,8-HpCDD	50	43	35.0	70.0	87
OCDF	100	89	63.0	170.0	89
OCDD	100	100	78.0	144.0	102
2,3,7,8-TCDD-37Cl4	10	9.4	3.1	19.1	94
2,3,7,8-TCDF-13C	100	66	22.0	152.0	66
2,3,7,8-TCDD-13C	100	71	20.0	175.0	71
1,2,3,7,8-PeCDF-13C	100	76	21.0	192.0	76
2,3,4,7,8-PeCDF-13C	100	78	13.0	328.0	78
1,2,3,7,8-PeCDD-13C	100	89	21.0	227.0	89
1,2,3,4,7,8-HxCDF-13C	100	85	19.0	202.0	85
1,2,3,6,7,8-HxCDF-13C	100	50	21.0	159.0	50
2,3,4,6,7,8-HxCDF-13C	100	70	22.0	176.0	70
1,2,3,7,8,9-HxCDF-13C	100	79	17.0	205.0	79
1,2,3,4,7,8-HxCDD-13C	100	81	21.0	193.0	81
1,2,3,6,7,8-HxCDD-13C	100	82	25.0	163.0	82
1,2,3,4,6,7,8-HpCDF-13C	100	77	21.0	158.0	77
1,2,3,4,7,8,9-HpCDF-13C	100	71	20.0	186.0	71
1,2,3,4,6,7,8-HpCDD-13C	100	93	26.0	166.0	93
OCDD-13C	200	170	26.0	397.0	84

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Con-Test Laboratories		
Spike 1 ID	LCS-97445	Spike 2 ID	LCSD-97446
Spike 1 Filename	U220322A_12	Spike 2 Filename	U220322A_13

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	106	105	0.9
2,3,7,8-TCDD	111	109	1.8
1,2,3,7,8-PeCDF	92	92	0.0
2,3,4,7,8-PeCDF	91	92	1.1
1,2,3,7,8-PeCDD	88	87	1.1
1,2,3,4,7,8-HxCDF	94	94	0.0
1,2,3,6,7,8-HxCDF	84	88	4.7
2,3,4,6,7,8-HxCDF	97	96	1.0
1,2,3,7,8,9-HxCDF	95	92	3.2
1,2,3,4,7,8-HxCDD	102	102	0.0
1,2,3,6,7,8-HxCDD	94	91	3.2
1,2,3,7,8,9-HxCDD	95	91	4.3
1,2,3,4,6,7,8-HpCDF	91	91	0.0
1,2,3,4,7,8,9-HpCDF	89	87	2.3
1,2,3,4,6,7,8-HpCDD	88	87	1.1
OCDF	87	89	2.3
OCDD	101	102	1.0

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test, a Pace Analytical Laboratory	Project #:	22C0990
Project Location:	100 Bridge St, Great Barrington, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

22C0990-01 thru 22C0990-05

Matrices: Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	MassDEP VPH (GC/PID/FID) CAM IV A ( )	8082 PCB CAM V A ( )	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )
8270 SVOC CAM II B (X)	7010 Metals CAM III C ( )	MassDEP VPH (GC/MS) CAM IV C ( )	8081 Pesticides CAM V B ( )	7196 Hex Cr CAM VI B ( )	MassDEP APH CAM IX A ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	MassDEP EPH CAM IV B ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )

Affirmative response to Questions A throughF is required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☐ Yes	☑ No[1]
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

<u>Data User Note:</u> Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were all QC perfomance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes	☑ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Tod Kopyscinski Position: Laboratory Director

Printed Name: Tod E. Kopyscinski Date: 04/05/22

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

www.pacelabs.com

Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10468684
Sample Receipt Date: 03/28/2019
Client Project #: 021.01074.010 NELH
Client Sub PO #: 11613
State Cert #: M-MN064

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

April 17, 2019

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

Report Prepared Date:
April 10, 2019

Report of Laboratory Analysis

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

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

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The reporting limits were set to correspond to the lowest calibration points and a nominal 1-liter sample amount.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 24-89%. Except for eight low values, which were flagged "R" on the results tables, the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. One reported concentration was above the calibration range, flagged "E", and should be regarded as an estimate.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 106-134% with relative percent differences of 0.0-6.3%. The recovery value obtained for 1,2,3,4,6,7,8-HpCDF in the laboratory spike duplicate was above the target range for the method, flagged "R" on the results table, and may indicate a high bias for this congener in these determinations. Matrix spikes were not prepared with the extraction batch.

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Minneapolis, MN 55414

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

Minnesota Laboratory Certifications

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

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Appendix A

Sample Management

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

2300894

Section A Required Client Information:
Company: Ransom Consulting, Inc.
Address: 12 Kent Way Suite 100
Byfield, MA 01922
Email To: nmarshall@ransomenv.com
Phone: 978-465-1822 Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: Nancy Marshall
Copy To: Tim Snay
Chris Williams
Purchase Order No.: 11613
Project Name: NELH
Project Number: 021.01074.010

Section C Invoice Information:
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 33276

REGULATORY AGENCY
☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

WO#: 10468684

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: N	Y	Residual Chl	Pace Project No./ Lab I.D.
1	TW501A-WI-032619	WT	G			3/26/19	14:24	8	2	X								X			001
2	TW502A-WI-032619	WT	G			3/26/19	15:38	8	2	X								X			002
3	TW504A-WI-032619	WT	G			3/26/19	15:30	8	2	X									X		003
4	TW508-WI-032619	WT	G			3/26/19	11:56	9	2	X								X			004
5	TW509-WI-032619	WT	G			3/26/19	13:15	9	2	X								X			005
6	TW510-WI-032619	WT	G			3/26/19	17:50	8	2	X								X			006
7																					
8																					
9																					
10																					
11																					
12																					

EPA 1613 EPA 1613

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Samples named "TMW" on container should be labeled "TW" as appears on COC.	Christ Williams	3/27/19	17:00		3/26/19	845	2.1 4.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Chris Williams / Scott Barta
SIGNATURE of SAMPLER: Christ Williams DATE Signed (MM/DD/YY): 03/27/19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-C-010-rev.00, 09Nov2017

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Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.25**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Ransom Consulting **Project #:** **WO#: 10468684**

PM: NB3 **Due Date: 04/18/19** **CLIENT: Ransom Consu**

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial **See Exception** ☐

Tracking Number: 7748 1019 2085 / 1023 2932

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☑ Yes ☐ No

Thermometer: ☐ G87A9155100842 ☒ G87A9170600254 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.1, 4.6 °C **Average Corrected Temp (no temp blank only):** ☐ **See Exceptions**

Correction Factor: One **Cooler Temp Corrected w/temp blank:** 2.1, 4.6 °C

USDA Regulated Soil: (☒ N/A, water sample/Other: _____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Date/Initials of Person Examining Contents: lw 3/28/19

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: **See Exception** ☐
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): NA

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Lillian Boberg **Date:** 3/29/19

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

Labeled by: RV

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW501A-WI-032619		
Lab Sample ID	10468684001		
Filename	F190405D_03		
Injected By	CVS		
Total Amount Extracted	900 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 14:24
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 14:40

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	61
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	62
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	78
				1,2,3,4,7,8-HxCDF-13C	2.00	58
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	43
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	60
				1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	56
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	54
				1,2,3,4,7,8,9-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	57
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	59
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 150 pg/L		
Total HpCDF	68	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	1200	-----	50	12 using 2005 TEFs		
Total HpCDD	2200	-----	50			
OCDF	ND	-----	100	Type text here		
OCDD	22000	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW502A-WI-032619		
Lab Sample ID	10468684002		
Filename	F190405D_04		
Injected By	CVS		
Total Amount Extracted	969 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 15:38
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 15:23

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10		2,3,7,8-TCDF-13C	2.00	70
Total TCDF	ND	-----	10		2,3,7,8-TCDD-13C	2.00	73
					1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	10		2,3,4,7,8-PeCDF-13C	2.00	75
Total TCDD	ND	-----	10		1,2,3,7,8-PeCDD-13C	2.00	89
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	50		1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	ND	-----	50		2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	ND	-----	50		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	70
1,2,3,7,8-PeCDD	ND	-----	50		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	50		1,2,3,4,6,7,8-HpCDF-13C	2.00	65
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	-----	50		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	50		OCDD-13C	4.00	83
2,3,4,6,7,8-HxCDF	ND	-----	50				
1,2,3,7,8,9-HxCDF	ND	-----	50		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	220	-----	50		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50		2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	86	-----	50				
1,2,3,7,8,9-HxCDD	ND	-----	50				
Total HxCDD	260	-----	50				
1,2,3,4,6,7,8-HpCDF	150	-----	50		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50		Equivalence: 800 pg/L		
Total HpCDF	490	-----	50		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	6100	-----	50				
Total HpCDD	11000	-----	50				
OCDF	420	-----	100				
OCDD	100000	-----	100	E			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

E = Exceeds calibration range

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW504A-WI-032619		
Lab Sample ID	10468684003		
Filename	F190405D_05		
Injected By	CVS		
Total Amount Extracted	985 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 15:30
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 16:06

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	50
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	53
				1,2,3,7,8-PeCDF-13C	2.00	57
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	53
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	62
				1,2,3,4,7,8-HxCDF-13C	2.00	51
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	41
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	52
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	50
				1,2,3,4,7,8-HxCDD-13C	2.00	48
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
				1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

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NC = Not Calculated

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW508-WI-032619		
Lab Sample ID	10468684004		
Filename	F190405D_06		
Injected By	CVS		
Total Amount Extracted	982 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 11:56
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 16:49

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	62
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	65
				1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	79
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	50
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	65
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	64
				1,2,3,4,7,8-HxCDD-13C	2.00	62
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	60
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	59
				1,2,3,4,7,8,9-HpCDF-13C	2.00	60
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW509-WI-032619		
Lab Sample ID	10468684005		
Filename	F190405D_07		
Injected By	CVS		
Total Amount Extracted	978 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 13:15
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 17:32

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery	
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	35	
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	35	
				1,2,3,7,8-PeCDF-13C	2.00	35	
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	33	
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	38	
				1,2,3,4,7,8-HxCDF-13C	2.00	29	
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	24	R
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	30	
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	30	
				1,2,3,4,7,8-HxCDD-13C	2.00	29	R
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	28	
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	27	R
				1,2,3,4,7,8,9-HpCDF-13C	2.00	28	
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	30	
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	32	
2,3,4,6,7,8-HxCDF	ND	-----	50				
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA	
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA	
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	79	
1,2,3,6,7,8-HxCDD	ND	-----	50				
1,2,3,7,8,9-HxCDD	ND	-----	50				
Total HxCDD	ND	-----	50				
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD			
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L			
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)			
1,2,3,4,6,7,8-HpCDD	ND	-----	50				
Total HpCDD	ND	-----	50				
OCDF	ND	-----	100				
OCDD	ND	-----	100				

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

R = Recovery outside target range

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Pace Analytical Services, LLC
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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW510-WI-032619		
Lab Sample ID	10468684006		
Filename	F190405D_08		
Injected By	CVS		
Total Amount Extracted	959 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/26/2019 17:50
ICAL ID	F190112	Received	03/28/2019 08:45
CCal Filename(s)	F190405D_01	Extracted	04/01/2019 12:05
Method Blank ID	BLANK-69491	Analyzed	04/05/2019 18:15

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	35
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	34
				1,2,3,7,8-PeCDF-13C	2.00	34
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	33
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	37
				1,2,3,4,7,8-HxCDF-13C	2.00	28
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	24 R
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	30
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	30
				1,2,3,4,7,8-HxCDD-13C	2.00	26 R
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	27 R
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	27 R
				1,2,3,4,7,8,9-HpCDF-13C	2.00	28
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	29
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	32
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

R = Recovery outside target range

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Minneapolis, MN 55414

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKKB		
Lab Sample ID	BLANK-69491	Matrix	Water
Filename	U190403A_19	Dilution	NA
Total Amount Extracted	982 mL	Extracted	04/01/2019 12:05
ICAL ID	U190403	Analyzed	04/04/2019 03:34
CCal Filename(s)	U190403A_08	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	63
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	64
				1,2,3,7,8-PeCDF-13C	2.00	63
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	81
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	60
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	56
				1,2,3,4,7,8-HxCDD-13C	2.00	55
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	50
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	41
				1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	49
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	15 R
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	68
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

R = Recovery outside target range

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Tel: 612-607-1700
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-69492		
Filename	U190403A_11	Matrix	Water
Total Amount Extracted	929 mL	Dilution	NA
ICAL ID	U190403	Extracted	04/01/2019 12:05
CCal Filename	U190403A_08	Analyzed	04/03/2019 21:21
Method Blank ID	BLANK-69491	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	12	7.5	15.8	116
2,3,7,8-TCDD	10	13	6.7	15.8	129
1,2,3,7,8-PeCDF	50	58	40.0	67.0	116
2,3,4,7,8-PeCDF	50	59	34.0	80.0	118
1,2,3,7,8-PeCDD	50	53	35.0	71.0	106
1,2,3,4,7,8-HxCDF	50	60	36.0	67.0	121
1,2,3,6,7,8-HxCDF	50	57	42.0	65.0	113
2,3,4,6,7,8-HxCDF	50	59	35.0	78.0	117
1,2,3,7,8,9-HxCDF	50	57	39.0	65.0	113
1,2,3,4,7,8-HxCDD	50	60	35.0	82.0	120
1,2,3,6,7,8-HxCDD	50	67	38.0	67.0	134
1,2,3,7,8,9-HxCDD	50	65	32.0	81.0	130
1,2,3,4,6,7,8-HpCDF	50	61	41.0	61.0	122
1,2,3,4,7,8,9-HpCDF	50	57	39.0	69.0	113
1,2,3,4,6,7,8-HpCDD	50	56	35.0	70.0	112
OCDF	100	120	63.0	170.0	123
OCDD	100	120	78.0	144.0	123
2,3,7,8-TCDD-37Cl4	10	8.5	3.1	19.1	85
2,3,7,8-TCDF-13C	100	83	22.0	152.0	83
2,3,7,8-TCDD-13C	100	82	20.0	175.0	82
1,2,3,7,8-PeCDF-13C	100	79	21.0	192.0	79
2,3,4,7,8-PeCDF-13C	100	83	13.0	328.0	83
1,2,3,7,8-PeCDD-13C	100	97	21.0	227.0	97
1,2,3,4,7,8-HxCDF-13C	100	69	19.0	202.0	69
1,2,3,6,7,8-HxCDF-13C	100	72	21.0	159.0	72
2,3,4,6,7,8-HxCDF-13C	100	72	22.0	176.0	72
1,2,3,7,8,9-HxCDF-13C	100	73	17.0	205.0	73
1,2,3,4,7,8-HxCDD-13C	100	68	21.0	193.0	68
1,2,3,6,7,8-HxCDD-13C	100	63	25.0	163.0	63
1,2,3,4,6,7,8-HpCDF-13C	100	55	21.0	158.0	55
1,2,3,4,7,8,9-HpCDF-13C	100	62	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	63	26.0	166.0	63
OCDD-13C	200	120	26.0	397.0	58

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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Minneapolis, MN 55414

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-69493		
Filename	U190403A_12	Matrix	Water
Total Amount Extracted	963 mL	Dilution	NA
ICAL ID	U190403	Extracted	04/01/2019 12:05
CCal Filename	U190403A_08	Analyzed	04/03/2019 22:08
Method Blank ID	BLANK-69491	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDF	10	12	7.5	15.8	119	
2,3,7,8-TCDD	10	13	6.7	15.8	133	
1,2,3,7,8-PeCDF	50	61	40.0	67.0	121	
2,3,4,7,8-PeCDF	50	62	34.0	80.0	123	
1,2,3,7,8-PeCDD	50	56	35.0	71.0	112	
1,2,3,4,7,8-HxCDF	50	62	36.0	67.0	123	
1,2,3,6,7,8-HxCDF	50	58	42.0	65.0	117	
2,3,4,6,7,8-HxCDF	50	58	35.0	78.0	116	
1,2,3,7,8,9-HxCDF	50	57	39.0	65.0	114	
1,2,3,4,7,8-HxCDD	50	62	35.0	82.0	124	
1,2,3,6,7,8-HxCDD	50	66	38.0	67.0	131	
1,2,3,7,8,9-HxCDD	50	65	32.0	81.0	130	
1,2,3,4,6,7,8-HpCDF	50	63	41.0	61.0	125	R
1,2,3,4,7,8,9-HpCDF	50	58	39.0	69.0	116	
1,2,3,4,6,7,8-HpCDD	50	57	35.0	70.0	115	
OCDF	100	130	63.0	170.0	131	
OCDD	100	130	78.0	144.0	126	
2,3,7,8-TCDD-37Cl4	10	8.8	3.1	19.1	88	
2,3,7,8-TCDF-13C	100	77	22.0	152.0	77	
2,3,7,8-TCDD-13C	100	78	20.0	175.0	78	
1,2,3,7,8-PeCDF-13C	100	76	21.0	192.0	76	
2,3,4,7,8-PeCDF-13C	100	79	13.0	328.0	79	
1,2,3,7,8-PeCDD-13C	100	93	21.0	227.0	93	
1,2,3,4,7,8-HxCDF-13C	100	71	19.0	202.0	71	
1,2,3,6,7,8-HxCDF-13C	100	74	21.0	159.0	74	
2,3,4,6,7,8-HxCDF-13C	100	75	22.0	176.0	75	
1,2,3,7,8,9-HxCDF-13C	100	74	17.0	205.0	74	
1,2,3,4,7,8-HxCDD-13C	100	69	21.0	193.0	69	
1,2,3,6,7,8-HxCDD-13C	100	64	25.0	163.0	64	
1,2,3,4,6,7,8-HpCDF-13C	100	55	21.0	158.0	55	
1,2,3,4,7,8,9-HpCDF-13C	100	63	20.0	186.0	63	
1,2,3,4,6,7,8-HpCDD-13C	100	63	26.0	166.0	63	
OCDD-13C	200	110	26.0	397.0	57	

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Ransom Consulting Inc		
Spike 1 ID	LCS-69492	Spike 2 ID	LCSD-69493
Spike 1 Filename	U190403A_11	Spike 2 Filename	U190403A_12

Compound	Spike 1 %REC	Spike 2 %REC	%RPD
2,3,7,8-TCDF	116	119	2.6
2,3,7,8-TCDD	129	133	3.1
1,2,3,7,8-PeCDF	116	121	4.2
2,3,4,7,8-PeCDF	118	123	4.1
1,2,3,7,8-PeCDD	106	112	5.5
1,2,3,4,7,8-HxCDF	121	123	1.6
1,2,3,6,7,8-HxCDF	113	117	3.5
2,3,4,6,7,8-HxCDF	117	116	0.9
1,2,3,7,8,9-HxCDF	113	114	0.9
1,2,3,4,7,8-HxCDD	120	124	3.3
1,2,3,6,7,8-HxCDD	134	131	2.3
1,2,3,7,8,9-HxCDD	130	130	0.0
1,2,3,4,6,7,8-HpCDF	122	125	2.4
1,2,3,4,7,8,9-HpCDF	113	116	2.6
1,2,3,4,6,7,8-HpCDD	112	115	2.6
OCDF	123	131	6.3
OCDD	123	126	2.4

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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Report Prepared for:

Nancy Marshall
Ransom Consulting Inc
12 Kent Way
Suite 100
Byfield MA 01922

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10470124
Sample Receipt Date: 04/09/2019
Client Project #: 021.01074.010
Client Sub PO #: 11613
State Cert #: N/A

Invoicing & Reporting Options:

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

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

This report has been reviewed by:

April 30, 2019

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

Report Prepared Date:
April 30, 2019

Report of Laboratory Analysis

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

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Pace Analytical Services, LLC.
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DISCUSSION

This report presents the results from the analyses performed on seven samples submitted by a representative of Ransom Consulting, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were set to correspond to the lowest calibration points and nominal 10-gram or 1-Liter sample amounts, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

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

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 39-79%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. Concentrations above the calibration range were flagged "E" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not significantly impact the results reported for the field samples.

Laboratory spike samples were also prepared using clean reference matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 94-168% with relative percent differences (RPDs) of 0.9-24.0%. The recovery value obtained for 1,2,3,6,7,8-HxCDD in LCSD-69802 was above the target range for the method, flagged "R", and may indicate a high bias for this congener. Also, the RPD value obtained for OCDF was above the 20% target upper limit and may indicate elevated variability for this congener in the associated field sample determinations. Matrix spikes were prepared with the solid sample extraction batch using sample material from a separate project; results from these analyses will be provided upon request. Matrix spikes were not prepared with the water sample extraction batch.

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

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REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

2300894

Section A Required Client Information:

Company: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Email To: nmarshall@ransomenv.com
Phone: 978-465-1822 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Nancy Marshall
Copy To: Tim Gray, Chris Williams
Purchase Order No.: 11613
Project Name: NELH
Project Number: 021.01074.010

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 33276

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

WO#: 10470124

10470124

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: Dioxins	Dioxins	Residu	Pace Project No./ Lab I.D.
1	TW503a-WI-040419	WT	G			4/4/19	10:09	7	2	✓									✓			W1
2	TW505-WI-040419	WT	G			4/4/19	11:04	7	2	✓									✓			W2
3	TW506-WI-040419	WT	G			4/4/19	12:08	9	2	✓									✓			W3
4	TW507-WI-040419	WT	G			4/4/19	13:11	9	2	✓									✓			W4
5	TW511-WI-040419	WT	G			4/4/19	8:46	5	2	✓										✓		W5
6	Woodpile-52	SL	C	4/3/19	12:00	4/3/19	12:00	–	4	✓									✓			W6
7	Woodpile-57	SL	C	4/3/19	12:20	4/3/19	12:20	–	4	✓									✓			W7
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Chris Williams	4/5/2019	17:00	Cam w Pace	4/9/19	0850	3.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Williams

SIGNATURE of SAMPLER: Chris Williams DATE Signed (MM/DD/YY): 04/05/19

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-C-010-rev.00, 09Nov2017

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Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 05Apr2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.27	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Ransom Consulting, Inc.

Project #: WO#: 10470124

PM: NB3 Due Date: 04/30/19

CLIENT: Ransom Consu

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Pace [ ] SpeeDee [ ] Commercial

See Exception [ ]

Tracking Number: 7749 0582 7895

Custody Seal on Cooler/Box Present? [X] Yes [ ] No **Seals Intact?** [X] Yes [ ] No **Biological Tissue Frozen?** [ ] Yes [ ] No [X] N/A

Packing Material: [X] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other: _____ **Temp Blank?** [X] Yes [ ] No

Thermometer: [ ] T1(0461) [ ] T2(1336) [ ] T3(0459) [X] T4(0254) [ ] T5(0048) **Type of Ice:** [X] Wet [ ] Blue [ ] None [ ] Dry [ ] Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** _____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank :** _____ °C

Average Corrected Temp (no temp blank only): 3.6 °C **See Exceptions** [X]

USDA Regulated Soil: ([X] N/A, water sample/Other: OT/SL)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? [ ] Yes [ ] No

Date/Initials of Person Examining Contents: CG 4/9/19

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [ ] No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	[X] Yes	[ ] No		1.
Chain of Custody Relinquished?	[X] Yes	[ ] No		2.
Sampler Name and/or Signature on COC?	[X] Yes	[ ] No	[ ] N/A	3.
Samples Arrived within Hold Time?	[X] Yes	[ ] No		4.
Short Hold Time Analysis (<72 hr)?	[ ] Yes	[X] No		5. [ ] Fecal Coliform [ ] HPC [ ] Total Coliform/E coli [ ] BOD/cBOD [ ] Hex Chrome [ ] Turbidity [ ] Nitrate [ ] Nitrite [ ] Orthophos [ ] Other
Rush Turn Around Time Requested?	[ ] Yes	[X] No		6.
Sufficient Volume?	[X] Yes	[ ] No		7.
Correct Containers Used? -Pace Containers Used?	[X] Yes [X] Yes	[ ] No [ ] No		8.
Containers Intact?	[X] Yes	[ ] No		9.
Field Filtered Volume Received for Dissolved Tests?	[ ] Yes	[ ] No	[X] N/A	10. Is sediment visible in the dissolved container? [ ] Yes [ ] No
Is sufficient information available to reconcile the samples to the COC? Matrix: [X] Water [ ] Soil [ ] Oil [X] Other OT/SL	[X] Yes	[ ] No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** [ ]
All containers needing acid/base preservation have been checked?	[ ] Yes	[ ] No	[X] N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	[ ] Yes	[ ] No	[X] N/A	[ ] NaOH [ ] HNO_3 [ ] H_2SO_4 [ ] Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	[ ] Yes	[ ] No	[X] N/A	Positive for Res. Chlorine? [ ] Yes [ ] No **pH Paper Lot#** **See Exception** [ ]
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	[ ] Yes	[ ] No	[X] N/A	13. **See Exception** [ ]
Trip Blank Present?	[ ] Yes	[ ] No	[X] N/A	14.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] N/A	Pace Trip Blank Lot # (if purchased): N/A

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** [ ] Yes [ ] No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Lethan Boberg **Date:** 4/9/19

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

Labeled by: CLJ

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Pace Analytical	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.02	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
2.2	2.2	3.5
3.6	3.6	
4.0	4.0	
4.7	4.7	

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

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

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

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW503a-WI-040419		
Lab Sample ID	10470124001		
Filename	F190420A_09		
Injected By	JRH		
Total Amount Extracted	931 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	04/04/2019 10:09
ICAL ID	F190112	Received	04/09/2019 08:50
CCal Filename(s)	F190420A_02	Extracted	04/11/2019 11:00
Method Blank ID	BLANK-69800	Analyzed	04/20/2019 16:30

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	55
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	55
				1,2,3,7,8-PeCDF-13C	2.00	49
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	47
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	54
				1,2,3,4,7,8-HxCDF-13C	2.00	48
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	51
				1,2,3,4,7,8-HxCDD-13C	2.00	49
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	52
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	51
				1,2,3,4,7,8,9-HpCDF-13C	2.00	51
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	54
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW505-WI-040419		
Lab Sample ID	10470124002		
Filename	F190420A_10		
Injected By	JRH		
Total Amount Extracted	953 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	04/04/2019 11:04
ICAL ID	F190112	Received	04/09/2019 08:50
CCal Filename(s)	F190420A_02	Extracted	04/11/2019 11:00
Method Blank ID	BLANK-69800	Analyzed	04/20/2019 17:13

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	47
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	47
				1,2,3,7,8-PeCDF-13C	2.00	43
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	40
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	46
				1,2,3,4,7,8-HxCDF-13C	2.00	44
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	48
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	48
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	45
				1,2,3,4,7,8-HxCDD-13C	2.00	43
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	46
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
				1,2,3,4,7,8,9-HpCDF-13C	2.00	47
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	48
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 34 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	270	-----	50			
Total HpCDD	540	-----	50	3.93 using 2005 TEFs		
OCDF	ND	-----	100			
OCDD	4100	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW506-WI-040419		
Lab Sample ID	10470124003		
Filename	F190420A_11		
Injected By	JRH		
Total Amount Extracted	500 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	04/04/2019 12:08
ICAL ID	F190112	Received	04/09/2019 08:50
CCal Filename(s)	F190420A_02	Extracted	04/11/2019 11:00
Method Blank ID	BLANK-69800	Analyzed	04/20/2019 17:56

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	68
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	71
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	62
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	71
				1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	72
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	70
				1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	70
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	68
				1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	75
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW507-WI-040419		
Lab Sample ID	10470124004		
Filename	F190420A_12		
Injected By	JRH		
Total Amount Extracted	945 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	04/04/2019 13:11
ICAL ID	F190112	Received	04/09/2019 08:50
CCal Filename(s)	F190420A_02	Extracted	04/11/2019 11:00
Method Blank ID	BLANK-69800	Analyzed	04/20/2019 18:38

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	50
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	51
				1,2,3,7,8-PeCDF-13C	2.00	45
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	43
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	49
				1,2,3,4,7,8-HxCDF-13C	2.00	46
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	52
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	52
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	48
				1,2,3,4,7,8-HxCDD-13C	2.00	47
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	49
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	47
				1,2,3,4,7,8,9-HpCDF-13C	2.00	48
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	51
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	51
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	TW511-WI-040419		
Lab Sample ID	10470124005		
Filename	F190420A_13		
Injected By	JRH		
Total Amount Extracted	963 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	04/04/2019 08:46
ICAL ID	F190112	Received	04/09/2019 08:50
CCal Filename(s)	F190420A_02	Extracted	04/11/2019 11:00
Method Blank ID	BLANK-69800	Analyzed	04/20/2019 19:21

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	45
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	45
				1,2,3,7,8-PeCDF-13C	2.00	41
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	39
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	44
				1,2,3,4,7,8-HxCDF-13C	2.00	39
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	44
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	44
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	40
				1,2,3,4,7,8-HxCDD-13C	2.00	38
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	42
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	40
				1,2,3,4,7,8,9-HpCDF-13C	2.00	40
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	41
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Minneapolis, MN 55414

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	Woodpile-52		
Lab Sample ID	10470124006		
Filename	U190427B_15		
Injected By	JRH		
Total Amount Extracted	13.9 g	Matrix	Solid
% Moisture	26.3	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	04/03/2019 12:00
ICAL ID	U190424	Received	04/09/2019 08:50
CCal Filename(s)	U190427B_01	Extracted	04/25/2019 16:10
Method Blank ID	BLANK-70125	Analyzed	04/27/2019 23:26

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.3	-----	1.0		2,3,7,8-TCDF-13C	2.00	74
Total TCDF	8.9	-----	1.0		2,3,7,8-TCDD-13C	2.00	71
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	35	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	79
					1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	52	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	60	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	69
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	ND	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	71
1,2,3,6,7,8-HxCDF	ND	-----	5.0		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	ND	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	550	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,6,7,8-HxCDD	66	-----	5.0				
1,2,3,7,8,9-HxCDD	ND	-----	5.0				
Total HxCDD	330	-----	5.0				
1,2,3,4,6,7,8-HpCDF	500	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	28	-----	5.0		Equivalence: 360 ng/Kg		
Total HpCDF	2700	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	2300	-----	5.0				
Total HpCDD	3600	-----	5.0				
OCDF	4200	-----	10				
OCDD	17000	-----	10	E			

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E = Exceeds calibration range

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

Method 1613B Sample Analysis Results

Client - Ransom Consulting Inc

Client's Sample ID	Woodpile-57		
Lab Sample ID	10470124007		
Filename	U190427B_16		
Injected By	JRH		
Total Amount Extracted	18.2 g	Matrix	Solid
% Moisture	43.1	Dilution	NA
Dry Weight Extracted	10.3 g	Collected	04/03/2019 12:20
ICAL ID	U190424	Received	04/09/2019 08:50
CCal Filename(s)	U190427B_01	Extracted	04/25/2019 16:10
Method Blank ID	BLANK-70125	Analyzed	04/28/2019 00:11

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0		2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	-----	1.0		2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	-----	1.0		2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD	23	-----	1.0		1,2,3,7,8-PeCDD-13C	2.00	66
					1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	5.0		1,2,3,6,7,8-HxCDF-13C	2.00	69
2,3,4,7,8-PeCDF	ND	-----	5.0		2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF	54	-----	5.0		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	61
1,2,3,7,8-PeCDD	ND	-----	5.0		1,2,3,6,7,8-HxCDD-13C	2.00	61
Total PeCDD	74	-----	5.0		1,2,3,4,6,7,8-HpCDF-13C	2.00	58
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	5.4	-----	5.0		1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	5.7	-----	5.0		OCDD-13C	4.00	50
2,3,4,6,7,8-HxCDF	6.8	-----	5.0				
1,2,3,7,8,9-HxCDF	ND	-----	5.0		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	520	-----	5.0		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0		2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	65	-----	5.0				
1,2,3,7,8,9-HxCDD	ND	-----	5.0				
Total HxCDD	450	-----	5.0				
1,2,3,4,6,7,8-HpCDF	430	-----	5.0		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	29	-----	5.0		Equivalence: 360 ng/Kg		
Total HpCDF	1200	-----	5.0		(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	2300	-----	5.0				
Total HpCDD	4000	-----	5.0				
OCDF	3400	-----	10				
OCDD	27000	-----	10	E			

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NC = Not Calculated

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

Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKNF		
Lab Sample ID	BLANK-69800	Matrix	Water
Filename	U190415A_21	Dilution	NA
Total Amount Extracted	963 mL	Extracted	04/11/2019 11:00
ICAL ID	U190403	Analyzed	04/15/2019 17:01
CCal Filename(s)	U190415A_11	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	10	2,3,7,8-TCDF-13C	2.00	57
Total TCDF	ND	-----	10	2,3,7,8-TCDD-13C	2.00	58
				1,2,3,7,8-PeCDF-13C	2.00	58
2,3,7,8-TCDD	ND	-----	10	2,3,4,7,8-PeCDF-13C	2.00	57
Total TCDD	ND	-----	10	1,2,3,7,8-PeCDD-13C	2.00	65
				1,2,3,4,7,8-HxCDF-13C	2.00	51
1,2,3,7,8-PeCDF	ND	-----	50	1,2,3,6,7,8-HxCDF-13C	2.00	53
2,3,4,7,8-PeCDF	ND	-----	50	2,3,4,6,7,8-HxCDF-13C	2.00	53
Total PeCDF	ND	-----	50	1,2,3,7,8,9-HxCDF-13C	2.00	54
				1,2,3,4,7,8-HxCDD-13C	2.00	49
1,2,3,7,8-PeCDD	ND	-----	50	1,2,3,6,7,8-HxCDD-13C	2.00	47
Total PeCDD	ND	-----	50	1,2,3,4,6,7,8-HpCDF-13C	2.00	39
				1,2,3,4,7,8,9-HpCDF-13C	2.00	43
1,2,3,4,7,8-HxCDF	ND	-----	50	1,2,3,4,6,7,8-HpCDD-13C	2.00	41
1,2,3,6,7,8-HxCDF	ND	-----	50	OCDD-13C	4.00	35
2,3,4,6,7,8-HxCDF	ND	-----	50			
1,2,3,7,8,9-HxCDF	ND	-----	50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	50	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	50	2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	50			
1,2,3,7,8,9-HxCDD	ND	-----	50			
Total HxCDD	ND	-----	50			
1,2,3,4,6,7,8-HpCDF	ND	-----	50	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	50	Equivalence: 0.00 pg/L		
Total HpCDF	ND	-----	50	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	50			
Total HpCDD	ND	-----	50			
OCDF	ND	-----	100			
OCDD	ND	-----	100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKQT		
Lab Sample ID	BLANK-70125	Matrix	Solid/Wipe
Filename	Y190427A_09	Dilution	NA
Total Amount Extracted	20.2 g	Extracted	04/25/2019 16:10
ICAL ID	Y190424	Analyzed	04/27/2019 15:39
CCal Filename(s)	Y190427A_01	Injected By	JRH

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.0	2,3,7,8-TCDF-13C	2.00	76
Total TCDF	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	-----	1.0	2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	1.0	1,2,3,7,8-PeCDD-13C	2.00	87
				1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	ND	-----	5.0	1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	ND	-----	5.0	2,3,4,6,7,8-HxCDF-13C	2.00	91
Total PeCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDF-13C	2.00	85
				1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	5.0	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	ND	-----	5.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	88
				1,2,3,4,7,8,9-HpCDF-13C	2.00	80
1,2,3,4,7,8-HxCDF	ND	-----	5.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
1,2,3,6,7,8-HxCDF	ND	-----	5.0	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	ND	-----	5.0			
1,2,3,7,8,9-HxCDF	ND	-----	5.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	5.0	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	ND	-----	5.0			
1,2,3,7,8,9-HxCDD	ND	-----	5.0			
Total HxCDD	ND	-----	5.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	5.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	5.0	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	5.0	(Lower-bound - Using MADEP Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	5.0			
Total HpCDD	ND	-----	5.0			
OCDF	ND	-----	10			
OCDD	ND	-----	10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-69801		
Filename	U190415A_23	Matrix	Water
Total Amount Extracted	927 mL	Dilution	NA
ICAL ID	U190403	Extracted	04/11/2019 11:00
CCal Filename	U190415A_11	Analyzed	04/15/2019 18:32
Method Blank ID	BLANK-69800	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	11	7.5	15.8	110
2,3,7,8-TCDD	10	12	6.7	15.8	121
1,2,3,7,8-PeCDF	50	55	40.0	67.0	110
2,3,4,7,8-PeCDF	50	57	34.0	80.0	114
1,2,3,7,8-PeCDD	50	54	35.0	71.0	109
1,2,3,4,7,8-HxCDF	50	57	36.0	67.0	113
1,2,3,6,7,8-HxCDF	50	55	42.0	65.0	109
2,3,4,6,7,8-HxCDF	50	53	35.0	78.0	107
1,2,3,7,8,9-HxCDF	50	54	39.0	65.0	108
1,2,3,4,7,8-HxCDD	50	62	35.0	82.0	124
1,2,3,6,7,8-HxCDD	50	66	38.0	67.0	132
1,2,3,7,8,9-HxCDD	50	65	32.0	81.0	131
1,2,3,4,6,7,8-HpCDF	50	59	41.0	61.0	117
1,2,3,4,7,8,9-HpCDF	50	56	39.0	69.0	111
1,2,3,4,6,7,8-HpCDD	50	57	35.0	70.0	113
OCDF	100	170	63.0	170.0	168
OCDD	100	120	78.0	144.0	118
2,3,7,8-TCDD-37Cl4	10	8.4	3.1	19.1	84
2,3,7,8-TCDF-13C	100	71	22.0	152.0	71
2,3,7,8-TCDD-13C	100	73	20.0	175.0	73
1,2,3,7,8-PeCDF-13C	100	73	21.0	192.0	73
2,3,4,7,8-PeCDF-13C	100	72	13.0	328.0	72
1,2,3,7,8-PeCDD-13C	100	80	21.0	227.0	80
1,2,3,4,7,8-HxCDF-13C	100	64	19.0	202.0	64
1,2,3,6,7,8-HxCDF-13C	100	66	21.0	159.0	66
2,3,4,6,7,8-HxCDF-13C	100	66	22.0	176.0	66
1,2,3,7,8,9-HxCDF-13C	100	63	17.0	205.0	63
1,2,3,4,7,8-HxCDD-13C	100	59	21.0	193.0	59
1,2,3,6,7,8-HxCDD-13C	100	56	25.0	163.0	56
1,2,3,4,6,7,8-HpCDF-13C	100	44	21.0	158.0	44
1,2,3,4,7,8,9-HpCDF-13C	100	50	20.0	186.0	50
1,2,3,4,6,7,8-HpCDD-13C	100	48	26.0	166.0	48
OCDD-13C	200	60	26.0	397.0	30

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-70126		
Filename	Y190427A_16	Matrix	Solid/Wipe
Total Amount Extracted	20.6 g	Dilution	NA
ICAL ID	Y190424	Extracted	04/25/2019 16:10
CCal Filename	Y190427A_01	Analyzed	04/27/2019 20:58
Method Blank ID	BLANK-70125	Injected By	JRH

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10	7.5	15.8	100
2,3,7,8-TCDD	10	11	6.7	15.8	112
1,2,3,7,8-PeCDF	50	50	40.0	67.0	101
2,3,4,7,8-PeCDF	50	51	34.0	80.0	101
1,2,3,7,8-PeCDD	50	47	35.0	71.0	94
1,2,3,4,7,8-HxCDF	50	52	36.0	67.0	104
1,2,3,6,7,8-HxCDF	50	51	42.0	65.0	102
2,3,4,6,7,8-HxCDF	50	49	35.0	78.0	97
1,2,3,7,8,9-HxCDF	50	48	39.0	65.0	95
1,2,3,4,7,8-HxCDD	50	55	35.0	82.0	110
1,2,3,6,7,8-HxCDD	50	54	38.0	67.0	108
1,2,3,7,8,9-HxCDD	50	53	32.0	81.0	107
1,2,3,4,6,7,8-HpCDF	50	53	41.0	61.0	106
1,2,3,4,7,8,9-HpCDF	50	50	39.0	69.0	100
1,2,3,4,6,7,8-HpCDD	50	50	35.0	70.0	99
OCDF	100	100	63.0	170.0	104
OCDD	100	110	78.0	144.0	111
2,3,7,8-TCDD-37Cl4	10	6.3	3.1	19.1	63
2,3,7,8-TCDF-13C	100	68	22.0	152.0	68
2,3,7,8-TCDD-13C	100	68	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	70	21.0	192.0	70
2,3,4,7,8-PeCDF-13C	100	68	13.0	328.0	68
1,2,3,7,8-PeCDD-13C	100	73	21.0	227.0	73
1,2,3,4,7,8-HxCDF-13C	100	69	19.0	202.0	69
1,2,3,6,7,8-HxCDF-13C	100	72	21.0	159.0	72
2,3,4,6,7,8-HxCDF-13C	100	74	22.0	176.0	74
1,2,3,7,8,9-HxCDF-13C	100	69	17.0	205.0	69
1,2,3,4,7,8-HxCDD-13C	100	66	21.0	193.0	66
1,2,3,6,7,8-HxCDD-13C	100	65	25.0	163.0	65
1,2,3,4,6,7,8-HpCDF-13C	100	70	21.0	158.0	70
1,2,3,4,7,8,9-HpCDF-13C	100	64	20.0	186.0	64
1,2,3,4,6,7,8-HpCDD-13C	100	70	26.0	166.0	70
OCDD-13C	200	110	26.0	397.0	56

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCSD-69802		
Filename	U190415A_24	Matrix	Water
Total Amount Extracted	945 mL	Dilution	NA
ICAL ID	U190403	Extracted	04/11/2019 11:00
CCal Filename	U190415A_11	Analyzed	04/15/2019 19:17
Method Blank ID	BLANK-69800	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDF	10	12	7.5	15.8	117	
2,3,7,8-TCDD	10	13	6.7	15.8	129	
1,2,3,7,8-PeCDF	50	58	40.0	67.0	116	
2,3,4,7,8-PeCDF	50	60	34.0	80.0	120	
1,2,3,7,8-PeCDD	50	57	35.0	71.0	114	
1,2,3,4,7,8-HxCDF	50	61	36.0	67.0	121	
1,2,3,6,7,8-HxCDF	50	58	42.0	65.0	116	
2,3,4,6,7,8-HxCDF	50	56	35.0	78.0	113	
1,2,3,7,8,9-HxCDF	50	54	39.0	65.0	109	
1,2,3,4,7,8-HxCDD	50	64	35.0	82.0	128	
1,2,3,6,7,8-HxCDD	50	70	38.0	67.0	139	R
1,2,3,7,8,9-HxCDD	50	68	32.0	81.0	136	
1,2,3,4,6,7,8-HpCDF	50	60	41.0	61.0	120	
1,2,3,4,7,8,9-HpCDF	50	58	39.0	69.0	117	
1,2,3,4,6,7,8-HpCDD	50	61	35.0	70.0	121	
OCDF	100	130	63.0	170.0	132	
OCDD	100	130	78.0	144.0	126	
2,3,7,8-TCDD-37Cl4	10	7.9	3.1	19.1	79	
2,3,7,8-TCDF-13C	100	63	22.0	152.0	63	
2,3,7,8-TCDD-13C	100	65	20.0	175.0	65	
1,2,3,7,8-PeCDF-13C	100	66	21.0	192.0	66	
2,3,4,7,8-PeCDF-13C	100	65	13.0	328.0	65	
1,2,3,7,8-PeCDD-13C	100	72	21.0	227.0	72	
1,2,3,4,7,8-HxCDF-13C	100	56	19.0	202.0	56	
1,2,3,6,7,8-HxCDF-13C	100	58	21.0	159.0	58	
2,3,4,6,7,8-HxCDF-13C	100	59	22.0	176.0	59	
1,2,3,7,8,9-HxCDF-13C	100	58	17.0	205.0	58	
1,2,3,4,7,8-HxCDD-13C	100	54	21.0	193.0	54	
1,2,3,6,7,8-HxCDD-13C	100	51	25.0	163.0	51	
1,2,3,4,6,7,8-HpCDF-13C	100	43	21.0	158.0	43	
1,2,3,4,7,8,9-HpCDF-13C	100	46	20.0	186.0	46	
1,2,3,4,6,7,8-HpCDD-13C	100	44	26.0	166.0	44	
OCDD-13C	200	76	26.0	397.0	38	

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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

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

Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

Client	Ransom Consulting Inc		
Spike 1 ID	LCS-69801	Spike 2 ID	LCSD-69802
Spike 1 Filename	U190415A_23	Spike 2 Filename	U190415A_24

Compound	Spike 1 %REC	Spike 2 %REC	%RPD	
2,3,7,8-TCDF	110	117	6.2	
2,3,7,8-TCDD	121	129	6.4	
1,2,3,7,8-PeCDF	110	116	5.3	
2,3,4,7,8-PeCDF	114	120	5.1	
1,2,3,7,8-PeCDD	109	114	4.5	
1,2,3,4,7,8-HxCDF	113	121	6.8	
1,2,3,6,7,8-HxCDF	109	116	6.2	
2,3,4,6,7,8-HxCDF	107	113	5.5	
1,2,3,7,8,9-HxCDF	108	109	0.9	
1,2,3,4,7,8-HxCDD	124	128	3.2	
1,2,3,6,7,8-HxCDD	132	139	5.2	
1,2,3,7,8,9-HxCDD	131	136	3.7	
1,2,3,4,6,7,8-HpCDF	117	120	2.5	
1,2,3,4,7,8,9-HpCDF	111	117	5.3	
1,2,3,4,6,7,8-HpCDD	113	121	6.8	
OCDF	168	132	24.0	*
OCDD	118	126	6.6	

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value
* = RPD outside target range

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ANALYTICAL REPORT

Lab Number:	L1908895
Client:	Ransom Consulting, Inc. 12 Kent Way Suite 100 Byfield, MA 01922-1221
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	NELH
Project Number:	021.01074.010
Report Date:	03/14/19

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1908895-01	SB504A-S2	SOIL	GREAT BARRINGTON, MA	03/06/19 11:20	03/07/19
L1908895-02	SB504A-S5	SOIL	GREAT BARRINGTON, MA	03/06/19 11:45	03/07/19
L1908895-03	SB502A-S2	SOIL	GREAT BARRINGTON, MA	03/07/19 10:55	03/07/19
L1908895-04	SB502A-S5	SOIL	GREAT BARRINGTON, MA	03/07/19 11:15	03/07/19
L1908895-05	SB502A-S7	SOIL	GREAT BARRINGTON, MA	03/07/19 11:45	03/07/19
L1908895-06	TW501A-W2	WATER	GREAT BARRINGTON, MA	03/05/19 16:40	03/07/19
L1908895-07	TW504A-W1	WATER	GREAT BARRINGTON, MA	03/06/19 12:30	03/07/19
L1908895-08	TW504A-W2	WATER	GREAT BARRINGTON, MA	03/06/19 15:00	03/07/19
L1908895-09	TW504A-W3	WATER	GREAT BARRINGTON, MA	03/06/19 16:40	03/07/19
L1908895-10	TW502A-W1	WATER	GREAT BARRINGTON, MA	03/07/19 12:00	03/07/19
L1908895-11	TW502A-W2	WATER	GREAT BARRINGTON, MA	03/07/19 13:55	03/07/19

DRAFT

Project Name: NELH **Lab Number:** L1908895

Project Number: 021.01074.010 **Report Date:** 03/14/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

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Project Name:	NELH	**Lab Number:**	L1908895
Project Number:	021.01074.010	**Report Date:**	03/14/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

L1908895-03: The collection date and time on the chain of custody was 07-MAR-19 10:55; however, the collection date/time on the container label was 07-MAR-19 10:45. At the client's request, the collection date/time is reported as 07-MAR-19 10:55.

Semivolatile Organics by SIM

The initial calibration, associated with L1908895-06, -07, -08, -09, WG1214042-1, WG1214042-2 and WG1214042-3, utilized a quadratic fit for Pentachlorophenol.

L1908895-10 and -11: The sample has elevated detection limits due to the dilution required by the sample matrix.

In reference to question H:

L1908895-10 and -11: The surrogate recoveries are below the acceptance criteria for 2-fluorophenol (0%), phenol-d6 (0%), nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), 2,4,6-tribromophenol (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Amita Naik

Title: Technical Director/Representative Date: 03/14/19

QC OUTLIER SUMMARY REPORT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Semivolatile Organics by SIM - Westborough Lab								
8270D-SIM	TW502A-W1	L1908895-10 D	2-Fluorophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W1	L1908895-10 D	Phenol-d6	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W1	L1908895-10 D	Nitrobenzene-d5	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW502A-W1	L1908895-10 D	2-Fluorobiphenyl	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW502A-W1	L1908895-10 D	2,4,6-Tribromophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W1	L1908895-10 D	4-Terphenyl-d14	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	2-Fluorophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	Phenol-d6	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	Nitrobenzene-d5	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	2-Fluorobiphenyl	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	2,4,6-Tribromophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW502A-W2	L1908895-11 D	4-Terphenyl-d14	Surrogate	0	30-130	-	potential low bias

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ORGANICS

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SEMIVOLATILES

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-01
Client ID: SB504A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 11:20
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 03/11/19 15:43
Analyst: CB
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 03/09/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	410	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		30-130
Phenol-d6	72		30-130
Nitrobenzene-d5	78		30-130
2-Fluorobiphenyl	60		30-130
2,4,6-Tribromophenol	89		30-130
4-Terphenyl-d14	45		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-02
Client ID: SB504A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 11:45
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 03/11/19 15:17
Analyst: CB
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 03/09/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	380	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		30-130
Phenol-d6	63		30-130
Nitrobenzene-d5	64		30-130
2-Fluorobiphenyl	60		30-130
2,4,6-Tribromophenol	74		30-130
4-Terphenyl-d14	41		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-03
Client ID: SB502A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 10:55
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 03/11/19 16:36
Analyst: CB
Percent Solids: 90%

Extraction Method: EPA 3546
Extraction Date: 03/09/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	490		ug/kg	360	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	65		30-130
Phenol-d6	61		30-130
Nitrobenzene-d5	67		30-130
2-Fluorobiphenyl	58		30-130
2,4,6-Tribromophenol	72		30-130
4-Terphenyl-d14	48		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-04 D
Client ID: SB502A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 11:15
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 03/14/19 17:34
Analyst: EK
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 03/09/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	47000		ug/kg	4000	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	82		30-130
Phenol-d6	80		30-130
Nitrobenzene-d5	72		30-130
2-Fluorobiphenyl	78		30-130
2,4,6-Tribromophenol	87		30-130
4-Terphenyl-d14	68		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-05
Client ID: SB502A-S7
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 11:45
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 03/11/19 14:24
Analyst: CB
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 03/09/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	2900		ug/kg	370	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		30-130
Phenol-d6	62		30-130
Nitrobenzene-d5	79		30-130
2-Fluorobiphenyl	52		30-130
2,4,6-Tribromophenol	77		30-130
4-Terphenyl-d14	43		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-06
Client ID: TW501A-W2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/05/19 16:40
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/11/19 19:49
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	34		15-110
Phenol-d6	30		15-110
Nitrobenzene-d5	71		30-130
2-Fluorobiphenyl	74		30-130
2,4,6-Tribromophenol	58		15-110
4-Terphenyl-d14	73		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-07
Client ID: TW504A-W1
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 12:30
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/11/19 20:13
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	40		15-110
Phenol-d6	34		15-110
Nitrobenzene-d5	78		30-130
2-Fluorobiphenyl	79		30-130
2,4,6-Tribromophenol	59		15-110
4-Terphenyl-d14	74		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-08
Client ID: TW504A-W2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 15:00
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/11/19 20:37
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	34		15-110
Phenol-d6	30		15-110
Nitrobenzene-d5	80		30-130
2-Fluorobiphenyl	78		30-130
2,4,6-Tribromophenol	52		15-110
4-Terphenyl-d14	75		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-09
Client ID: TW504A-W3
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 16:40
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/11/19 21:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		15-110
Phenol-d6	37		15-110
Nitrobenzene-d5	57		30-130
2-Fluorobiphenyl	57		30-130
2,4,6-Tribromophenol	46		15-110
4-Terphenyl-d14	52		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-10 D
Client ID: TW502A-W1
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 12:00
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/13/19 21:09
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	6500		ug/l	800	--	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	**0**	Q	15-110
Phenol-d6	**0**	Q	15-110
Nitrobenzene-d5	**0**	Q	30-130
2-Fluorobiphenyl	**0**	Q	30-130
2,4,6-Tribromophenol	**0**	Q	15-110
4-Terphenyl-d14	**0**	Q	30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-11 D
Client ID: TW502A-W2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 13:55
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 03/13/19 21:40
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	420		ug/l	40	--	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	**0**	Q	15-110
Phenol-d6	**0**	Q	15-110
Nitrobenzene-d5	**0**	Q	30-130
2-Fluorobiphenyl	**0**	Q	30-130
2,4,6-Tribromophenol	**0**	Q	15-110
4-Terphenyl-d14	**0**	Q	30-130

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 03/10/19 17:15
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 03/09/19 00:16

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 01-05 Batch: WG1213967-1					
Pentachlorophenol	ND		ug/kg	320	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		30-130
Phenol-d6	71		30-130
Nitrobenzene-d5	70		30-130
2-Fluorobiphenyl	69		30-130
2,4,6-Tribromophenol	90		30-130
4-Terphenyl-d14	70		30-130

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 03/11/19 18:38
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 03/09/19 09:37

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 06-11 Batch: WG1214042-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	46		15-110
Phenol-d6	35		15-110
Nitrobenzene-d5	74		30-130
2-Fluorobiphenyl	75		30-130
2,4,6-Tribromophenol	69		15-110
4-Terphenyl-d14	69		30-130

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Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1908895

Report Date: 03/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 01-05 Batch: WG1213967-2 WG1213967-3								
Pentachlorophenol	62		61		30-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	72		72		30-130
Phenol-d6	70		71		30-130
Nitrobenzene-d5	72		73		30-130
2-Fluorobiphenyl	64		66		30-130
2,4,6-Tribromophenol	89		85		30-130
4-Terphenyl-d14	63		59		30-130

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Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1908895

Report Date: 03/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 06-11 Batch: WG1214042-2 WG1214042-3								
Pentachlorophenol	86		85		30-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	46		43		15-110
Phenol-d6	37		34		15-110
Nitrobenzene-d5	73		69		30-130
2-Fluorobiphenyl	77		72		30-130
2,4,6-Tribromophenol	73		70		15-110
4-Terphenyl-d14	73		74		30-130

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INORGANICS
&
MISCELLANEOUS

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-01
Client ID: SB504A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 11:20
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	03/08/19 14:00	121,2540G	RI

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-02
Client ID: SB504A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/06/19 11:45
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	03/08/19 14:00	121,2540G	RI

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-03
Client ID: SB502A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 10:55
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.8		%	0.100	NA	1	-	03/08/19 14:00	121,2540G	RI

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-04
Client ID: SB502A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 11:15
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	03/08/19 14:00	121,2540G	RI

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

SAMPLE RESULTS

Lab ID: L1908895-05
Client ID: SB502A-S7
Sample Location: GREAT BARRINGTON, MA

Date Collected: 03/07/19 11:45
Date Received: 03/07/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.9		%	0.100	NA	1	-	03/08/19 14:00	121,2540G	RI

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Lab Duplicate Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1908895

Report Date: 03/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG1213785-1 QC Sample: L1908895-01 Client ID: SB504A-S2						
Solids, Total	80.0	79.4	%	1		20

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Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1908895
Report Date: 03/14/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1908895-01A	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L1908895-01B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		MCP-AEXT-10(14)
L1908895-02A	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L1908895-02B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		MCP-AEXT-10(14)
L1908895-03A	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L1908895-03B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		MCP-AEXT-10(14)
L1908895-04A	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L1908895-04B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		MCP-AEXT-10(14)
L1908895-05A	Plastic 2oz unpreserved for TS	A	NA		3.9	Y	Absent		TS(7)
L1908895-05B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		MCP-AEXT-10(14)
L1908895-06A	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-06B	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-07A	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-07B	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-08A	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-08B	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-09A	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-10A	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-10B	Amber 1000ml unpreserved	B	7	7	4.3	Y	Absent		MCP-8270SIM-10(7)
L1908895-11A	Amber 1000ml unpreserved	A	7	7	3.9	Y	Absent		MCP-8270SIM-10(7)
L1908895-11B	Amber 1000ml unpreserved	A	7	7	3.9	Y	Absent		MCP-8270SIM-10(7)

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*Values in parentheses indicate holding time in days

Project Name:	NELH	**Lab Number:**	L1908895
Project Number:	021.01074.010	**Report Date:**	03/14/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the

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original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

DRAFT

Project Name:	NELH	**Lab Number:**	L1908895
Project Number:	021.01074.010	**Report Date:**	03/14/19

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

DRAFT

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

DRAFT

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 3/8/19

ALPHA Job #: L1908895

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Phone: 978-465-1877
Email: nmarshall@ransomenv.com

Additional Project Information:

Project Information

Project Name: NELH
Project Location: Great Barrington, MA
Project #: 021.01074.010
Project Manager: Nancy Marshall
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 11560

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: MUBS270D-Acid Extractables	SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	Sample Comments	TOTAL # BOTTLES
08895-01	SB504a-S2	3/6/19	11:20	S	CRW	✓			2
02	SB504a-S5	3/6/19	11:45	S	CRW	✓			2
03	SB502a-S2	3/7/19	10:55	S	CRW	✓			2
04	SB502a-S5	3/7/19	11:15	S	CRW	✓			2
05	SB502a-S7	3/7/19	11:45	S	CRW	✓			2
06	TW501a-W2	3/5/19	16:40	GW	CRW	✓			2
07	TW504a-W1	3/6/19	12:30	GW	CRW	✓			2
08	TW504a-W2	3/6/19	15:00	GW	CRW	✓			2
09	TW504a-W3	3/6/19	16:40	GW	CRW	✓			2
10	TW502a-W1	3/7/19	12:00	GW	CRW	✓			2

Container Type											
Preservative											

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	3/7/19 14:40		3/8/19 1440
	3/7/19 16:04		3/8/19 1605

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 3/8/19

ALPHA Job #: L1908895

Client Information

Client: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Phone: 978-465-1822
Email: nmarshall@ransomenv.com

Project Information

Project Name: NEH
Project Location: Great Barrington, MA
Project #: 021.01074.010
Project Manager: Nancy Marshall
ALPHA Quote #:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 115608

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
MCP8270D-Acid Extractables

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
	CRW			S	CRW		
08895-11	TW502a-W2	3/7/19	13:55	GW	CRW		2

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

	Container Type																							
	Preservative																							

Relinquished By:	Date/Time	Received By:	Date/Time
	3/7/19 14:40		3/7/19 14:40
	3/7/19 16:04		3/6/19 01:05

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

DRAFT

ANALYTICAL REPORT

Lab Number:	L1913168
Client:	Ransom Consulting, Inc. 12 Kent Way Suite 100 Byfield, MA 01922-1221
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	NELH
Project Number:	021.01074.010
Report Date:	04/09/19

DRAFT

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1913168-01	SB501B-S2	SOIL	GREAT BARRINGTON, MA	04/01/19 11:40	04/02/19
L1913168-02	SB501B-S5	SOIL	GREAT BARRINGTON, MA	04/01/19 12:00	04/02/19
L1913168-03	SB501B-S8	SOIL	GREAT BARRINGTON, MA	04/01/19 12:10	04/02/19
L1913168-04	TW501B-W1	WATER	GREAT BARRINGTON, MA	04/01/19 12:50	04/02/19
L1913168-05	TW501B-W2	WATER	GREAT BARRINGTON, MA	04/01/19 13:20	04/02/19
L1913168-06	TW501B-W3	WATER	GREAT BARRINGTON, MA	04/01/19 13:50	04/02/19
L1913168-07	SB503A-S2	SOIL	GREAT BARRINGTON, MA	04/01/19 15:05	04/02/19
L1913168-08	SB503A-S5	SOIL	GREAT BARRINGTON, MA	04/01/19 15:20	04/02/19
L1913168-09	SB503A-S6	SOIL	GREAT BARRINGTON, MA	04/01/19 15:25	04/02/19
L1913168-10	TW503A-W1	WATER	GREAT BARRINGTON, MA	04/01/19 15:50	04/02/19
L1913168-11	TW503A-W2	WATER	GREAT BARRINGTON, MA	04/01/19 16:05	04/02/19
L1913168-12	TW503A-W3	WATER	GREAT BARRINGTON, MA	04/01/19 16:40	04/02/19
L1913168-13	SB501C-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 12:05	04/02/19
L1913168-14	SB501C-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 12:15	04/02/19
L1913168-15	SB501E-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 11:25	04/02/19
L1913168-16	SB501E-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 11:35	04/02/19
L1913168-17	SB503B-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 10:35	04/02/19
L1913168-18	SB503B-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 10:45	04/02/19
L1913168-19	SB503C-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 09:55	04/02/19
L1913168-20	SB503C-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 10:05	04/02/19
L1913168-21	SB503D-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 09:10	04/02/19
L1913168-22	SB503D-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 09:20	04/02/19
L1913168-23	SB503E-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 08:20	04/02/19
L1913168-24	SB503E-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 08:35	04/02/19

DRAFT

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1913168-25	SB504C-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 13:10	04/02/19
L1913168-26	SB504C-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 13:20	04/02/19
L1913168-27	SB504D-S2	SOIL	GREAT BARRINGTON, MA	04/02/19 13:50	04/02/19
L1913168-28	SB504D-S5	SOIL	GREAT BARRINGTON, MA	04/02/19 14:00	04/02/19

DRAFT

Project Name: NELH **Lab Number:** L1913168

Project Number: 021.01074.010 **Report Date:** 04/09/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

DRAFT

Project Name:	NELH	**Lab Number:**	L1913168
Project Number:	021.01074.010	**Report Date:**	04/09/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

Case Narrative (continued)

MCP Related Narratives

Acid Extractables

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Semivolatile Organics by SIM

L1913168-10: The sample was lost after extraction due glassware breakage. Due to a lack of additional sample volume, re-extraction could not be performed.

L1913168-11: The sample has an elevated detection limit due to limited sample volume available for analysis.

In reference to question H:

L1913168-04 and -05: The surrogate recoveries are below the acceptance criteria for 2-fluorophenol (0%), phenol-d6 (0%), nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), 2,4,6-tribromophenol (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

DRAFT

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/09/19

QC OUTLIER SUMMARY REPORT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Semivolatile Organics - Westborough Lab								
8270D	Batch QC	WG1223874-3	Pentachlorophenol	LCSD	42	30	27-28	non-directional bias
MCP Semivolatile Organics by SIM - Westborough Lab								
8270D-SIM	TW501B-W1	L1913168-04 D	2-Fluorophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W1	L1913168-04 D	Phenol-d6	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W1	L1913168-04 D	Nitrobenzene-d5	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW501B-W1	L1913168-04 D	2-Fluorobiphenyl	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW501B-W1	L1913168-04 D	2,4,6-Tribromophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W1	L1913168-04 D	4-Terphenyl-d14	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	2-Fluorophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	Phenol-d6	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	Nitrobenzene-d5	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	2-Fluorobiphenyl	Surrogate	0	30-130	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	2,4,6-Tribromophenol	Surrogate	0	15-110	-	potential low bias
8270D-SIM	TW501B-W2	L1913168-05 D	4-Terphenyl-d14	Surrogate	0	30-130	-	potential low bias

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ORGANICS

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SEMIVOLATILES

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-01
Client ID: SB501B-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 11:40
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 09:44
Analyst: KR
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	540		ug/kg	390	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		30-130
Phenol-d6	49		30-130
Nitrobenzene-d5	47		30-130
2-Fluorobiphenyl	63		30-130
2,4,6-Tribromophenol	62		30-130
4-Terphenyl-d14	50		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-02
Client ID: SB501B-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 12:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 07:12
Analyst: KR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	2600		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	62		30-130
Phenol-d6	63		30-130
Nitrobenzene-d5	63		30-130
2-Fluorobiphenyl	83		30-130
2,4,6-Tribromophenol	88		30-130
4-Terphenyl-d14	65		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-03
Client ID: SB501B-S8
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 12:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 08:54
Analyst: KR
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	2800		ug/kg	380	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		30-130
Phenol-d6	67		30-130
Nitrobenzene-d5	75		30-130
2-Fluorobiphenyl	68		30-130
2,4,6-Tribromophenol	85		30-130
4-Terphenyl-d14	51		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-04 D
Client ID: TW501B-W1
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 12:50
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/09/19 15:58
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	460		ug/l	32	--	40

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	**0**	Q	15-110
Phenol-d6	**0**	Q	15-110
Nitrobenzene-d5	**0**	Q	30-130
2-Fluorobiphenyl	**0**	Q	30-130
2,4,6-Tribromophenol	**0**	Q	15-110
4-Terphenyl-d14	**0**	Q	30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-05 D
Client ID: TW501B-W2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 13:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/09/19 16:30
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	700		ug/l	80	--	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	**0**	Q	15-110
Phenol-d6	**0**	Q	15-110
Nitrobenzene-d5	**0**	Q	30-130
2-Fluorobiphenyl	**0**	Q	30-130
2,4,6-Tribromophenol	**0**	Q	15-110
4-Terphenyl-d14	**0**	Q	30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-06
Client ID: TW501B-W3
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 13:50
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/08/19 23:45
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	15		ug/l	0.79	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		15-110
Phenol-d6	40		15-110
Nitrobenzene-d5	93		30-130
2-Fluorobiphenyl	81		30-130
2,4,6-Tribromophenol	62		15-110
4-Terphenyl-d14	95		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-07
Client ID: SB503A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 02:32
Analyst: KR
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	390	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		30-130
Phenol-d6	45		30-130
Nitrobenzene-d5	43		30-130
2-Fluorobiphenyl	64		30-130
2,4,6-Tribromophenol	72		30-130
4-Terphenyl-d14	69		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-08
Client ID: SB503A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 02:58
Analyst: KR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	81		30-130
Phenol-d6	72		30-130
Nitrobenzene-d5	65		30-130
2-Fluorobiphenyl	93		30-130
2,4,6-Tribromophenol	90		30-130
4-Terphenyl-d14	71		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-09
Client ID: SB503A-S6
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:25
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 07:37
Analyst: KR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	83		30-130
Phenol-d6	78		30-130
Nitrobenzene-d5	64		30-130
2-Fluorobiphenyl	94		30-130
2,4,6-Tribromophenol	97		30-130
4-Terphenyl-d14	80		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-11
Client ID: TW503A-W2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 16:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/09/19 00:09
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	1.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		15-110
Phenol-d6	29		15-110
Nitrobenzene-d5	70		30-130
2-Fluorobiphenyl	60		30-130
2,4,6-Tribromophenol	51		15-110
4-Terphenyl-d14	72		30-130

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Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-12
Client ID: TW503A-W3
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 16:40
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/09/19 00:34
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	1.1		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		15-110
Phenol-d6	39		15-110
Nitrobenzene-d5	91		30-130
2-Fluorobiphenyl	74		30-130
2,4,6-Tribromophenol	63		15-110
4-Terphenyl-d14	83		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-13
Client ID: SB501C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 12:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 10:10
Analyst: KR
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	380	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	37		30-130
Phenol-d6	52		30-130
Nitrobenzene-d5	68		30-130
2-Fluorobiphenyl	90		30-130
2,4,6-Tribromophenol	78		30-130
4-Terphenyl-d14	76		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-14
Client ID: SB501C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 12:15
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 10:35
Analyst: KR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	410	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	74		30-130
Phenol-d6	70		30-130
Nitrobenzene-d5	56		30-130
2-Fluorobiphenyl	83		30-130
2,4,6-Tribromophenol	88		30-130
4-Terphenyl-d14	63		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-15
Client ID: SB501E-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 11:25
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 09:19
Analyst: KR
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	380	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	64		30-130
Phenol-d6	64		30-130
Nitrobenzene-d5	62		30-130
2-Fluorobiphenyl	82		30-130
2,4,6-Tribromophenol	83		30-130
4-Terphenyl-d14	62		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-16
Client ID: SB501E-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 11:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 03:23
Analyst: KR
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	450	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		30-130
Phenol-d6	52		30-130
Nitrobenzene-d5	53		30-130
2-Fluorobiphenyl	71		30-130
2,4,6-Tribromophenol	67		30-130
4-Terphenyl-d14	45		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-17
Client ID: SB503B-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 08:02
Analyst: KR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		30-130
Phenol-d6	61		30-130
Nitrobenzene-d5	54		30-130
2-Fluorobiphenyl	76		30-130
2,4,6-Tribromophenol	85		30-130
4-Terphenyl-d14	61		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-18
Client ID: SB503B-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:45
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 04:39
Analyst: KR
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	390	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		30-130
Phenol-d6	63		30-130
Nitrobenzene-d5	55		30-130
2-Fluorobiphenyl	76		30-130
2,4,6-Tribromophenol	75		30-130
4-Terphenyl-d14	65		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-19
Client ID: SB503C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:55
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 05:05
Analyst: KR
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	420	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	85		30-130
Phenol-d6	79		30-130
Nitrobenzene-d5	72		30-130
2-Fluorobiphenyl	99		30-130
2,4,6-Tribromophenol	90		30-130
4-Terphenyl-d14	75		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-20
Client ID: SB503C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 05:30
Analyst: KR
Percent Solids: 87%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	370	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		30-130
Phenol-d6	69		30-130
Nitrobenzene-d5	64		30-130
2-Fluorobiphenyl	89		30-130
2,4,6-Tribromophenol	82		30-130
4-Terphenyl-d14	77		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-21
Client ID: SB503D-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 05:55
Analyst: KR
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	390	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		30-130
Phenol-d6	66		30-130
Nitrobenzene-d5	59		30-130
2-Fluorobiphenyl	83		30-130
2,4,6-Tribromophenol	71		30-130
4-Terphenyl-d14	65		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-22
Client ID: SB503D-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 06:21
Analyst: KR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	410	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	80		30-130
Phenol-d6	74		30-130
Nitrobenzene-d5	63		30-130
2-Fluorobiphenyl	89		30-130
2,4,6-Tribromophenol	89		30-130
4-Terphenyl-d14	80		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-23
Client ID: SB503E-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 08:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 06:46
Analyst: KR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	62		30-130
Phenol-d6	62		30-130
Nitrobenzene-d5	58		30-130
2-Fluorobiphenyl	83		30-130
2,4,6-Tribromophenol	71		30-130
4-Terphenyl-d14	61		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-24
Client ID: SB503E-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 08:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 03:48
Analyst: KR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	400	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		30-130
Phenol-d6	71		30-130
Nitrobenzene-d5	61		30-130
2-Fluorobiphenyl	87		30-130
2,4,6-Tribromophenol	85		30-130
4-Terphenyl-d14	62		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-25
Client ID: SB504C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 08:28
Analyst: KR
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	420	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		30-130
Phenol-d6	55		30-130
Nitrobenzene-d5	57		30-130
2-Fluorobiphenyl	79		30-130
2,4,6-Tribromophenol	78		30-130
4-Terphenyl-d14	62		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-26
Client ID: SB504C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 04:14
Analyst: KR
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	410	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		30-130
Phenol-d6	66		30-130
Nitrobenzene-d5	59		30-130
2-Fluorobiphenyl	81		30-130
2,4,6-Tribromophenol	75		30-130
4-Terphenyl-d14	59		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-27
Client ID: SB504D-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:50
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 12:21
Analyst: EK
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	410	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	64		30-130
Phenol-d6	64		30-130
Nitrobenzene-d5	77		30-130
2-Fluorobiphenyl	67		30-130
2,4,6-Tribromophenol	74		30-130
4-Terphenyl-d14	48		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-28
Client ID: SB504D-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 14:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 04/09/19 12:45
Analyst: EK
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Acid Extractables - Westborough Lab						
Pentachlorophenol	ND		ug/kg	440	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		30-130
Phenol-d6	67		30-130
Nitrobenzene-d5	78		30-130
2-Fluorobiphenyl	67		30-130
2,4,6-Tribromophenol	71		30-130
4-Terphenyl-d14	47		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 04/09/19 02:24
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 04/06/19 13:52

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 27-28 Batch: WG1223874-1					
Pentachlorophenol	ND		ug/kg	330	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	93		30-130
Phenol-d6	90		30-130
Nitrobenzene-d5	92		30-130
2-Fluorobiphenyl	98		30-130
2,4,6-Tribromophenol	119		30-130
4-Terphenyl-d14	112		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 04/08/19 21:43
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/07/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 04-06,11-12 Batch: WG1223950-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	42		15-110
Phenol-d6	33		15-110
Nitrobenzene-d5	80		30-130
2-Fluorobiphenyl	72		30-130
2,4,6-Tribromophenol	63		15-110
4-Terphenyl-d14	82		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 04/09/19 00:25
Analyst: KR

Extraction Method: EPA 3546
Extraction Date: 04/07/19 09:54

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 01-03,07-09,13-26 Batch: WG1223965-1					
Pentachlorophenol	ND		ug/kg	330	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		30-130
Phenol-d6	70		30-130
Nitrobenzene-d5	59		30-130
2-Fluorobiphenyl	83		30-130
2,4,6-Tribromophenol	81		30-130
4-Terphenyl-d14	77		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1913168

Report Date: 04/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 27-28 Batch: WG1223874-2 WG1223874-3								
Pentachlorophenol	119		78		30-130	**42**	Q	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	77		36		30-130
Phenol-d6	82		43		30-130
Nitrobenzene-d5	83		43		30-130
2-Fluorobiphenyl	92		53		30-130
2,4,6-Tribromophenol	118		74		30-130
4-Terphenyl-d14	89		61		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1913168

Report Date: 04/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 04-06,11-12 Batch: WG1223950-2 WG1223950-3								
Pentachlorophenol	89		93		30-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	50		55		15-110
Phenol-d6	41		45		15-110
Nitrobenzene-d5	90		99		30-130
2-Fluorobiphenyl	78		85		30-130
2,4,6-Tribromophenol	65		68		15-110
4-Terphenyl-d14	81		87		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1913168

Report Date: 04/09/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 01-03,07-09,13-26 Batch: WG1223965-2 WG1223965-3								
Pentachlorophenol	82		100		30-130	20		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	72		85		30-130
Phenol-d6	68		80		30-130
Nitrobenzene-d5	59		69		30-130
2-Fluorobiphenyl	79		97		30-130
2,4,6-Tribromophenol	85		107		30-130
4-Terphenyl-d14	72		89		30-130

DRAFT

INORGANICS
&
MISCELLANEOUS

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-01
Client ID: SB501B-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 11:40
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-02
Client ID: SB501B-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 12:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-03
Client ID: SB501B-S8
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 12:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-07
Client ID: SB503A-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-08
Client ID: SB503A-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-09
Client ID: SB503A-S6
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/01/19 15:25
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-13
Client ID: SB501C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 12:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.3		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-14
Client ID: SB501C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 12:15
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	04/03/19 22:41	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-15
Client ID: SB501E-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 11:25
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-16
Client ID: SB501E-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 11:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.5		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-17
Client ID: SB503B-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-18
Client ID: SB503B-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:45
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-19
Client ID: SB503C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:55
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.0		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-20
Client ID: SB503C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 10:05
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-21
Client ID: SB503D-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-22
Client ID: SB503D-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 09:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.1		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-23
Client ID: SB503E-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 08:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-24
Client ID: SB503E-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 08:35
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.5		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-25
Client ID: SB504C-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:10
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.1		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-26
Client ID: SB504C-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:20
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-27
Client ID: SB504D-S2
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 13:50
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

SAMPLE RESULTS

Lab ID: L1913168-28
Client ID: SB504D-S5
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/02/19 14:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.6		%	0.100	NA	1	-	04/03/19 22:58	121,2540G	YA

DRAFT

Lab Duplicate Analysis

Batch Quality Control

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03,07-09,13-14 QC Batch ID: WG1222772-1 QC Sample: L1913168-01 Client ID: SB501B-S2						
Solids, Total	83.6	84.0	%	0		20

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1913168-01A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-01B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-02A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-02B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-03A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-03B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-04A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-04B	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-05A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-05B	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-06A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-07A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-07B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-08A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-08B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-09A	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		MCP-AEXT-10(14)
L1913168-09B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L1913168-10A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		HOLD-8270(7)
L1913168-11A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-12A	Amber 1000ml unpreserved	A	7	7	3.8	Y	Absent		MCP-8270SIM-10(7)
L1913168-13A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-13B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)

DRAFT

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1913168-14A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-14B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-15A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-15B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-16A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-16B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-17A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-17B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-18A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-18B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-19A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-19B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-20A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-20B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-21A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-21B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-22A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-22B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-23A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-23B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-24A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-24B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-25A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-25B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-26A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-26B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)
L1913168-27A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-27B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)

DRAFT

*Values in parentheses indicate holding time in days

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913168
Report Date: 04/09/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1913168-28A	Glass 120ml/4oz unpreserved	B	NA		2.4	Y	Absent		MCP-AEXT-10(14)
L1913168-28B	Plastic 2oz unpreserved for TS	B	NA		2.4	Y	Absent		TS(7)

DRAFT

*Values in parentheses indicate holding time in days

Project Name:	NELH	**Lab Number:**	L1913168
Project Number:	021.01074.010	**Report Date:**	04/09/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

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Project Name:	NELH	**Lab Number:**	L1913168
Project Number:	021.01074.010	**Report Date:**	04/09/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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Project Name:	NELH	**Lab Number:**	L1913168
Project Number:	021.01074.010	**Report Date:**	04/09/19

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

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LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

DRAFT

ALPHA ANALYTICAL

World Class Chemistry

CHAIN OF CUSTODY

PAGE 1 OF ____

Date Rec'd in Lab: 4/3/19

ALPHA Job #: L1913168

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Ransom Consulting, Inc.

Address: 12 Kent Way, Suite 100, Byfield, MA 01922

Phone: 978-465-1822

Email: nmarshall@ransomenv.com

Additional Project Information:

Project Information

Project Name: NEH

Project Location: Great Barrington, MA

Project #: 021.01074.010

Project Manager: Nancy Marshall

ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 11560

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods

☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)

☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)

☐ Yes ☑ No NPDES RGP

☐ Other State /Fed Program ____ Criteria ____

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; MCP 8270D-Acid Extractables

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	MCP 8270D-Acid Extractables	Sample Comments	TOTAL # BOTTLES
13168-01	SB501b-S2	4/1/19	11:40	S	CRW	✓		
-02	SB501b-S5	4/1/19	12:00	S	CRW	✓		
-03	SB501b-S8	4/1/19	12:10	S	CRW	✓		
-04	TW501b-W1	4/1/19	12:50	GW	CRW	✓		
-05	TW501b-W2	4/1/19	13:20	GW	CRW	✓		
-06	TW501b-W3	4/1/19	13:50	GW	CRW	✓		
-07	SB503a-S2	4/1/19	15:05	S	CRW	✓		
-08	SB503a-S5	4/1/19	15:20	S	CRW	✓		
-09	SB503a-S6	4/1/19	15:25	S	CRW	✓		
-10	TW503a-W1	4/1/19	15:50	GW	CRW	✓		

Container Type

Preservative

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/2/19 14:41	[signature]	4/2/19 14:41
[signature]	4/2/19 16:07	[signature]	4/3/19 0050

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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CHAIN OF CUSTODY

PAGE 2 OF _____

Date Rec'd in Lab: 4/3/19

ALPHA Job #: L1913168

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information
Project Name: NELH
Project Location: Great Barrington, MA
Project #: 021.01074.010
Project Manager: Nancy Marshall
ALPHA Quote #:

Report Information - Data Deliverables
☑ ADEx ☑ EMAIL

Billing Information
☑ Same as Client info PO #: 11560

Client Information
Client: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Phone: 978-465-1822
Email: nmarshall@ransomenv.com

Regulatory Requirements & Project Information Requirements
☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time
☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
MCP8270D-Acid Extractables

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	MCP8270D-Acid Extractables	Sample Comments	TOTAL # BOTTLES
13168-11	TW503a-W2	4/1/19	16:05	GW	CRW	✓		
-12	TW503a-W3	4/1/19	16:40	GW	CRW	✓		
-13	SB501c-S2	4/2/19	12:05	S	CRW	✓		
-14	SB501c-S5	4/2/19	12:15	S	CRW	✓		
-15	SB501e-S2	4/2/19	11:25	S	CRW	✓		
-16	SB501e-S5	4/2/19	11:35	S	CRW	✓		
-17	SB503b-S2	4/2/19	10:35	S	CRW	✓		
-18	SB503b-S5	4/2/19	10:45	S	CRW	✓		
-19	SB503c-S2	4/2/19	9:55	S	CRW	✓		
-20	SB503c-S5	4/2/19	10:05	S	CRW	✓		

Container Type								
Preservative								

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	4/2/19 14:41		4/2/19 14:41
	4/2/19 16:07		4/3/19 0052

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

DRAFT

CHAIN OF CUSTODY

PAGE 3 OF _____

Date Rec'd in Lab: 4/3/19

ALPHA Job #: L1913168

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Phone: 978-465-1822
Email: nmarshall@ransomenv.com

Project Information

Project Name: NELH
Project Location: Great Barrington, MA
Project #: 021.01074.010
Project Manager: Nancy Marshall
ALPHA Quote #:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 11560

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
MCP 8270D-Acid Extractables

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	MCP 8270D-Acid Extractables
L1913168-21	SB503d-S2	4/2/19	9:10	S	CRW	✓
-22	SB503d-S5	4/2/19	9:20	S	CRW	✓
-23	SB503e-S2	4/2/19	8:20	S	CRW	✓
-24	SB503e-S5	4/2/19	8:35	S	CRW	✓
-25	SB504c-S2	4/2/19	13:10	S	CRW	✓
-26	SB504c-S5	4/2/19	13:20	S	CRW	✓
-27	SB504d-S2	4/2/19	13:50	S	CRW	✓
-28	SB504d-S5	4/2/19	14:00	S	CRW	✓

Container Type	
Preservative	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Mary Williams	4/2/19 14:41		4/2/19 14:40
	4/2/19 16:07		4/3/19 0052

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

DRAFT

ANALYTICAL REPORT

Lab Number:	L1913579
Client:	Ransom Consulting, Inc. 12 Kent Way Suite 100 Byfield, MA 01922-1221
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	NELH
Project Number:	021.01074.010
Report Date:	04/12/19

DRAFT

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913579
Report Date: 04/12/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1913579-01	TW505-W1-040419	WATER	GREAT BARRINGTON, MA	04/04/19 11:04	04/04/19
L1913579-02	TW506-W1-040419	WATER	GREAT BARRINGTON, MA	04/04/19 12:08	04/04/19
L1913579-03	TW507-W1-040419	WATER	GREAT BARRINGTON, MA	04/04/19 13:11	04/04/19
L1913579-04	TW511-W1-040419	WATER	GREAT BARRINGTON, MA	04/04/19 08:46	04/04/19

DRAFT

Project Name: NELH **Lab Number:** L1913579

Project Number: 021.01074.010 **Report Date:** 04/12/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

DRAFT

Project Name:	NELH	**Lab Number:**	L1913579
Project Number:	021.01074.010	**Report Date:**	04/12/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913579
Report Date: 04/12/19

Case Narrative (continued)

MCP Related Narratives

Semivolatile Organics by SIM

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Dissolved Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

DRAFT

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 04/12/19

QC OUTLIER SUMMARY REPORT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913579
Report Date: 04/12/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

DRAFT

ORGANICS

DRAFT

SEMIVOLATILES

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913579
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-01
Client ID: TW505-W1-040419
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/04/19 11:04
Date Received: 04/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/11/19 19:27
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/10/19 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		15-110
Phenol-d6	34		15-110
Nitrobenzene-d5	91		30-130
2-Fluorobiphenyl	66		30-130
2,4,6-Tribromophenol	85		15-110
4-Terphenyl-d14	63		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913579
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-02
Client ID: TW506-W1-040419
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/04/19 12:08
Date Received: 04/04/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/12/19 12:35
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/10/19 02:04

DRAFT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		15-110
Phenol-d6	29		15-110
Nitrobenzene-d5	80		30-130
2-Fluorobiphenyl	86		30-130
2,4,6-Tribromophenol	93		15-110
4-Terphenyl-d14	74		30-130

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913579
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-03 D
Client ID: TW507-W1-040419
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/04/19 13:11
Date Received: 04/04/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/12/19 13:27
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 04/10/19 02:04

DRAFT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	120		ug/l	8.0	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		15-110
Phenol-d6	32		15-110
Nitrobenzene-d5	86		30-130
2-Fluorobiphenyl	109		30-130
2,4,6-Tribromophenol	86		15-110
4-Terphenyl-d14	91		30-130

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913579
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-04
Client ID: TW511-W1-040419
Sample Location: GREAT BARRINGTON, MA

Date Collected: 04/04/19 08:46
Date Received: 04/04/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 04/11/19 20:46
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/10/19 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		15-110
Phenol-d6	31		15-110
Nitrobenzene-d5	96		30-130
2-Fluorobiphenyl	58		30-130
2,4,6-Tribromophenol	71		15-110
4-Terphenyl-d14	59		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913579
Report Date: 04/12/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 04/11/19 17:40
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/10/19 02:04

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01-04 Batch: WG1224804-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		15-110
Phenol-d6	35		15-110
Nitrobenzene-d5	93		30-130
2-Fluorobiphenyl	70		30-130
2,4,6-Tribromophenol	88		15-110
4-Terphenyl-d14	68		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1913579

Report Date: 04/12/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-04 Batch: WG1224804-2 WG1224804-3								
Pentachlorophenol	82		89		30-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	41		64		15-110
Phenol-d6	30		40		15-110
Nitrobenzene-d5	89		121		30-130
2-Fluorobiphenyl	67		78		30-130
2,4,6-Tribromophenol	82		82		15-110
4-Terphenyl-d14	61		72		30-130

DRAFT

METALS

DRAFT

Project Name: NELH
Lab Number: L1913579
Project Number: 021.01074.010
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-02
Client ID: TW506-W1-040419
Sample Location: GREAT BARRINGTON, MA
Date Collected: 04/04/19 12:08
Date Received: 04/04/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		mg/l	0.010	--	1	04/08/19 14:05	04/10/19 17:58	EPA 3005A	97,6010D	AB

DRAFT

Project Name: NELH
Lab Number: L1913579
Project Number: 021.01074.010
Report Date: 04/12/19

SAMPLE RESULTS

Lab ID: L1913579-03
Client ID: TW507-W1-040419
Sample Location: GREAT BARRINGTON, MA
Date Collected: 04/04/19 13:11
Date Received: 04/04/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		mg/l	0.010	--	1	04/08/19 14:05	04/10/19 18:03	EPA 3005A	97,6010D	AB

DRAFT

Project Name: NELH
Project Number: 021.01074.010
Lab Number: L1913579
Report Date: 04/12/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 02-03 Batch: WG1224271-1										
Lead, Dissolved	ND		mg/l	0.010	--	1	04/08/19 14:05	04/10/19 17:54	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.010

Lab Number: L1913579

Report Date: 04/12/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 02-03 Batch: WG1224271-2 WG1224271-3								
Lead, Dissolved	105		108		80-120	3		20

DRAFT

Project Name: NELH
Project Number: 021.01074.010

Lab Number: L1913579
Report Date: 04/12/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1913579-01A	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-01B	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-02A	Plastic 250ml HNO3 preserved	A	<2	<2	4.7	Y	Absent		MCP-PB-6010S-10(180)
L1913579-02B	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-02C	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-03A	Plastic 250ml HNO3 preserved	A	<2	<2	4.7	Y	Absent		MCP-PB-6010S-10(180)
L1913579-03B	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-03C	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-04A	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)
L1913579-04B	Amber 1000ml unpreserved	A	7	7	4.7	Y	Absent		MCP-8270SIM-10(7)

DRAFT

*Values in parentheses indicate holding time in days

Project Name:	NELH	**Lab Number:**	L1913579
Project Number:	021.01074.010	**Report Date:**	04/12/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

DRAFT

Project Name:	NELH	**Lab Number:**	L1913579
Project Number:	021.01074.010	**Report Date:**	04/12/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

DRAFT

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 4/5/19

ALPHA Job #: L1913579

ALPHA ANALYTICAL
6 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Ransom Consulting, Inc.
Address: 12 Kent Way, Suite 100, Byfield, MA 01922
Phone: 978-465-1822
Email: nmarshall@ransomenv.com

Additional Project Information:

Project Information

Project Name: NELH
Project Location: Great Barrington, MA
Project #: 021.01074.010
Project Manager: Nancy Marshall
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 11560

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	MCP 8270D-Acid Extractables	Dissolved Lead	Sample Comments	TOTAL # BOTTLES
13579-01	TW505-W1-040419	4/4/19	11:04	GW	CRW									✓			
-02	TW506-W1-040419	4/4/19	12:08	GW	CRW									✓	✓		
-03	TW507-W1-040419	4/4/19	13:11	GW	CRW									✓	✓		
-04	TW511-W1-040419	4/4/19	8:46	GW	CRW									✓			

SAMPLE INFO
Filtration: ☑ Field ☐ Lab to do (if lead)
Preservation: ☐ Lab to do

Container Type																	
Preservative																	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	4/4/19 14:26		4/4/19 14:26
	4/4/19 16:04		4/5/19 0130

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

DRAFT

ANALYTICAL REPORT

Lab Number:	L2134324
Client:	Ransom Consulting, LLC. 50 High Street Suite 25 North Andover, MA 01845
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	NELH
Project Number:	021.01074.017
Report Date:	07/12/21

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The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2134324-01	MW601-W1-062421	WATER	GREAT BARRINGTON, MA	06/24/21 11:00	06/24/21
L2134324-02	MW602-W1-062421	WATER	GREAT BARRINGTON, MA	06/24/21 09:38	06/24/21
L2134324-03	MW603-W1-062421	WATER	GREAT BARRINGTON, MA	06/24/21 08:28	06/24/21
L2134324-04	MW604-W1-062321	WATER	GREAT BARRINGTON, MA	06/23/21 13:13	06/24/21
L2134324-05	MW605-W1-062321	WATER	GREAT BARRINGTON, MA	06/23/21 14:22	06/24/21

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

DRAFT

Project Name:	NELH	**Lab Number:**	L2134324
Project Number:	021.01074.017	**Report Date:**	07/12/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

DRAFT

Project Name:	NELH	**Lab Number:**	L2134324
Project Number:	021.01074.017	**Report Date:**	07/12/21

Case Narrative (continued)

MCP Related Narratives

Semivolatile Organics by SIM

L2134324-01, -02, -03, -04, -05, WG1518889-1, WG1518889-2/-3, WG1519342-1 and WG1519342-2/-3 :

The initial calibration utilized a quadratic fit for Pentachlorophenol.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

DRAFT

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Jennifer L Clements

Title: Technical Director/Representative Date: 07/12/21

QC OUTLIER SUMMARY REPORT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Semivolatile Organics by SIM - Westborough Lab								
8270D-SIM	MW601-W1-062421	L2134324-01	2,4,6-Tribromophenol	Surrogate	128	15-110	-	potential high bias
8270D-SIM	MW601-W1-062421	L2134324-01	4-Terphenyl-d14	Surrogate	133	30-130	-	potential high bias
8270D-SIM	MW604-W1-062321	L2134324-04	2,4,6-Tribromophenol	Surrogate	126	15-110	-	potential high bias
8270D-SIM	MW605-W1-062321	L2134324-05	2,4,6-Tribromophenol	Surrogate	124	15-110	-	potential high bias
8270D-SIM	Laboratory Method Bl	WG1518889-1	2,4,6-Tribromophenol	Surrogate	130	15-110	-	potential high bias
8270D-SIM	Batch QC	WG1518889-2	2,4,6-Tribromophenol	Surrogate	169	15-110	-	potential high bias
8270D-SIM	Batch QC	WG1518889-3	2,4,6-Tribromophenol	Surrogate	187	15-110	-	potential high bias
8270D-SIM	Laboratory Method Bl	WG1519342-1	2,4,6-Tribromophenol	Surrogate	132	15-110	-	potential high bias
8270D-SIM	Batch QC	WG1519342-2	2,4,6-Tribromophenol	Surrogate	145	15-110	-	potential high bias
8270D-SIM	Batch QC	WG1519342-3	2,4,6-Tribromophenol	Surrogate	141	15-110	-	potential high bias

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ORGANICS

DRAFT

SEMIVOLATILES

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-01
Client ID: MW601-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 11:00
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 07/07/21 16:55
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/01/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	49		15-110
Phenol-d6	60		15-110
Nitrobenzene-d5	110		30-130
2-Fluorobiphenyl	111		30-130
2,4,6-Tribromophenol	**128**	Q	15-110
4-Terphenyl-d14	**133**	Q	30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-02
Client ID: MW602-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 09:38
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 07/07/21 17:15
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/01/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	1.3		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	32		15-110
Phenol-d6	45		15-110
Nitrobenzene-d5	91		30-130
2-Fluorobiphenyl	87		30-130
2,4,6-Tribromophenol	81		15-110
4-Terphenyl-d14	114		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-03
Client ID: MW603-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 08:28
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 07/07/21 17:35
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/01/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	33		15-110
Phenol-d6	44		15-110
Nitrobenzene-d5	94		30-130
2-Fluorobiphenyl	89		30-130
2,4,6-Tribromophenol	81		15-110
4-Terphenyl-d14	117		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-04
Client ID: MW604-W1-062321
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/23/21 13:13
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 07/01/21 19:10
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/30/21 13:06

DRAFT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		15-110
Phenol-d6	62		15-110
Nitrobenzene-d5	103		30-130
2-Fluorobiphenyl	97		30-130
2,4,6-Tribromophenol	**126**	Q	15-110
4-Terphenyl-d14	115		30-130

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-05
Client ID: MW605-W1-062321
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/23/21 14:22
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 07/01/21 19:30
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/30/21 13:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		15-110
Phenol-d6	62		15-110
Nitrobenzene-d5	93		30-130
2-Fluorobiphenyl	92		30-130
2,4,6-Tribromophenol	**124**	Q	15-110
4-Terphenyl-d14	113		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 07/01/21 18:11
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 06/30/21 13:06

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 04-05 Batch: WG1518889-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		15-110
Phenol-d6	68		15-110
Nitrobenzene-d5	108		30-130
2-Fluorobiphenyl	110		30-130
2,4,6-Tribromophenol	**130**	Q	15-110
4-Terphenyl-d14	128		30-130

DRAFT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 07/02/21 14:11
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/01/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01-03 Batch: WG1519342-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		15-110
Phenol-d6	67		15-110
Nitrobenzene-d5	101		30-130
2-Fluorobiphenyl	91		30-130
2,4,6-Tribromophenol	**132**	Q	15-110
4-Terphenyl-d14	109		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.017

Lab Number: L2134324

Report Date: 07/12/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 04-05 Batch: WG1518889-2 WG1518889-3								
Pentachlorophenol	111		111		30-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	83		95		15-110
Phenol-d6	68		78		15-110
Nitrobenzene-d5	112		122		30-130
2-Fluorobiphenyl	103		113		30-130
2,4,6-Tribromophenol	**169**	Q	**187**	Q	15-110
4-Terphenyl-d14	121		130		30-130

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.017

Lab Number: L2134324

Report Date: 07/12/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1519342-2 WG1519342-3								
Pentachlorophenol	101		107		30-130	6		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	80		83		15-110
Phenol-d6	67		73		15-110
Nitrobenzene-d5	94		100		30-130
2-Fluorobiphenyl	82		89		30-130
2,4,6-Tribromophenol	**145**	Q	**141**	Q	15-110
4-Terphenyl-d14	100		102		30-130

DRAFT

SEMIVOLATILES

High Resolution Mass Spectrometry

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-01
Client ID: MW601-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 11:00
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 132,1613B
Analytical Date: 07/02/21 14:49
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab							
2,3,7,8-TCDD	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDD	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDD	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDD	ND			pg/l	48.5	--	1
OCDD	ND			pg/l	97.1	--	1
2,3,7,8-TCDF	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDF	ND			pg/l	48.5	--	1
2,3,4,7,8-PeCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDF	ND			pg/l	48.5	--	1
2,3,4,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8,9-HpCDF	ND			pg/l	48.5	--	1
OCDF	ND			pg/l	97.1	--	1
Total TCDD	ND			pg/l	9.71	--	1
Total PeCDD	ND			pg/l	48.5	--	1
Total HxCDD	ND			pg/l	48.5	--	1
Total HpCDD	ND			pg/l	48.5	--	1
Total TCDF	ND			pg/l	9.71	--	1
Total PeCDF	ND			pg/l	48.5	--	1
Total HxCDF	ND			pg/l	48.5	--	1
Total HpCDF	ND			pg/l	48.5	--	1
Total PCDD	ND			pg/l	9.71	--	1
Total PCDF	ND			pg/l	9.71	--	1
Toxic Equivalency (TEQ)	ND			pg/l	0.029	--	1

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-01 Date Collected: 06/24/21 11:00

Client ID: MW601-W1-062421 Date Received: 06/24/21

Sample Location: GREAT BARRINGTON, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab

Surrogate/Cleanup Standard	% Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	60		24-169
13C12-2,3,7,8-TCDD	57		25-164
13C12-1,2,3,7,8-PeCDF	61		24-185
13C12-2,3,4,7,8-PeCDF	64		21-178
13C12-1,2,3,7,8-PeCDD	67		25-181
13C12-1,2,3,4,7,8-HxCDF	64		26-152
13C12-1,2,3,6,7,8-HxCDF	69		26-123
13C12-2,3,4,6,7,8-HxCDF	70		28-136
13C12-1,2,3,7,8,9-HxCDF	71		29-147
13C12-1,2,3,4,7,8-HxCDD	60		32-141
13C12-1,2,3,6,7,8-HxCDD	60		28-130
13C12-1,2,3,4,6,7,8-HpCDF	64		28-143
13C12-1,2,3,4,7,8,9-HpCDF	66		26-138
13C12-1,2,3,4,6,7,8-HpCDD	66		23-140
13C12-OCDD	61		17-157
37CL4-2,3,7,8-TCDD	99		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-02
Client ID: MW602-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 09:38
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 132,1613B
Analytical Date: 07/02/21 19:05
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab							
2,3,7,8-TCDD	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDD	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDD	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDD	ND			pg/l	48.5	--	1
OCDD	ND			pg/l	97.1	--	1
2,3,7,8-TCDF	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDF	ND			pg/l	48.5	--	1
2,3,4,7,8-PeCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDF	ND			pg/l	48.5	--	1
2,3,4,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8,9-HpCDF	ND			pg/l	48.5	--	1
OCDF	ND			pg/l	97.1	--	1
Total TCDD	ND			pg/l	9.71	--	1
Total PeCDD	ND			pg/l	48.5	--	1
Total HxCDD	ND			pg/l	48.5	--	1
Total HpCDD	ND			pg/l	48.5	--	1
Total TCDF	ND			pg/l	9.71	--	1
Total PeCDF	ND			pg/l	48.5	--	1
Total HxCDF	ND			pg/l	48.5	--	1
Total HpCDF	ND			pg/l	48.5	--	1
Total PCDD	ND			pg/l	9.71	--	1
Total PCDF	ND			pg/l	9.71	--	1
Toxic Equivalency (TEQ)	ND			pg/l	0.029	--	1

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-02 Date Collected: 06/24/21 09:38

Client ID: MW602-W1-062421 Date Received: 06/24/21

Sample Location: GREAT BARRINGTON, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab

Surrogate/Cleanup Standard	% Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	73		24-169
13C12-2,3,7,8-TCDD	69		25-164
13C12-1,2,3,7,8-PeCDF	75		24-185
13C12-2,3,4,7,8-PeCDF	78		21-178
13C12-1,2,3,7,8-PeCDD	80		25-181
13C12-1,2,3,4,7,8-HxCDF	60		26-152
13C12-1,2,3,6,7,8-HxCDF	67		26-123
13C12-2,3,4,6,7,8-HxCDF	67		28-136
13C12-1,2,3,7,8,9-HxCDF	78		29-147
13C12-1,2,3,4,7,8-HxCDD	58		32-141
13C12-1,2,3,6,7,8-HxCDD	66		28-130
13C12-1,2,3,4,6,7,8-HpCDF	74		28-143
13C12-1,2,3,4,7,8,9-HpCDF	79		26-138
13C12-1,2,3,4,6,7,8-HpCDD	81		23-140
13C12-OCDD	74		17-157
37CL4-2,3,7,8-TCDD	102		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-03
Client ID: MW603-W1-062421
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/24/21 08:28
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 132,1613B
Analytical Date: 07/02/21 21:13
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab							
2,3,7,8-TCDD	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDD	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDD	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDD	ND			pg/l	48.5	--	1
OCDD	ND			pg/l	97.1	--	1
2,3,7,8-TCDF	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDF	ND			pg/l	48.5	--	1
2,3,4,7,8-PeCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDF	ND			pg/l	48.5	--	1
2,3,4,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8,9-HpCDF	ND			pg/l	48.5	--	1
OCDF	ND			pg/l	97.1	--	1
Total TCDD	ND			pg/l	9.71	--	1
Total PeCDD	ND			pg/l	48.5	--	1
Total HxCDD	ND			pg/l	48.5	--	1
Total HpCDD	ND			pg/l	48.5	--	1
Total TCDF	ND			pg/l	9.71	--	1
Total PeCDF	ND			pg/l	48.5	--	1
Total HxCDF	ND			pg/l	48.5	--	1
Total HpCDF	ND			pg/l	48.5	--	1
Total PCDD	ND			pg/l	9.71	--	1
Total PCDF	ND			pg/l	9.71	--	1
Toxic Equivalency (TEQ)	ND			pg/l	0.029	--	1

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-03 Date Collected: 06/24/21 08:28

Client ID: MW603-W1-062421 Date Received: 06/24/21

Sample Location: GREAT BARRINGTON, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab

Surrogate/Cleanup Standard	% Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	69		24-169
13C12-2,3,7,8-TCDD	65		25-164
13C12-1,2,3,7,8-PeCDF	70		24-185
13C12-2,3,4,7,8-PeCDF	74		21-178
13C12-1,2,3,7,8-PeCDD	79		25-181
13C12-1,2,3,4,7,8-HxCDF	64		26-152
13C12-1,2,3,6,7,8-HxCDF	71		26-123
13C12-2,3,4,6,7,8-HxCDF	70		28-136
13C12-1,2,3,7,8,9-HxCDF	75		29-147
13C12-1,2,3,4,7,8-HxCDD	64		32-141
13C12-1,2,3,6,7,8-HxCDD	62		28-130
13C12-1,2,3,4,6,7,8-HpCDF	69		28-143
13C12-1,2,3,4,7,8,9-HpCDF	73		26-138
13C12-1,2,3,4,6,7,8-HpCDD	75		23-140
13C12-OCDD	78		17-157
37CL4-2,3,7,8-TCDD	100		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-04
Client ID: MW604-W1-062321
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/23/21 13:13
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 132,1613B
Analytical Date: 07/02/21 22:17
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab							
2,3,7,8-TCDD	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDD	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDD	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDD	ND			pg/l	48.5	--	1
OCDD	ND			pg/l	97.1	--	1
2,3,7,8-TCDF	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDF	ND			pg/l	48.5	--	1
2,3,4,7,8-PeCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDF	ND			pg/l	48.5	--	1
2,3,4,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8,9-HpCDF	ND			pg/l	48.5	--	1
OCDF	ND			pg/l	97.1	--	1
Total TCDD	ND			pg/l	9.71	--	1
Total PeCDD	ND			pg/l	48.5	--	1
Total HxCDD	ND			pg/l	48.5	--	1
Total HpCDD	ND			pg/l	48.5	--	1
Total TCDF	ND			pg/l	9.71	--	1
Total PeCDF	ND			pg/l	48.5	--	1
Total HxCDF	ND			pg/l	48.5	--	1
Total HpCDF	ND			pg/l	48.5	--	1
Total PCDD	ND			pg/l	9.71	--	1
Total PCDF	ND			pg/l	9.71	--	1
Toxic Equivalency (TEQ)	ND			pg/l	0.029	--	1

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-04 Date Collected: 06/23/21 13:13

Client ID: MW604-W1-062321 Date Received: 06/24/21

Sample Location: GREAT BARRINGTON, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab

Surrogate/Cleanup Standard	% Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	64		24-169
13C12-2,3,7,8-TCDD	57		25-164
13C12-1,2,3,7,8-PeCDF	56		24-185
13C12-2,3,4,7,8-PeCDF	59		21-178
13C12-1,2,3,7,8-PeCDD	59		25-181
13C12-1,2,3,4,7,8-HxCDF	64		26-152
13C12-1,2,3,6,7,8-HxCDF	68		26-123
13C12-2,3,4,6,7,8-HxCDF	74		28-136
13C12-1,2,3,7,8,9-HxCDF	73		29-147
13C12-1,2,3,4,7,8-HxCDD	64		32-141
13C12-1,2,3,6,7,8-HxCDD	59		28-130
13C12-1,2,3,4,6,7,8-HpCDF	67		28-143
13C12-1,2,3,4,7,8,9-HpCDF	68		26-138
13C12-1,2,3,4,6,7,8-HpCDD	68		23-140
13C12-OCDD	58		17-157
37CL4-2,3,7,8-TCDD	98		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-05
Client ID: MW605-W1-062321
Sample Location: GREAT BARRINGTON, MA

Date Collected: 06/23/21 14:22
Date Received: 06/24/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 132,1613B
Analytical Date: 07/02/21 23:21
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab							
2,3,7,8-TCDD	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDD	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDD	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDD	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDD	ND			pg/l	48.5	--	1
OCDD	ND			pg/l	97.1	--	1
2,3,7,8-TCDF	ND			pg/l	9.71	--	1
1,2,3,7,8-PeCDF	ND			pg/l	48.5	--	1
2,3,4,7,8-PeCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,7,8,9-HxCDF	ND			pg/l	48.5	--	1
2,3,4,6,7,8-HxCDF	ND			pg/l	48.5	--	1
1,2,3,4,6,7,8-HpCDF	ND			pg/l	48.5	--	1
1,2,3,4,7,8,9-HpCDF	ND			pg/l	48.5	--	1
OCDF	ND			pg/l	97.1	--	1
Total TCDD	ND			pg/l	9.71	--	1
Total PeCDD	ND			pg/l	48.5	--	1
Total HxCDD	ND			pg/l	48.5	--	1
Total HpCDD	ND			pg/l	48.5	--	1
Total TCDF	ND			pg/l	9.71	--	1
Total PeCDF	ND			pg/l	48.5	--	1
Total HxCDF	ND			pg/l	48.5	--	1
Total HpCDF	ND			pg/l	48.5	--	1
Total PCDD	ND			pg/l	9.71	--	1
Total PCDF	ND			pg/l	9.71	--	1
Toxic Equivalency (TEQ)	ND			pg/l	0.029	--	1

DRAFT

Project Name: NELH **Lab Number:** L2134324

Project Number: 021.01074.017 **Report Date:** 07/12/21

SAMPLE RESULTS

Lab ID: L2134324-05 Date Collected: 06/23/21 14:22

Client ID: MW605-W1-062321 Date Received: 06/24/21

Sample Location: GREAT BARRINGTON, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	EMPC	Units	RL	MDL	Dilution Factor

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab

Surrogate/Cleanup Standard	% Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	66		24-169
13C12-2,3,7,8-TCDD	62		25-164
13C12-1,2,3,7,8-PeCDF	66		24-185
13C12-2,3,4,7,8-PeCDF	67		21-178
13C12-1,2,3,7,8-PeCDD	72		25-181
13C12-1,2,3,4,7,8-HxCDF	68		26-152
13C12-1,2,3,6,7,8-HxCDF	73		26-123
13C12-2,3,4,6,7,8-HxCDF	72		28-136
13C12-1,2,3,7,8,9-HxCDF	75		29-147
13C12-1,2,3,4,7,8-HxCDD	65		32-141
13C12-1,2,3,6,7,8-HxCDD	63		28-130
13C12-1,2,3,4,6,7,8-HpCDF	70		28-143
13C12-1,2,3,4,7,8,9-HpCDF	68		26-138
13C12-1,2,3,4,6,7,8-HpCDD	73		23-140
13C12-OCDD	62		17-157
37CL4-2,3,7,8-TCDD	102		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 132,1613B
Analytical Date: 07/02/21 12:35
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab for sample(s): 01-05 Batch: WG1518091-1						
2,3,7,8-TCDD	ND			pg/l	10.0	--
1,2,3,7,8-PeCDD	ND			pg/l	50.0	--
1,2,3,4,7,8-HxCDD	ND			pg/l	50.0	--
1,2,3,6,7,8-HxCDD	ND			pg/l	50.0	--
1,2,3,7,8,9-HxCDD	ND			pg/l	50.0	--
1,2,3,4,6,7,8-HpCDD	ND			pg/l	50.0	--
OCDD	ND			pg/l	100	--
2,3,7,8-TCDF	ND			pg/l	10.0	--
1,2,3,7,8-PeCDF	ND			pg/l	50.0	--
2,3,4,7,8-PeCDF	ND			pg/l	50.0	--
1,2,3,4,7,8-HxCDF	ND			pg/l	50.0	--
1,2,3,6,7,8-HxCDF	ND			pg/l	50.0	--
1,2,3,7,8,9-HxCDF	ND			pg/l	50.0	--
2,3,4,6,7,8-HxCDF	ND			pg/l	50.0	--
1,2,3,4,6,7,8-HpCDF	ND			pg/l	50.0	--
1,2,3,4,7,8,9-HpCDF	ND			pg/l	50.0	--
OCDF	ND			pg/l	100	--
Total TCDD	ND			pg/l	10.0	--
Total PeCDD	ND			pg/l	50.0	--
Total HxCDD	ND			pg/l	50.0	--
Total HpCDD	ND			pg/l	50.0	--
Total TCDF	ND			pg/l	10.0	--
Total PeCDF	ND			pg/l	50.0	--
Total HxCDF	ND			pg/l	50.0	--
Total HpCDF	ND			pg/l	50.0	--
Total PCDD	ND			pg/l	10.0	--
Total PCDF	ND			pg/l	10.0	--
Toxic Equivalency (TEQ)	ND			pg/l	0.030	--

DRAFT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 132,1613B
Analytical Date: 07/02/21 12:35
Analyst: PB

Extraction Method: EPA 1613B
Extraction Date: 06/29/21 08:20
Cleanup Method: EPA 1613B
Cleanup Date: 07/01/21

Parameter	Result	Qualifier	EMPC	Units	RL	MDL
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab for sample(s): 01-05 Batch: WG1518091-1						

Surrogate/Cleanup Standard	%Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	69		24-169
13C12-2,3,7,8-TCDD	63		25-164
13C12-1,2,3,7,8-PeCDF	65		24-185
13C12-2,3,4,7,8-PeCDF	69		21-178
13C12-1,2,3,7,8-PeCDD	70		25-181
13C12-1,2,3,4,7,8-HxCDF	69		26-152
13C12-1,2,3,6,7,8-HxCDF	74		26-123
13C12-2,3,4,6,7,8-HxCDF	74		28-136
13C12-1,2,3,7,8,9-HxCDF	76		29-147
13C12-1,2,3,4,7,8-HxCDD	67		32-141
13C12-1,2,3,6,7,8-HxCDD	63		28-130
13C12-1,2,3,4,6,7,8-HpCDF	66		28-143
13C12-1,2,3,4,7,8,9-HpCDF	67		26-138
13C12-1,2,3,4,6,7,8-HpCDD	65		23-140
13C12-OCDD	55		17-157
37CL4-2,3,7,8-TCDD	92		35-197

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.017

Lab Number: L2134324

Report Date: 07/12/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 Batch: WG1518091-2								
2,3,7,8-TCDD	103		-		67-158	-		25
1,2,3,7,8-PeCDD	100		-		70-142	-		25
1,2,3,4,7,8-HxCDD	109		-		70-164	-		25
1,2,3,6,7,8-HxCDD	113		-		76-134	-		25
1,2,3,7,8,9-HxCDD	120		-		64-162	-		25
1,2,3,4,6,7,8-HpCDD	98		-		70-140	-		25
OCDD	98		-		78-144	-		25
2,3,7,8-TCDF	111		-		75-158	-		25
1,2,3,7,8-PeCDF	104		-		80-134	-		25
2,3,4,7,8-PeCDF	94		-		68-160	-		25
1,2,3,4,7,8-HxCDF	115		-		72-134	-		25
1,2,3,6,7,8-HxCDF	111		-		84-130	-		25
1,2,3,7,8,9-HxCDF	110		-		78-130	-		25
2,3,4,6,7,8-HxCDF	106		-		70-156	-		25
1,2,3,4,6,7,8-HpCDF	111		-		82-122	-		25
1,2,3,4,7,8,9-HpCDF	112		-		78-138	-		25
OCDF	115		-		63-170	-		25

DRAFT

Lab Control Sample Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.017

Lab Number: L2134324

Report Date: 07/12/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 Batch: WG1518091-2								

Surrogate/Cleanup Standard	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
13C12-2,3,7,8-TCDF	72				24-169
13C12-2,3,7,8-TCDD	68				25-164
13C12-1,2,3,7,8-PeCDF	73				24-185
13C12-2,3,4,7,8-PeCDF	76				21-178
13C12-1,2,3,7,8-PeCDD	79				25-181
13C12-1,2,3,4,7,8-HxCDF	72				26-152
13C12-1,2,3,6,7,8-HxCDF	77				26-123
13C12-2,3,4,6,7,8-HxCDF	79				28-136
13C12-1,2,3,7,8,9-HxCDF	81				29-147
13C12-1,2,3,4,7,8-HxCDD	71				32-141
13C12-1,2,3,6,7,8-HxCDD	68				28-130
13C12-1,2,3,4,6,7,8-HpCDF	74				28-143
13C12-1,2,3,4,7,8,9-HpCDF	76				26-138
13C12-1,2,3,4,6,7,8-HpCDD	79				23-140
13C12-OCDD	68				17-157
37CL4-2,3,7,8-TCDD	101				35-197

DRAFT

Matrix Spike Analysis

Batch Quality Control

Project Name: NELH
Project Number: 021.01074.017
Lab Number: L2134324
Report Date: 07/12/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1518091-3 QC Sample: L2134324-01 Client ID: MW601-W1-062421												
2,3,7,8-TCDD	ND	194	210	108		-	-		67-158	-		25
1,2,3,7,8-PeCDD	ND	971	940	97		-	-		70-142	-		25
1,2,3,4,7,8-HxCDD	ND	971	1070	110		-	-		70-164	-		25
1,2,3,6,7,8-HxCDD	ND	971	1100	113		-	-		76-134	-		25
1,2,3,7,8,9-HxCDD	ND	971	1160	119		-	-		64-162	-		25
1,2,3,4,6,7,8-HpCDD	ND	971	979	101		-	-		70-140	-		25
OCDD	ND	1940	1950	100		-	-		78-144	-		25
2,3,7,8-TCDF	ND	194	223	115		-	-		75-158	-		25
1,2,3,7,8-PeCDF	ND	971	1030	106		-	-		80-134	-		25
2,3,4,7,8-PeCDF	ND	971	932	96		-	-		68-160	-		25
1,2,3,4,7,8-HxCDF	ND	971	1120	115		-	-		72-134	-		25
1,2,3,6,7,8-HxCDF	ND	971	1070	110		-	-		84-130	-		25
1,2,3,7,8,9-HxCDF	ND	971	1090	112		-	-		78-130	-		25
2,3,4,6,7,8-HxCDF	ND	971	1020	105		-	-		70-156	-		25
1,2,3,4,6,7,8-HpCDF	ND	971	1090	112		-	-		82-122	-		25
1,2,3,4,7,8,9-HpCDF	ND	971	1100	113		-	-		78-138	-		25
OCDF	ND	1940	2240	115		-	-		63-170	-		25

Surrogate/Cleanup Standard	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
13C12-1,2,3,4,6,7,8-HpCDD	72				23-140
13C12-2,3,4,7,8-PeCDF	68				21-178
13C12-1,2,3,7,8-PeCDD	74				25-181

DRAFT

Matrix Spike Analysis

Batch Quality Control

Project Name: NELH

Project Number: 021.01074.017

Lab Number: L2134324

Report Date: 07/12/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1518091-3 QC Sample: L2134324-01 Client ID: MW601-W1-062421

Surrogate/Cleanup Standard	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
13C12-1,2,3,4,7,8-HxCDF	67				26-152
13C12-1,2,3,7,8,9-HxCDF	77				29-147
13C12-1,2,3,4,7,8,9-HpCDF	71				26-138
13C12-2,3,7,8-TCDD	61				25-164
13C12-1,2,3,7,8-PeCDF	65				24-185
13C12-2,3,4,6,7,8-HxCDF	77				28-136
37CL4-2,3,7,8-TCDD	99				35-197
13C12-1,2,3,6,7,8-HxCDD	64				28-130
13C12-OCDD	65				17-157
13C12-1,2,3,4,7,8-HxCDD	66				32-141
13C12-2,3,7,8-TCDF	66				24-169
13C12-1,2,3,6,7,8-HxCDF	74				26-123
13C12-1,2,3,4,6,7,8-HpCDF	69				28-143

DRAFT

Lab Duplicate Analysis
Batch Quality Control

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1518091-4 QC Sample: L2134324-02 Client ID: MW602-W1-062421						
2,3,7,8-TCDD	ND	ND	pg/l	NC		25
1,2,3,7,8-PeCDD	ND	ND	pg/l	NC		25
1,2,3,4,7,8-HxCDD	ND	ND	pg/l	NC		25
1,2,3,6,7,8-HxCDD	ND	ND	pg/l	NC		25
1,2,3,7,8,9-HxCDD	ND	ND	pg/l	NC		25
1,2,3,4,6,7,8-HpCDD	ND	ND	pg/l	NC		25
OCDD	ND	ND	pg/l	NC		25
2,3,7,8-TCDF	ND	ND	pg/l	NC		25
1,2,3,7,8-PeCDF	ND	ND	pg/l	NC		25
2,3,4,7,8-PeCDF	ND	ND	pg/l	NC		25
1,2,3,4,7,8-HxCDF	ND	ND	pg/l	NC		25
1,2,3,6,7,8-HxCDF	ND	ND	pg/l	NC		25
1,2,3,7,8,9-HxCDF	ND	ND	pg/l	NC		25
2,3,4,6,7,8-HxCDF	ND	ND	pg/l	NC		25
1,2,3,4,6,7,8-HpCDF	ND	ND	pg/l	NC		25
1,2,3,4,7,8,9-HpCDF	ND	ND	pg/l	NC		25
OCDF	ND	ND	pg/l	NC		25
Total TCDD	ND	ND	pg/l	NC		25
Total PeCDD	ND	ND	pg/l	NC		25
Total HxCDD	ND	ND	pg/l	NC		25
Total HpCDD	ND	ND	pg/l	NC		25

DRAFT

Lab Duplicate Analysis
Batch Quality Control

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1518091-4 QC Sample: L2134324-02 Client ID: MW602-W1-062421						
Total TCDF	ND	ND	pg/l	NC		25
Total PeCDF	ND	ND	pg/l	NC		25
Total HxCDF	ND	ND	pg/l	NC		25
Total HpCDF	ND	ND	pg/l	NC		25
Total PCDD	ND	ND	pg/l	NC		25
Total PCDF	ND	ND	pg/l	NC		25
Toxic Equivalency (TEQ)	ND	ND	pg/l	NC		25

Surrogate/Cleanup Standard	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
13C12-2,3,7,8-TCDF	73		70		24-169
13C12-2,3,7,8-TCDD	69		67		25-164
13C12-1,2,3,7,8-PeCDF	75		70		24-185
13C12-2,3,4,7,8-PeCDF	78		73		21-178
13C12-1,2,3,7,8-PeCDD	80		79		25-181
13C12-1,2,3,4,7,8-HxCDF	60		67		26-152
13C12-1,2,3,6,7,8-HxCDF	67		73		26-123
13C12-2,3,4,6,7,8-HxCDF	67		74		28-136
13C12-1,2,3,7,8,9-HxCDF	78		77		29-147
13C12-1,2,3,4,7,8-HxCDD	58		67		32-141
13C12-1,2,3,6,7,8-HxCDD	66		62		28-130
13C12-1,2,3,4,6,7,8-HpCDF	74		68		28-143
13C12-1,2,3,4,7,8,9-HpCDF	79		72		26-138
13C12-1,2,3,4,6,7,8-HpCDD	81		69		23-140
13C12-OCDD	74		63		17-157

DRAFT

Lab Duplicate Analysis
Batch Quality Control

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Dioxins & Furans by Isotope Dilution HRMS - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1518091-4 QC Sample: L2134324-02 Client ID: MW602-W1-062421

Surrogate/Cleanup Standard	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
37CL4-2,3,7,8-TCDD	102		95		35-197

DRAFT

Project Name: NELH
Project Number: 021.01074.017

Lab Number: L2134324
Report Date: 07/12/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2134324-01A	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-01B	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-01C	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-01D	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-02A	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-02B	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-02C	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-02D	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-03A	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-03B	Amber 250ml unpreserved	A	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-03C	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-03D	Amber 1000ml unpreserved	A	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-04A	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-04B	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-04C	Amber 1000ml unpreserved	B	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-04D	Amber 1000ml unpreserved	B	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-05A	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-05B	Amber 250ml unpreserved	B	7	7	2.5	Y	Absent		MCP-8270SIM-10-LVI(7)
L2134324-05C	Amber 1000ml unpreserved	B	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)
L2134324-05D	Amber 1000ml unpreserved	B	7	7	2.5	Y	Absent		A2-DIOXIN-1613(365)

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*Values in parentheses indicate holding time in days

Project Name:	NELH	**Lab Number:**	L2134324
Project Number:	021.01074.017	**Report Date:**	07/12/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

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Project Name:	NELH	**Lab Number:**	L2134324
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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

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Project Number:	021.01074.017	**Report Date:**	07/12/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

132 Method 1613 Revision B: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS. USEPA Office of Water, October 1994.

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LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 6/24/21

ALPHA Job #: L2134324

Client Information

Client: Ransom Consulting, LLC
Address: 50 High Street, Suite 25, North Andover, MA 01845
Phone: 978-465-1822
Email: nmarshall@ransomenv.com

Project Information

Project Name: NELH
Project Location: Great Barrington, MA
Project #: 021.01074.017
Project Manager: Nancy Marshall
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: 13102

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

Additional Project Information:

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; PCP via 8270; Dioxins via 1613

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCP via 8270	Dioxins via 1613	Sample Comments	TOTAL # BOTTLES
34324-01	MW601-W1-062421	6/24/21	11:00	GW	CRW	✓	✓		4
02	MW602-W1-062421	6/24/21	9:38	GW	CRW	✓	✓		4
03	MW603-W1-062421	6/24/21	8:28	GW	CRW	✓	✓		4
04	MW604-W1-062321	6/23/21	13:13	GW	CRW	✓	✓		4
05	MW605-W1-062321	6/23/21	14:22	GW	CRW	✓	✓		4

Container Type
Preservative

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Christ Williams	6/24/21/13:35	[signature]	6/24/21 1535

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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RANSOM

Project No.: 021.01074.017
(file with lab data)

LABORATORY REPORT CHECKLIST

Laboratory:	Alpha Analytical		
Site:	New England Log Homes	Lab Job No.:	L2134324
Report Reviewed by:	CRW	Date Reviewed:	8/16/2021
Sample Description:	Post-PTSSC Groundwater Monitoring – 1st round (Year 1, Quarter 2)		

Sample Integrity

- ☒ Custody Seal N/A
- ☒ Temperature 2.5 °C
- ☒ Preservation
- ☒ Containers
- ☒ Holding time
- ☒ Date and time of collection
- ☒ Field identification accurate
- ☒ Filtration, any field manipulation noted
- ☒ Separate phase, matrix notes

Laboratory Information

- ☒ Current certification (if applicable)
- ☒ Name and address
- ☒ Signed by Lab Director or designee
- ☒ Lab ID No.
- ☒ Certification Statement (EPH/VPH)

Chain of Custody

- ☒ Relinquish and receipt signatures, dates, and times
- ☒ No gaps in custody
- ☒ Name of person collecting sample

Laboratory Report

- ☒ Method Reference
- ☒ Sample preparation
- ☒ Analysis method
- ☒ Modifications to method
- ☒ Units (solids on a dry weight basis)
- ☒ Reporting limits
- ☒ Analyst
- ☒ Date of analysis
- ☒ Date of preparation, if applicable
- ☒ Dilution factors
- ☒ % Moisture for solid samples N/A
- ☒ Target analytes correct
- ☒ Matrix
- ☒ Lab report and/or sample ID#

Quality Assurance/Quality Control

- ☒ Any findings notes, explained well, data impact clear
- ☒ Method blank less than detection limit or not greater than 10% of lowest detected sample
- ☒ Surrogates, every sample, in control or discussed
- ☐ Matrix Spike/Matrix Spike
- ☒ Duplicate/Duplicate in control or discussed

Comments: Surrogate recovery was outside the upper limit of the QC acceptance criteria, potentially high bias results. Temp was within the preferred range of 4 degrees Celsius. Results anticipated to be representative.

DRAFT

ANALYTICAL REPORT

Lab Number:	L2357386
Client:	Ransom Consulting, LLC. 50 High Street Suite 25 North Andover, MA 01845
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	FMR. NEW ENGLAND LOG HOMES
Project Number:	021.01074.022
Report Date:	10/09/23

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The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: FMR. NEW ENGLAND LOG HOMES
Project Number: 021.01074.022

Lab Number: L2357386
Report Date: 10/09/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2357386-01	MW602-092823	WATER	GREAT BARRINGTON, MA	09/28/23 12:10	09/29/23

DRAFT

Project Name: FMR. NEW ENGLAND LOG HOMES **Lab Number:** L2357386

Project Number: 021.01074.022 **Report Date:** 10/09/23

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

DRAFT

Project Name:	FMR. NEW ENGLAND LOG HOMES	**Lab Number:**	L2357386
Project Number:	021.01074.022	**Report Date:**	10/09/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

DRAFT

Project Name:	FMR. NEW ENGLAND LOG HOMES	**Lab Number:**	L2357386
Project Number:	021.01074.022	**Report Date:**	10/09/23

Case Narrative (continued)

MCP Related Narratives

Semivolatile Organics by SIM

L2357386-01D: The sample has an elevated detection limit due to the dilution required by the sample matrix.

L2357386-01D, WG1835710-1, and WG1835710-2/-3: The initial calibration utilized a quadratic fit for Pentachlorophenol

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

DRAFT

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly O'Neill

Title: Technical Director/Representative Date: 10/09/23

QC OUTLIER SUMMARY REPORT

Project Name: FMR. NEW ENGLAND LOG HOMES
Project Number: 021.01074.022

Lab Number: L2357386
Report Date: 10/09/23

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

DRAFT

ORGANICS

DRAFT

SEMIVOLATILES

DRAFT

Project Name: FMR. NEW ENGLAND LOG HOMES **Lab Number:** L2357386

Project Number: 021.01074.022 **Report Date:** 10/09/23

SAMPLE RESULTS

Lab ID: L2357386-01 D
Client ID: MW602-092823
Sample Location: GREAT BARRINGTON, MA

Date Collected: 09/28/23 12:10
Date Received: 09/29/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 141,8270E-SIM
Analytical Date: 10/09/23 13:11
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 10/04/23 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Pentachlorophenol	76		ug/l	4.0	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		15-110
Phenol-d6	62		15-110
Nitrobenzene-d5	101		30-130
2-Fluorobiphenyl	79		30-130
2,4,6-Tribromophenol	98		15-110
4-Terphenyl-d14	75		30-130

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Project Name: FMR. NEW ENGLAND LOG HOMES
Project Number: 021.01074.022
Lab Number: L2357386
Report Date: 10/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8270E-SIM
Analytical Date: 10/06/23 11:30
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 10/04/23 20:26

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01 Batch: WG1835710-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		15-110
Phenol-d6	73		15-110
Nitrobenzene-d5	126		30-130
2-Fluorobiphenyl	84		30-130
2,4,6-Tribromophenol	95		15-110
4-Terphenyl-d14	80		30-130

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Lab Control Sample Analysis

Batch Quality Control

Project Name: FMR. NEW ENGLAND LOG HOMES

Project Number: 021.01074.022

Lab Number: L2357386

Report Date: 10/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01 Batch: WG1835710-2 WG1835710-3								
Pentachlorophenol	100		100		30-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	83		77		15-110
Phenol-d6	76		71		15-110
Nitrobenzene-d5	111		104		30-130
2-Fluorobiphenyl	77		74		30-130
2,4,6-Tribromophenol	97		90		15-110
4-Terphenyl-d14	69		68		30-130

DRAFT

Project Name: FMR. NEW ENGLAND LOG HOMES
Project Number: 021.01074.022

Lab Number: L2357386
Report Date: 10/09/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2357386-01A	Amber 250ml unpreserved	A	7	7	5.3	Y	Absent		MCP-8270SIM-21-LVI(7)
L2357386-01B	Amber 250ml unpreserved	A	7	7	5.3	Y	Absent		MCP-8270SIM-21-LVI(7)

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*Values in parentheses indicate holding time in days

Project Name:	FMR. NEW ENGLAND LOG HOMES	**Lab Number:**	L2357386
Project Number:	021.01074.022	**Report Date:**	10/09/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

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Project Name:	FMR. NEW ENGLAND LOG HOMES	**Lab Number:**	L2357386
Project Number:	021.01074.022	**Report Date:**	10/09/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

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Project Name:	FMR. NEW ENGLAND LOG HOMES	**Lab Number:**	L2357386
Project Number:	021.01074.022	**Report Date:**	10/09/23

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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Report Format: Data Usability Report

REFERENCES

141 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA and IIB, November 2021.

DRAFT

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

DRAFT

Serial_No:10092314:38

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 9/29/23

ALPHA Job #: L2357386

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Ransom Consulting, LLC
Address: 50 High St Suite 25
North Andover, MA
Phone: (978) 465-1822
Email: nmarshall@ransomenv.com

Project Information

Project Name: Fmr. New England Log Homes
Project Location: Great Barrington, MA
Project #: 021.01074.022
Project Manager: Nancy Marshall
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
PCP by 8270

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCP by 8270	TOTAL # BOTTLES
57386-01	MW602-092823	9/28/23	1210	GW	TE	X	

Container Type																													
Preservative																													

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	9/29/23 1130	AHDO	9/29 1130
AHDO	9/29 1712		9/29 1712

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

DRAFT

ANALYTICAL REPORT

Lab Number:	L2555564
Client:	Pinchin, LLC 50 High Street Suite 25 North Andover, MA 01845
ATTN:	Nancy Marshall
Phone:	(978) 465-1822
Project Name:	100 BRIDGE ST
Project Number:	021.01074.023
Report Date:	09/16/25

DRAFT

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023

Lab Number: L2555564
Report Date: 09/16/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2555564-01	MW-602	WATER	GREAT BARRINGTON, MA	09/03/25 12:45	09/04/25
L2555564-02	MW-605	WATER	GREAT BARRINGTON, MA	09/03/25 13:25	09/04/25

DRAFT

Project Name:	100 BRIDGE ST	**Lab Number:**	L2555564
Project Number:	021.01074.023	**Report Date:**	09/16/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 09/16/25

DRAFT

ORGANICS

DRAFT

SEMIVOLATILES

DRAFT

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023
Lab Number: L2555564
Report Date: 09/16/25

SAMPLE RESULTS

Lab ID: L2555564-01
Client ID: MW-602
Sample Location: GREAT BARRINGTON, MA

Date Collected: 09/03/25 12:45
Date Received: 09/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM
Analytical Date: 09/10/25 20:42
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 09/08/25 05:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	58		15-120
2,4,6-Tribromophenol	67		10-120
4-Terphenyl-d14	63		41-149

DRAFT

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023
Lab Number: L2555564
Report Date: 09/16/25

SAMPLE RESULTS

Lab ID: L2555564-02
Client ID: MW-605
Sample Location: GREAT BARRINGTON, MA

Date Collected: 09/03/25 13:25
Date Received: 09/04/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM
Analytical Date: 09/10/25 20:59
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 09/08/25 05:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Pentachlorophenol	ND		ug/l	0.80	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	30		21-120
Phenol-d6	26		10-120
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	58		15-120
2,4,6-Tribromophenol	44		10-120
4-Terphenyl-d14	65		41-149

DRAFT

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023

Lab Number: L2555564
Report Date: 09/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM
Analytical Date: 09/10/25 20:25
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 09/08/25 05:50

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02 Batch: WG2111809-1					
Pentachlorophenol	ND		ug/l	0.80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	52		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	56		41-149

DRAFT

Lab Control Sample Analysis
Batch Quality Control

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023

Lab Number: L2555564
Report Date: 09/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG2111809-2 WG2111809-3								
Pentachlorophenol	84		88		40-140	5		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		44		21-120
Phenol-d6	34		35		10-120
Nitrobenzene-d5	60		63		23-120
2-Fluorobiphenyl	50		52		15-120
2,4,6-Tribromophenol	68		69		10-120
4-Terphenyl-d14	53		57		41-149

DRAFT

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023

Lab Number: L2555564
Report Date: 09/16/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2555564-01A	Amber 100ml unpreserved	NA	NA			Y	Absent		8270TCL-SIM-RVT(7)
L2555564-01B	Amber 100ml unpreserved	NA	NA			Y	Absent		8270TCL-SIM-RVT(7)
L2555564-02A	Amber 100ml unpreserved	NA	NA			Y	Absent		8270TCL-SIM-RVT(7)
L2555564-02B	Amber 100ml unpreserved	NA	NA			Y	Absent		8270TCL-SIM-RVT(7)

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*Values in parentheses indicate holding time in days

Project Name:	100 BRIDGE ST	**Lab Number:**	L2555564
Project Number:	021.01074.023	**Report Date:**	09/16/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

DRAFT

Project Name:	100 BRIDGE ST	**Lab Number:**	L2555564
Project Number:	021.01074.023	**Report Date:**	09/16/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

DRAFT

Project Name:	100 BRIDGE ST	**Lab Number:**	L2555564
Project Number:	021.01074.023	**Report Date:**	09/16/25

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

DRAFT

Report Format: Data Usability Report

Project Name: 100 BRIDGE ST
Project Number: 021.01074.023

Lab Number: L2555564
Report Date: 09/16/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

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LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, SM4500CL-G, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT.**

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1: Hg. **EPA 245.7:** Hg.
SM2340B

DRAFT

Certification IDs:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
CT PH-0826, IL 200077, IN C-MA-03, KY kY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
MA M-MA00030, CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 85084, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
ANAB/DoD L2474, LA 245052, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

DRAFT

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 9·4·25

ALPHA Job #: L2555564

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Pinchin LLC
Address: 400 Commercial st
Suite 404, Portland, ME 04101
Phone: 914-215-0515
Email: Ian.McGregor@Pinchin.com

Project Information

Project Name: 100 Bridge St
Project Location: Great Barrington, MA
Project #: 021.01074.023
Project Manager: Nancy Marshall
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Pentachlorophenol 8270e SIM	Sample Comments	TOTAL # BOTTLES
55564-01	MW-604	9-3	1245	GW	ISM	X		2
-02	MW-605	9-3	1325	GW	ISM	X		2

ANALYSIS — VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

Container Type																						AG	AG
Preservative																						-	-

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Ian McGregor JMC	9-4-25 @ 14:05	JMC	9/4 1405
	9/4 1520		9/4/25 1520

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 9·4·25

ALPHA Job #: L2555564

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: 100 Bridge St

Project Location: Great Barrington, MA

Project #: 021.01074.023

Project Manager: Nancy Marshall

ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Client Information

Client: Pinchin LLC

Address: 400 Commercial St Suite 404, Portland, ME 04101

Phone: 914-215-0515

Email: Ian.McGregor@Pinchin.com

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Pentachlorophenol 8270e SIM

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Pentachlorophenol 8270e SIM	TOTAL # BOTTLES
55564-01	MW-~~604~~ 602 LS 9/9/25	9-3	1245	GW	ISM	X	2
-02	MW-605	9-3	1325	GW	ISM	X	2

Container Type																			~~AG~~	AG			
Preservative																			-	-			

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Ian McGregor	9-4-25 @ 14:05	JMC	9/4 1405
JMC	9/4 1520		9/4/25 1520

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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Sample Delivery Group Summary

Pace Job Number : L2555564

Account Name : Pinchin, LLC
Project Number : 021.01074.023
Project Name : 100 BRIDGE ST

Received : 04-SEP-2025
Reviewer : Allison Whitenack

Delivery Information

Samples Delivered By : Pace Courier

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
A	Absent/	Ice	4.7	

Condition Information

1) All samples on COC received?	**YES**
2) Extra samples received?	**NO**
3) Are there any sample container discrepancies?	**NO**
4) Are there any discrepancies between COC & sample labels?	**NO**
5) Are samples in appropriate containers for requested analysis?	**YES**
6) Are samples properly preserved for requested analysis?	**YES**
7) Are samples within holding time for requested analysis?	**YES**
8) All sampling equipment returned?	**NA**

Volatile Organics/VPH

1) Reagent Water Vials Frozen by Client?	**NA**

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APPENDIX F
Method 3 Risk Characterization

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O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

August 4, 2026
File No: 5249-02-01

Prepared for:
Pinchin LLC

METHOD 3 RISK CHARACTERIZATION
Former New England Log Homes Site – Southern Portion (Bentley Development)
100 Bridge Street
Great Barrington, Massachusetts
MassDEP RTN 1-0682

Prepared by:
O'Reilly, Talbot & Okun Associates, Inc.
276 Bridge Street, Suite 302
Springfield, Massachusetts 01103

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1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Method 3 pertains to the southern portion of the former New England Log Homes (NELH) property (the "Bentley Development) located at 100 Bridge Street in Great Barrington, Massachusetts (the "Site Property"), which was developed as the Bentley Apartments in 2021. The original approximately 8-acre Massachusetts Contingency Plan (MCP) Disposal Site was identified as 100 Bridge Street and occupied by the former NELH factory, located southwest of the intersection of Bridge Street and Bentley Road and north of the Town of Great Barrington Wastewater Treatment Plant (WWTP). Soil and/or groundwater at the 8-acre NELH was impacted primarily by dioxins/furans and pentachlorophenol (PCP), with secondary impacts in soil from metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs); groundwater has been impacted primarily by PCP.

The Disposal Site was assigned Release Tracking Number (RTN) 1-0682 by the Massachusetts Department of Environmental Protection (MassDEP) in January 1990. In 2021, the original 8-acre Disposal Site boundary was expanded to include the southerly abutting 3.12-acre WWTP property located at 100 Bentley Road after dioxins/furans were identified in shallow soils obtained from that property. The disposal site (Site) is now defined as the 11.12-acre property comprised of the former NELH property and the WWTP property. Refer to the Site Location Map provided as PSSC Figure 1 for the location of the expanded 11.12-acre Disposal Site (Site) shown on an excerpt of a United Stated Geological Services (USGS) map.

The Method 3 completed by O'Reilly, Talbot & Okun Associates, Inc. (OTO) was based on Site information and analytical data collected at the Site and provided to OTO by Pinchin, LLC (formerly Ransom Consulting, LLC [Ransom]), on behalf of the Community Development Corporation of South Berkshire (CDCSB). The obtained information and analytical data are summarized in the Pinchin *Partial Permanent Solution Statement with Conditions for the Southern Portion (Bentley Development)* (Partial PSSC). OTO has not conducted independent testing or Site characterization activities and relies on the Pinchin provided information and analytical data to provide an adequate characterization of the nature and extent of Site contamination, as defined in the MCP.

This Method 3 risk characterization was completed for the developed portion of the Site (i.e., the Bentley Apartments). This area of the Site meets the criteria for a Permanent Solution for a condition of No Significant Risk (NSR) for the Bentley Apartments portion of the Site. However, because contaminated soil is present at depth and/or beneath an engineered barrier, a Notice of Activity and Use Limitation (AUL) is required to maintain the condition of NSR.

For the purposes of this report, the Partial PSSC Site is limited to the currently developed area which includes the Bentley Apartments on Lot 3 and the Southern Berm and southern Stormwater Retention Area on abutting portions of Lot 4, encompassing 17,433 square feet (4 acres). The northern undeveloped portion of the Site (i.e. Lots 1 and 2 and portions of Lot 4) require additional remediation in conjunction with future development.

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The overall Site boundary, the WWTP Partial PSS Site, Lots 1 through 4, and the Partial PSSC Site boundary are shown on the Partial PSSC Figure 2.

1.2 RISK CHARACTERIZATION METHOD

Three Risk Characterization methods, which vary in detail and circumstances of use, have been developed under the MCP to evaluate Disposal Sites, as described in 310 CMR 40.0941(3) and 40.0942. These three methods provide equivalent levels of protection to human health, public welfare, and the environment.

This Method 3 has been completed in accordance with the MCP, 310 CMR 40.0900, specifically 40.0990 (MassDEP, 2024a), and applicable MassDEP guidance (MassDEP, 1995 through 2025). Human health risks for the Site are assessed in Section 6.1 of this report. Risk of harm to public welfare, including comparisons to Method 3 Ceiling Limits (M3CLs), is presented in Section 6.2. Characterization of risk of harm to safety is described in Section 6.3. The environmental risk characterization is presented in Section 6.4. The Uncertainty Analysis is presented in Section 7.0. Section 8.0 presents conclusions regarding the overall significance of Site risk.

1.3 DESCRIPTION OF RELEASE AND REMEDIATION

During initial assessment activities, historical industrial activities at the Site resulted in elevated concentrations of dioxins and furans (expressed as 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] toxicity equivalences [TEQs] and calculated using the MassDEP Toxicity Equivalency Factors [TEFs]), PCP, EPH, PAHs, and metals in soil. Based on historical data, dioxins/furans were present in surface soils across the Site at concentrations above the corresponding upper concentration limit (UCL) of 500 nanograms per kilogram (ng/kg), in effect at the time. It is noted that the 2024 M3CL for 2,3,7,8-TCDD toxicity equivalences (TEQs) is 600 ng/kg.

On April 17, 2025, the MassDEP issued a communication detailing revised recommendations for the TEFs used to calculate dioxins/furans TEQs for assessments completed under the MCP. MassDEP is currently using the TEFs derived and adopted by the World Health Organization (WHO) in 2005. As noted in the communication, the revision aligns MassDEP TEF values with those of the U.S. Environmental Protection Agency (USEPA, 2010), California Environmental Protection Agency (OEHHA 2011) and multiple state organizations. MassDEP noted that the revised TEFs (MassDEP 2025 – TEFs) supersede those previously recommended by MassDEP that were in use at the time that the remediation activities were completed at the Site.

A copy of MassDEP's communication regarding the currently recommended TEFs is included in Partial PSSC Appendix C. A Plan view of the DUs within the Partial PSSC Site with the 2025 dioxin/furan TEQs is provided as Partial PSSC Figure 7. A summary of the post-excavation concentrations of dioxins/furans is provided in Partial PSSC Table 1, and copies of the laboratory chemical analysis reports are provided in Partial PSCC Appendix D.

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PCP was present in surface and deeper soil at concentrations greater than its corresponding MCP Method 1 Standards in the area of two former dip tanks, and to a lesser degree in the southeast corner of the Site. Remedial activities were required to prevent exposure to impacted soil at the Site so that the Site can achieve a condition of NSR of harm to health, safety, public welfare, or the environment with respect to soil.

The primary groundwater contaminant is PCP, which was detected in groundwater samples at concentrations greater than its Massachusetts Maximum Contaminant Level (MMCL) and GW-1 Standard of 1 microgram per liter (µg/l) at several locations. In the west-central portion of the Site, PCP was detected at concentrations greater than its Method 1 GW-3 Standard (200 µg/l), and dioxins/furans were detected at concentrations greater than the MMCL and GW-1 Standard (30 picograms per liter). Groundwater is not in use at the Site and the historical sampling has not indicated an adverse impact to the Housatonic River.

A detailed description of the remedial actions and redevelopment completed at the Site are presented in Sections 5 of the Partial PSSC. In summary:

The goal of the completed response actions within the Partial PSSC Site was to allow redevelopment of the Site with mixed-income multi-unit housing and public open space. The majority of the contaminated soil at the Site prior to the initiation of response actions was present in the upper 18 to 20 inches of soil. Given the accessibility of the dioxins/furans-impacted soil and the failure of the *in-situ* bioremediation option to reduce the overall mass of dioxins/furans at the Site, the remediation plan was designed to prevent exposure to contaminants in soils.

No feasible options were identified to remove the contaminated soil or to reduce the contaminant mass during the assessment of remedial alternatives. To accomplish the remediation goal within the Partial PSSC Site, CDCSB relocated soils impacted by dioxins/furans at concentrations greater than 500 ng/kg (i.e., the UCL in effect at that time) from the building site to a landscaped berm located along the southern property boundary with the WWTP; the Southern Berm was finished with an Engineered Barrier.

Specifically, removal of at least the top 2 feet of soil was completed across Lots 2, 3, and the western portion of Lot 4; additional excavation occurred in selected DUs within the Partial PSSC Site as shown on Figure 5. The excavated soils were relocated initially to the Southern Berm on Lot 4, and later to the berm on Lot 1 (designated the Eastern Berm) after the Southern Berm reached its design grades.

Remaining soils with low concentrations of dioxins/furans are covered by caps with conditions in place to maintain those caps.

1.4 CURRENT AND FORESEEABLE ACTIVITY AND USE

Site Location and Description – The overall Disposal Site an approximately 11-acre parcel located at 100 Bridge Street and 100 Bentley Road, just southeast of downtown Great Barrington. The Site is bounded by the Housatonic River to the west, Bridge Street

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and Bentley Road to the north and east, respectively, and undeveloped wooded land to the south.

The Partial PSSC Site is located at the southern end of the former NELH property. It is bounded by the Housatonic River to the west, Bentley Road to the east, the WWTP to the south, and the undeveloped portion of the Site (i.e., Lots 1, 2, and the northern portion of Lot 4) to the north. This Partial PSSC applies to the approximately 4-acre portion of the Site currently developed as the Bentley Apartments (three multi-unit apartment buildings providing 45 units affordable rental housing) and includes the Southern Berm and the southern Stormwater Retention Area; specifically, the Partial PSSC Site is comprised of Lot 3 and the abutting portions of Lot 4 (i.e., the Partial PSSC Site). Refer to PSSC Figure 2 for the Area subject to this Partial PSSC.

The remaining portion of Lot 4 along the western Site boundary was brought to finished grade during the remediation activities and is proposed for development into a Riverfront Park with walking paths and landscaping. The current development of the Site is shown on Partial PSSC Figure 5.

Redevelopment of Lots 1 and 2 is pending, along with the final remediation of that portion of the Site. Lot 1 along Bentley Road will be improved with a landscaped berm constructed from relocated surface soils and covered by an Engineered Barrier. CDCSB had been pursuing development options for Lot 2. Although some commercial options showed some initial promise, CDCSB has been unable to obtain commitments from outside developers. Therefore, to move forward with the final remediation and development of the remainder of the Site, CDCSB intends to pursue funding for the construction of additional affordable housing at the Site.

Sensitive Receptors - The areas to the north and east are primarily residential; the central commercial district is nearby, northwest of the Site and to the west of the Housatonic River. Properties around the Site are serviced by the public water and there are no known private water supply wells on or within 500 feet of the Site; however, the Site is located within the Zone II of the Town of Sheffield public water supply.

The Site is also located in the 100-year flood plain for the Housatonic River as designated by the Federal Emergency Management Agency (FEMA). Based on a review of the Phase I Map, an Estimated Rare Wetland Wildlife Habitat is associated with the Site. Areas of Protected Open Space (Memorial Park and Grove Street Park, respectively) exist on the opposite side of the Housatonic River south of Bridge Street, and on the opposite side of Bentley Road within 500 feet of the southeastern portion of the Site. A copy of MassDEP's Phase I Map is included as Partial PSSC Appendix A.

2.0 IDENTIFICATION OF APPLICABLE SOIL AND GROUNDWATER CATEGORIES

2.1 SOIL

Identification of the applicable soil category requires an assessment of three factors identified in Section 40.0930 of the MCP. These are (i) accessibility, (ii) frequency of use,

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and (iii) intensity of use. Each of these factors must be assessed for the current use scenario and for a reasonably foreseeable future use scenario.

Soil analytical data indicated that detected concentrations of OHM were reported in soils within the former NELH Site at original grades at depths of 0-2 to 12-14 feet below the ground surface (bgs) in predevelopment conditions. For post-response action conditions, the shallow soil located at 0 to 3 feet bgs in unpaved areas are categorized in the MCP as "accessible" for exposure. The soil located at 3 to 12 feet bgs in unpaved areas and 0 to 12 feet bgs under pavement or similar barrier are categorized in the MCP as "potentially accessible" for exposure. Soil located beneath buildings and permanent structures are categorized as "isolated" from exposure.

The Partial PSSC Site has been developed for residential purposes (i.e., Bentley Apartments) and other purposes (i.e., Southern Berm and Stormwater Detention Area). In the Bentley Apartments area, children and adult residents are assumed to be present on a high frequency basis. The intensity of use for soil is low to high. In the Stormwater Detention Area, both the frequency and intensity of use are expected to be low.

Members of the general public, including adults and children, as visitors and trespassers, may be on the Site at a low to high frequency. There is limited potential at the Site for the general public to directly contact the "accessible" and "potentially accessible" soils.

Landscapers may conduct work in shallow soils. Subsurface excavation for utility work is typically to a depth of 6 feet bgs, while construction work may occur to a depth of 15 feet bgs. Construction work and utility repair may occur at the Site. The frequency of this activity was considered low, and the intensity of use was considered high (i.e., short-term excavation activities occurring at infrequent and irregular intervals).

Under redeveloped use with the Notice of AUL, the applicable soil categories are S-2, and S-3. The AUL was recorded for areas of the Site where total Site risks for dioxins/furans (and, if applicable, other contaminants) do not support "unrestricted" S-1 residential use.

2.2 GROUNDWATER

MassDEP has identified three groundwater exposure categories (GW-1, GW-2, and GW-3) under the MCP, each reflective of a type of risk that may be posed by OHM in groundwater. Different combinations of these criteria are applicable at MCP sites depending upon the relevant site groundwater resource characteristics.

The GW-1 category is applicable to locations where groundwater is, or may in the future be, a drinking water source. Based on information presented in Section 1.4, the groundwater category GW-1 applies to the Site. As previously noted, the Site is serviced by municipal water. Therefore, the use of Site groundwater as drinking water is not a current use. .

The GW-2 category applies to locations where OHM may volatilize from the groundwater and migrate into an occupied structure. Wells with an average annual depth to groundwater of 15 feet or less and located within 30 feet of a currently occupied or future

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planned building meet the criteria of GW-2. Groundwater elevations determined from historical monitoring indicate that the depths to groundwater were generally 10 to 15 feet bgs. Therefore, the GW-2 category is applicable within 30 feet of the Site buildings.

The GW-3 category is intended to protect environmental receptors in surface water that may be exposed to OHM when groundwater from an MCP site discharges to surface water. For all MCP sites, the GW-3 groundwater category is applicable. There are no surface water bodies located on the Site. The nearest surface water is the Housatonic River that abuts the Site to the west. Groundwater from the Site flows west towards the river. Based on a slight upward gradient observed in a groundwater monitoring well pair located along the east bank of the river, it appears that the Housatonic River serves as a discharge location for groundwater at the Site.

3.0 HAZARD IDENTIFICATION

The Hazard Identification identified constituents of concern (COCs) for each sampled media. MassDEP's "Guidance for Disposal Site Risk Characterization" (WSC/ORS-95-141) was used as a reference in considering which compounds would be selected as COCs. In accordance with this document, each detected compound should be considered a contaminant of concern, unless one of the following conditions is true:

- The chemicals are present at a low frequency of detection and in low concentrations;
- The chemicals are present at levels consistent with "background" conditions for the area and there is no evidence that their presence is related to activities at the Site; or
- The chemicals are field or laboratory contaminants.

3.1 SOIL

Pre-remediation soil samples collected at the Site indicate that the COCs for the Site are dioxins/furans, PCP, EPH carbon fractions,, and metals (arsenic, lead, thallium, and zinc) based on the above criteria. Volatile petroleum hydrocarbons (VPH), volatile organic compounds (VOCs), and other metals were eliminated as soil COCs based on the above criteria. It is noted that the two EPH soil hot spots and zinc are located with Lot 2, outside the Partial PSSC Site. Therefore, EPH and zinc are not included as soil COCs in this report.

Therefore, the COCs for soil in this Method 3 are dioxins/furans and PCP.

3.2 GROUNDWATER

The analytical results for groundwater samples collected at the Site from 2019 through 2025 indicate that dioxins/furans and PCP are the groundwater COCs (PSSC Tables 2 and 3).

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3.3 SURFACE WATER/SEDIMENT

Surface water and sediment were collected from upstream, discharge point, and downstream locations in the Housatonic River in March 2019. The samples were analyzed for PCP and no detections were reported. Therefore, there are no COCs selected for surface water/sediment.

3.4 INDOOR AIR

VOCs were not reported in soil and groundwater. Therefore, indoor air is not a media of concern for the Site.

4.0 DOSE-RESPONSE ASSESSMENT

Dose-response information describes the health effects observed in humans or animals associated with particular doses of a constituent. Based on the observed effect and target organ identified, a numerical value is developed to estimate the magnitude of the health effect associated with a dose. Dose-response values are derived differently for non-carcinogenic and carcinogenic effects, as discussed below.

Toxicity values were compiled for COCs in the media that serve as potential exposure points for human receptors. For this Site, soil serves as a potential exposure point. The dose-response information for COCs are encoded in the MassDEP Method 3 Shortforms (Worksheet Tab: Chem) as presented in the Shortforms Vlookup Version v0624 (MassDEP, 2024b) (Appendix B). The primary source of the toxicity values used by MassDEP was United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS).

Threshold (Non-carcinogenic) Effects - For non-carcinogenic effects, there is believed to be a threshold level below which no adverse health effects will occur. Dose-response values for non-carcinogenic oral effects are referred to as Reference Doses (RfDs). For inhalation effects, these values are referred to as Reference Concentrations (RfCs). RfDs and RfCs represent provisional estimates of the threshold dose that will not pose risk of an adverse health effect to sensitive humans.

RfDs and RfCs are developed by applying uncertainty factors and modifying factors to the critical dose or concentration. This dose or concentration is usually either the Lowest-Observed-Adverse-Effect Level (LOAEL) or the No-Observed-Adverse-Effect Level (NOAEL) from toxicological studies, which are typically performed with test animals. Units for RfDs are mg/kg/day, representing a dose of chemical (in milligrams) per receptor body weight (in kilograms) per day. For inhalation exposures, the RfC value is expressed as a concentration in air in mg/m^3 for continuous, 24 hour/day exposure.

Uncertainty factors are used to account for interspecies variability, variation in sensitivity within the human population, differences in the route of administration among tests, and other variables that may lend uncertainty to the extrapolation of test data to environmental settings.

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Non-threshold (Carcinogenic) Effects - In accordance with MCP guidance, we have assumed that for carcinogenic effects there is no threshold level; that is, every non-zero exposure to a carcinogen is believed to be associated with some increased incremental risk. Dose-response values derived for carcinogenic compounds are Cancer Slope Factors (CSFs).

CSFs are calculated as the largest linear slope of the dose-response curve, which is generally extrapolated from the low-dose end of the curve. Oral CSFs are expressed in $(mg/kg/day)^{-1}$, and inhalation unit risks are expressed in $(ug/m^3)^{-1}$. Both values assume that the received dose is averaged over a lifetime. Carcinogenic values for inhalation exposures based on oral CSFs, called unit risks, are calculated by dividing the slope factor by the body weight (70 kg) and multiplying by the air inhalation rate (20 cubic meter $[m^3]$) for risk associated with unit concentration in air. Multiplication by 10^{-3} is necessary to convert mg (milligrams) to µg (micrograms).

USEPA's weight-of-evidence cancer classifications for each of the COCs at the Site were compiled. These classifications indicate whether existing human and animal data are sufficient to confirm whether there is an association between exposure to the compound and the occurrence of cancer.

No COC has a Group A (i.e., Human Carcinogen - sufficient evidence in epidemiological studies to support causal association between exposure and cancer in humans). PCP, 2,3,7,8-TCDD, and carcinogenic PAHs (e.g., benzo[a])pyrene) have a Group B2 weight-of-evidence classification (i.e., Probable Human Carcinogen). No COCs have a Group C weight-of-evidence classification (i.e., Possible Human Carcinogen). The remaining COCs have been given a classification of D (i.e., Not Classifiable - inadequate or no human and animal evidence of carcinogenicity) or a classification is not available.

Relative Absorption Factors - Relative absorption factors (RAFs) are used to account for the differences in absorption likely to occur between exposures under Site conditions and those that occurred under the experimental conditions that form the basis of the toxicity values. Absorption differences may result from matrix effects (e.g., doses absorbed from soil versus water) as well as from routes of administration (e.g., oral versus dermal exposure). RAFs adjust the calculated Site dose to make it comparable to the available toxicity information.

RAFs used in this risk assessment for exposure are encoded in the Method 3 Shortforms (Worksheet Tab: Chem) (MassDEP, 2024b). In the absence of compound-specific data for inhalation exposures, a default RAF of one (1) was used, which conservatively assumes 100% uptake.

Toxicity Profiles – Toxicity profiles describe the potential human health effects posed by the constituents of concern, when doses are high enough to elicit an effect. Toxicity profiles for COCs can be obtained from the Center for Disease Control (CDC), Agency for Toxic Substances and Disease Registry (ATSDR):
https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsLanding.aspx

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5.0 HUMAN HEALTH EXPOSURE ASSESSMENT

5.1 IDENTIFICATION OF POTENTIAL HUMAN RECEPTORS

Human receptors were identified per 310 CMR 40.0921 considering current and foreseeable uses and activities for the Site. Potential human receptors identified under current and future Site use include construction/utility workers, residents, Site workers, and visitors/ trespassers.

5.2 IDENTIFICATION OF POTENTIAL EXPOSURE PATHWAYS

Potential Exposure Pathways - Soil analytical data indicated that detected concentrations of OHM were reported in soils at original grades located at depths of 0-2 to 12-14 feet bgs in pre-remediation and development conditions. For post-remediation conditions, the shallow soil located at 0 to 3 feet bgs in unpaved areas are categorized in the MCP as "accessible" for exposure. The soil located at 3 to 12 feet bgs in unpaved areas and 0 to 12 feet bgs under pavement or similar barrier are categorized in the MCP as "potentially accessible" for exposure. Soil located in buildings and permanent structures are categorized as "isolated" from exposure

The Method 3 evaluates concentrations of OHM under current and foreseeable future conditions. As demonstrated in this Method 3, post-remediation development meets a condition of No Significant Risk for soils using sufficient covers and AUL, where required, and for other areas where no covers nor AUL are required.

There is limited potential for direct contact soil exposure after Site development by construction workers. Exposure to construction workers are managed with a Health and Safety Plan, as required in the AUL. Under post-development conditions, the potential for direct contact exposure may exist for residents for the Bentley Apartments, and trespassers in the Stormwater Detention Area, where covers are not required. The current residents were evaluated as the maximum exposed individual for each area of the Partial PSSC Site.

Exposure factors, also referred to as exposure assumptions, are numerical estimates of the magnitude and duration of exposures that receptors may have to OHM at the Partial PSSC Site. For the potential exposure to soil by residents was evaluated using the MassDEP *Shortforms for Human Health Risk Assessment under the MCP (sf0624rs)* with the Vlookup Version v0624 (MassDEP, 2024b); encoded with receptor-specific exposure assumptions and equations. A 30-year exposure period is assumed for residential exposure for a condition of No Significant Risk.

Groundwater at the Site is impacted PCP. However, recent groundwater sampling for the Partial PSSC portion of the Site evaluated in this Partial PSSC indicates that PCP is not detected. There is no current direct exposure pathway to groundwater via drinking water, as drinking water to the Site is supplied by a municipal source.

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5.3 EXPOSURE POINT CONCENTRATIONS

Soil - Soil EPCs were based on the remediation plan for movement and reuse of soils at the Site. For soil EPCs, the data was segregated into soils that were managed, as specified in the Phase IV report, as excavated and placed under the engineered barrier berm (excluded from EPCs) or present under other barriers (i.e., concrete, asphalt, building, and clean fill with and a Notice of AUL, or no restrictions on use required.

EPCs for areas with no barriers (i.e., accessible soil) were derived for each of the two Site areas (Bentley Apartments, and Stormwater Detention Area). The EPCs for calculating risks were based on the maximum reported concentration in the DU samples for each subset of the data for these three areas. For comparison of EPCs to M3CLs, the maximum concentration was also used. Soil EPCs are presented in Appendix A.

6.0 RISK CHARACTERIZATION

6.1 POTENTIAL RISK OF HARM TO HUMAN HEALTH

Risk calculations for soil were performed by entering the sets of EPCs into the residential receptor-specific MassDEP Method 3 Shortform *(sf0624rs*). Risks to residents are considered to be protective of other receptors, including constructions workers, and trespassers. The Shortforms are a series of linked spreadsheets containing toxicological information for various compounds and exposure assumptions for the different receptors. The complete Shortforms are included in Appendix B.

For a residential use scenario, we used the Residential ShortForm (*sf0624rs*), which considers soil incidental ingestion, dermal contact, and, for some parameters, ingestion of vegetables grown in the impacted soil. The COC 2,3,7,8-TCDD does not have a MassDEP Plant Uptake Factor (PUF), therefore, the vegetable ingestion pathway was not quantitatively evaluated. The Residential ShortForm evaluates risks for exposures of 150 days/week and up to 30 years, including subchronic risks for toddlers aged 1 to 2 years old. Evaluation of residential exposures is protective of lesser exposed individuals, such as visitors and trespassers, who may be present, but for shorter frequency and duration.

Table 1
Summary of Risk Calculations

Receptor	Site Area	SubChronic Hazard Index (HI)	Chronic Hazard Index (HI)	Cancer Risk (ELCR)
	Accessible Soil - No AUL Restrictions Required			
Resident	Bentley Apartments	0.14	0.045	8E-07
	Primary Storm Water Basin	0.58	0.19	3E-06
MCP Risk Limits		**1**	**1**	**1E-05**

No values exceed MCP Risk limits.

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A condition of No Significant Risk to soil exists after Site development with direct contact exposure being eliminated through fill, barriers, and AUL, where required.

6.2 POTENTIAL RISK OF HARM TO PUBLIC WELFARE

The MCP (310 CMR 40.0994) defines two (2) purposes for conducting a characterization of risk to public welfare: (a) to identify and evaluate nuisance conditions which may be localized, and (b) to identify and evaluate significant community effects. The characterization of risk to public welfare considers effects that exist or may result from the presence of residual contamination or the implementation of a proposed remedial alternative.

The characterization of the risk of harm to public welfare considers Site, receptor, and exposure information, as well as data collected pursuant to the response action(s) being performed. The characterization of risk of harm to public welfare also considers such factors as the existence of nuisance conditions, loss of active or passive property use(s), and any non-pecuniary effects not otherwise considered in the characterization of risk of harm to health, safety, and the environment, but which may accrue due to the degradation of public resources directly attributed to the release or threat of release of OHM or the remedial alternative (310 CMR 40.0994(2)).

The risk of harm to public welfare is also characterized by comparing EPCs to the M3CLs in soil, as defined in 310 CMR 40.0996. In addition, a level of No Significant Risk of harm to public welfare exists or has been achieved if no nuisance conditions, such as noxious odors, persist in the breathing zone of ambient and indoor air in the reasonably foreseeable future.

The EPCs for soil (Appendix A) do not exceed M3CLs. No NAPL is currently present on Site.

The initial release may have contained constituents possessing an odor at close range. MassDEP guidance (MassDEP, 2002b) has suggested rules of thumb for determining when an odor condition would generally not be considered a nuisance condition. The rules of thumb that would be applicable to potential intermittent odors are:

1. Odors observed in the subsurface during excavation or boring advancement would generally not be considered a nuisance condition, as long as such odors are not detectable in ambient or indoor air, and as long as there are no plans to excavate or disturb such areas.
2. Odors observed in the breathing zone of the ambient air, or indoor air of an impacted structure, would generally not be considered a nuisance condition, if such odors do not persist for more than three (3) months.
3. Odors observed in the breathing zone of the ambient air would generally not be considered a nuisance condition if they are discernable less than ten (10) days a year.
4. Odors observed in the ambient air or indoor air of an affected structure would generally not be considered a nuisance condition if the occupants of such a

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structure do not believe such odors significantly affect or degrade their quality of life.

Potential odors are not believed to pose a significant risk to public welfare based on these rules of thumb being met and no potential for human exposures. Therefore, there is No Significant Risk to public welfare for soils and groundwater at the Site under current and foreseeable future conditions.

6.3 POTENTIAL RISK OF HARM TO SAFETY

The risk of harm to safety, as described in 310 CMR 40.0960, was evaluated for the Site. The following observations concerning the Site apply to release-related conditions at the Site and the relevant criteria set forth in Section 40.0960 of the MCP:

1. There are no rusted or corroded drums or containers, open pits, lagoons, or other dangerous structures at the Site;
2. There is no threat of fire or explosion from the presence of explosive vapors resulting from a release of OHM at the Site; and
3. There are no uncontained materials at the Site exhibiting the characteristics of corrosivity, reactivity, or flammability as described at 310 CMR 40.0347.

Therefore, there is not a risk of harm to safety due to release-related conditions at the Site.

6.4 POTENTIAL RISK TO THE ENVIRONMENT

The focus of a Method 3 Risk Characterization on any environmental resource areas, such as wetlands, aquatic and terrestrial habitats, and fisheries that exist at a site. A condition of No Substantial Hazard to the Environment exists if steps have been taken to eliminate or mitigate conditions, where applicable, affecting an environmental resource at a site (310 CMR 40.0956(2)). These conditions may include stressed biota, visible oil on soil or sediment, and continued discharge of contaminated groundwater to surface water.

In accordance with Section 40.0995 of the MCP, this section of the risk assessment evaluates possible ecological risks due to OHM in soil and groundwater at the Site. For the Site, a Stage I Environmental Risk Screening was conducted. The Stage I Screening steps are:

1. Identify complete Exposure Pathways [310 CMR 40.0995 (3)(a)],
2. Determine whether Readily Apparent Harm Exists [310 CMR 40.0995 (3)(b)], and
3. Establish if Potentially Significant Exposures Exist [310 CMR 40.0995 (3)(c)].

If there are complete exposure pathways then, for each complete exposure, Site conditions are evaluated to determine when significant environmental harm is “readily apparent” and if the potential exposure is significant. If there are no complete exposure pathways, no further action to assess readily apparent harm and potentially significant

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exposures is required (MassDEP, 1996a). The Stage I screening for potential ecological receptors has been conducted separately for aquatic and terrestrial habitats.

Site Environmental Setting - The Site abuts the Housatonic River and is located in the 100-year flood plain for the Housatonic River as designated by the Federal Emergency Management Agency (FEMA).

Aquatic Habitat Screening - Four criteria are identified in the MCP (310 CMR 40.0995(3)(a)(1)) to assess whether there is evidence of current or potential future exposures to aquatic environmental receptors:

1. Evidence that OHM have come to be located in a surface water body or wetland,
2. Evidence that OHM have had an adverse impact on aquatic biota,
3. The presence of OHM in a surface water body or wetland as indicated by analytical data, and
4. The potential for transport of OHM in groundwater or surface runoff to aquatic receptors.

Sediment and surface water data (see Section 3.3) indicate that no PCP has been detected in Site samples collected from the Housatonic River that may be the result of groundwater discharging into the river. No evidence of stressed biota nor visible evidence of oil have been observed. Therefore, a condition of No Substantial Hazard exists under current conditions.

Terrestrial Habitat Screening - Natural vegetation on the Site is limited due to the current development of the Site. Wildlife may include birds and small animals and transitory larger mammals.

A further evaluation of the presence of potentially significant exposure pathways was completed. Since no soil screening criteria are available, the terrestrial habitat has been screened on the basis of its size. For the purposes of this screening, the size of undeveloped/open land at the Site determines the specific evaluation of terrestrial environments.

MassDEP (1996a) states that, for the purposes of the screening process, undeveloped/open land is characterized by the presence of native vegetation, and does not include landscaped residential and commercial parcels, landscaped parks, or golf courses. Based on this MassDEP definition, the open space at the Site is less than 2 acres in size. Therefore, pursuant to the MCP, no further action to characterize ecological risk is required for such a site unless:

1. Contaminant transport from surface soil to an Area of Critical Environmental Concern (ACEC) is possible, or
2. State-listed threatened or endangered species, or other species of special concern are present.

According to the MassDEP Site Scoring Map, the Site is not:

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1. Within an ACEC, nor is contaminant transport from surface soil to an ACEC possible, or
2. The location of state-listed threatened or endangered species, or other species of special concern.

Based on the above information, potentially significant exposures do not exist for terrestrial ecological receptors potentially exposed to soils at the Site. As a result, in summary, there is currently a condition of No Substantial Hazard to the environment.

7.0 UNCERTAINTY ANALYSIS

The Method 3 Risk Characterization is dependent on the quality and nature of the sampling data from the site characterization. Sampling bias or selection of specific analytical methodologies may affect the accuracy of the data. Samples collected for the purposes of the Risk Characterization were obtained from areas of reported contamination, and may not be representative of site-wide conditions. Constituent concentrations actually present in on-site media are uncertain because they were estimated from results of individual samples. Random fluctuations in analytical results exist due to variations in sampling and analytical procedures.

The EPCs, based on individual sample results, also represent conservative conditions. These instances of potential uncertainty apply specifically to current site use scenarios. Uncertainty is perhaps more pronounced for EPCs used under modeled future conditions. It is assumed that future concentrations will be equivalent to current concentrations. In reality, concentrations for constituents of concern will decline in the future due to natural attenuation from physical, chemical and biological processes.

Conservative, health-protective assumptions were used in calculating risks of exposure.

8.0 SUMMARY AND CONCLUSIONS

A Method 3 Risk Characterization was performed for southern portion of the property referred to as the Bentley Development at 100 Bridge Street in Great Barrington, Massachusetts and RTN 1-0682. The Method 3 was completed in accordance with 310 CMR 40.0900 to evaluate if the current and foreseeable future Site conditions are consistent with a condition of No Significant Risk of harm to health, environment, safety, and public welfare.

The following conclusions were reached:

- A condition of No Significant Risk exists for soil exposure to current residents and lesser-exposed construction workers and trespassers with the use of fill, barriers, and AUL to restrict direct contact exposure in specified areas of the Bentley Apartments, and Stormwater Retention Area. Other specified areas above the barriers (i.e., accessible soil) of the Bentley Apartments and Stormwater Retention Area do not require restrictions on use.

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- A condition of No Significant Risk exists for future use of Site groundwater as drinking water for this portion of the Site, but not for the remainder of the Site;
- A condition of No Significant Risk exists for public welfare and safety; and
- A condition of No Significant Risk for the environment exists for the aquatic environment for this portion of the Site, but not the remainder of the Site based on the potential for groundwater to discharge into the Housatonic River.

Based on these conclusions, a Partial Permanent Solution is supported by the overall conclusion of a condition of No Significant Risk for the Bentley Development portion of the Site with the implementation of an AUL.

9.0 REFERENCES

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APPENDIX A

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Table A-1
Soil Exposure Point Concentrations (EPCs) - Dioxins
Bentley Apartment Parcel (Lot 3)

Sample ID	Dioxin TEQ at Depth	Sample Elevation	Current Elevation	Minimum Soil Cover (in feet)	Accessible Soil?	Dioxin TEQ for EPC
DU2	30	668	671-673	3	No	NA
RF1	1	Top 12"	670-675	none	Yes	1
DU4	1	669.5-671	670-675	8"	Yes	1
DU19	16	668	671-673	3	No	NA
DU8	20	668.5-670	673-675	5	No	NA
DU9	12	670-672	675	4	No	NA
DU20	1	670-671	673-674	3	No	NA
DU10	8	671-673	671-675	none	Yes	8
DU12	9	671	675	4	No	NA
DU13-S3	24	669-670	674-675	4	No	NA
DU14-South-S2	0	671-672	673-674	2	Yes	0
DU17-S2	69	670	675-678	5	No	NA
DU16	4	671-672	676-678	6	No	NA
DU15	3	671	673-675	2	Yes	3
DU18	7	674	678-680	4	No	NA
Exposure Point Concentration (EPC) Accessible Maximum:						**8**
Exposure Point Concentration (EPC) Potentially Accessible Maximum:						**69**

Notes:

1. Concentrations of dioxins/furans are in nanograms per kilogram (ng/kg) and expressed as 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] toxicity equivalency [TEQ] and calculated using the MassDEP Toxicity Equivalency Factors (TEFs).

2. Samples were collected from the surface of the entire Decision Unit (DU) using the Incremental Composite Sampling Method after excavation was complete.

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Table A-2
Soil Exposure Point Concentrations (EPCs) - Dioxins
Primary Stormwater Basin (Lot 4)

Sample ID	Dioxin TEQ at Depth	Sample Elev.	Current Elev.	Min. Soil Cover (ft)	Accessible Soil?	Dioxin TEQ for EPC
DU21	20	668-671	669-672	12"	Yes	20
DU1	30	668-673	668-673	12"	Yes	30
DU2	30	668-673	667-671	12"	Yes	30
DU3	33	668-669	667-673	12"	Yes	33
Exposure Point Concentration (EPC) Accessible - Maximum:						**33**

Notes:

1. Concentrations of dioxins/furans are in nanograms per kilogram (ng/kg) and expressed as 2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD] toxicity equivalency [TEQ] and calculated using the MassDEP Toxicity Equivalency Factors (TEFs).

2. Samples were collected from the surface of the entire Decision Unit (DU) using the Incremental Composite Sampling Method after excavation was complete.

3. In locations where the finished grade was above the sample elevation, the area was overexcavated to 1 foot below the proposed finished grade and the existing soils were covered with 12 inches of topsoil.

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Table A-3
Soil Exposure Point Concentrations (EPCs)
Pentachlorophenol (PCP) in Soil

Boring	Date	Depth (feet (bgs)	PCP Concentrations (mg/kg)	
BENTLEY APARTMENTS				
		2-2.5	BRL	
SS326	12/10/2013	0-3	BRL	Excavated 2 '
SB503a	4/1/2019	2-4	BRL (0.39)	
		8-10	BRL (0.4)	
		10-12	BRL (0.4)	
SB503b	4/2/2019	2-4	BRL (0.4)	
		8-10	BRL (0.39)	
SB503c	4/2/2019	2-4	BRL (0.42)	
		8-10	BRL (0.37)	
SB503d	4/2/2019	2-4	BRL (0.39)	
		8-10	BRL (0.41)	
SB503e	4/2/2019	2-4	BRL (0.4)	
		8-10	BRL (0.4)	
SB504b	4/2/2019	2-4	BRL (0.42)	
		8-10	BRL (0.48)	
SB504c	4/2/2019	2-4	BRL (0.42)	
		8-10	BRL (0.41)	
	EPCs (Maximum) =		BRL	

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APPENDIX B

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Method 3 Risk Assessment for Resident Exposed to Chemicals in Soil - Shortforms 2024 (sf0624rs)

Index

Tab	Description
EPCs	Table RS-1: Select chemicals and enter Exposure Point Concentrations (EPCs) (estimated risks are shown to the right)
Produce Risk	Table RS-2: Produce risk Select chemical and enter EPCs
C Eq	Table RS-3: Equations to calculate cancer risks
OtherMut C Eq	Table RS-4a: Equations to calculate mutagenic cancer risks (except for vinyl chloride and trichloroethylene)
OtherMut C	Table RS-9a, Table RS-2a, and cancer risk calculations for all mutagens except trichloroethylene and vinyl chloride
VC C Eq	Table RS-4b: Equations to calculate mutagenic cancer risks for vinyl chloride
VC C	Table RS-9b, Table RS-2b, and cancer risk calculations for vinyl chloride
TCE C Eq	Table RS-4c: Equations to calculate mutagenic cancer risks for trichloroethylene
TCE C	Table RS-9c, Table RS-2c, and cancer risk calculations for trichloroethylene
cNC Eq	Table RS-5: Equations to calculate chronic noncancer risks
scNC Eq	Table RS-6: Equations to calculate subchronic noncancer risks
Exp	Table RS-7: Definitions and exposure factors
Produce	Table RS-8: Equations to calculate produce ingestion rate
Chem	Table RS-9: Chemical-specific data
Cyanide	Table RS-10: Cyanide Calculations

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Shortforms Version June 2024

These spreadsheets are the property of MassDEP.

Original design by Andrew Friedmann, with further contributions from other MassDEP staff.

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Resident - Soil: Table RS-1
Exposure Point Concentration (EPC)
Based on Resident Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)

Shortforms Version June 2024

Method 3 Lookup Tables Version v0624

ELCR (all chemicals) = 8.0E-07

Chronic HI (all chemicals) = 4.5E-02

Subchronic HI (all chemicals) = 1.4E-01

****Do Not Insert Or Delete Any Rows****

Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	Cancer			Chronic			Subchronic			Notes
		$ELCR_{ing}$	$ELCR_{derm}$	$ELCR_{total}$	HQ_{ing}	HQ_{derm}	HQ_{total}	HQ_{ing}	HQ_{derm}	HQ_{total}	
TCDD, 2,3,7,8- (equivalents)	8.0E-06	4.0E-07	4.0E-07	8.0E-07	2.5E-02	2.1E-02	4.5E-02	8.5E-02	5.4E-02	1.4E-01	
PENTACHLOROPHENOL	ND			ND			ND			ND	

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Resident - Soil: Table RS-1
Exposure Point Concentration (EPC)
Based on Resident Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)

Shortforms Version June 2024

Method 3 Lookup Tables Version v0624

ELCR (all chemicals) = 3.3E-06

Chronic HI (all chemicals) = 1.9E-01

Subchronic HI (all chemicals) = 5.8E-01

****Do Not Insert Or Delete Any Rows****

Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	Cancer			Chronic			Subchronic			Notes
		$ELCR_{ing}$	$ELCR_{derm}$	$ELCR_{total}$	HQ_{ing}	HQ_{derm}	HQ_{total}	HQ_{ing}	HQ_{derm}	HQ_{total}	
TCDD, 2,3,7,8- (equivalents)	3.3E-05	1.7E-06	1.7E-06	3.3E-06	1.0E-01	8.6E-02	1.9E-01	3.5E-01	2.2E-01	5.8E-01	
PENTACHLOROPHENOL	ND			ND			ND			ND	

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Resident - Soil: Table RS-2
Exposure Point Concentration (EPC)

Based on Resident Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)

Shortforms Version June 2024

Method 3 Lookup Tables Version v0624

ELCR (all chemicals) =

Chronic HI (all chemicals) =

Subchronic HI (all chemicals) =

***Vegetable uptake is informational only and NOT included in totals on EPC tab.**

****Do Not Insert Or Delete Any Rows****

Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	Cancer $ELCR_{vegetable*}$	Chronic $HQ_{vegetable*}$	Subchronic $HQ_{vegetable*}$	Notes
TCDD, 2,3,7,8- (equivalents)	8.0E-06				

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Resident - Soil: Table RS-3

Equations to Calculate Cancer Risk for Resident (Age 1-31 Years)

Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing(1\text{-}31)} * CSF$$

$$LADD_{ing\ (1\text{-}31)} = LADD_{ing\ (1\text{-}8)} + LADD_{ing\ (8\text{-}15)} + LADD_{ing\ (15\text{-}31)}$$

$$LADD_{ing\ x} = \frac{[OHM]_{soil} * IR_x * RAF_{c\text{-}ing} * EF_{ing} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm\ (1\text{-}31)} = LADD_{derm\ (1\text{-}8)} + LADD_{derm\ (8\text{-}15)} + LADD_{derm\ (15\text{-}31)}$$

$$LADD_{derm\ x} = \frac{[OHM]_{soil} * SA_x * RAF_{c\text{-}derm} * SAF_x * EF_{derm} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

Cancer Risk from Homegrown Produce

$$ELCR_{prod} = LADD_{prod\ (1\text{-}31)} * CSF$$

$$LADD_{prod\ (1\text{-}31)} = LADD_{prod\ (1\text{-}8)} + LADD_{prod\ (8\text{-}15)} + LADD_{prod\ (15\text{-}31)}$$

$$LADD_{prod\ x} = \frac{[OHM_{soil}] * PUF * PIR_x * RAF_{c\text{-}produce} * EF_{produce} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

Method 3 Lookup Tables Version v0624

Parameter	Value	Units
CSF	OHM specific	$(mg/kg\text{-}day)^{-1}$
LADD	age/OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
$IR_{(1\text{-}8)}$	100	mg/day
$IR_{(8\text{-}15)}$	50	mg/day
$IR_{(15\text{-}31)}$	50	mg/day
$PIR_{(1\text{-}8)}$	1,210	mg/day
$PIR_{(8\text{-}15)}$	1,781	mg/day
$PIR_{(15\text{-}31)}$	2,442	mg/day
$RAF_{c\text{-}ing}$	OHM specific	dimensionless
$RAF_{c\text{-}derm}$	OHM specific	dimensionless
$RAF_{c\text{-}produce}$	OHM specific	dimensionless
EF_{ing} or EF_{derm} = EF_{cancer}	0.411	event/day
$EF_{produce}$	1	event/day
ED	1	day/event
$EP_{(1\text{-}8)}$	7	years
$EP_{(8\text{-}15)}$	7	years
$EP_{(15\text{-}31)}$	16	years
C	0.000001	kg/mg
$BW_{(1\text{-}8)}$	19.0	kg
$BW_{(8\text{-}15)}$	46.1	kg
$BW_{(15\text{-}31)}$	64.5	kg
$AP_{lifetime}$	70	years
$SA_{(1\text{-}8)}$	2244	cm^2 / day
$SA_{(8\text{-}15)}$	4051	cm^2 / day
$SA_{(15\text{-}31)}$	5322	cm^2 / day
$SAF_{(1\text{-}8)}$	0.3740	mg/cm^2
$SAF_{(8\text{-}15)}$	0.1365	mg/cm^2
$SAF_{(15\text{-}31)}$	0.1329	mg/cm^2
PUF	OHM specific	dimensionless

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Resident - Soil: Table RS-4a

All Mutagens Except Trichloroethylene and Vinyl Chloride

Equations to Calculate Cancer Risk for Resident (Age 1-31 Years)

Method 3 Lookup Tables Version v0624

Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing(1\text{-}31)} * CSF$$

$$LADD_{ing\ (1\text{-}31)} = LADD_{ing\ (1\text{-}2)} * ADAF_{(1\text{-}2)} + LADD_{ing\ (2\text{-}6)} * ADAF_{(2\text{-}6)} + LADD_{ing\ (6\text{-}16)} * ADAF_{(6\text{-}16)} + LADD_{ing\ (16\text{-}31)} * ADAF_{(16\text{-}31)}$$

$$LADD_{ing\ x} = \frac{[OHM]_{soil} * IR_x * RAF_{c\text{-}ing} * EF_{ing} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm\ (1\text{-}31)} * CSF$$

$$LADD_{derm\ (1\text{-}31)} = LADD_{derm\ (1\text{-}2)} * ADAF_{(1\text{-}2)} + LADD_{derm\ (2\text{-}6)} * ADAF_{(2\text{-}6)} + LADD_{derm\ (6\text{-}16)} * ADAF_{(6\text{-}16)} + LADD_{derm\ (16\text{-}31)} * ADAF_{(16\text{-}31)}$$

$$LADD_{derm\ x} = \frac{[OHM]_{soil} * SA_x * RAF_{c\text{-}derm} * SAF_x * EF_{derm} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

Cancer Risk from Homegrown Produce

$$ELCR_{prod} = LADD_{prod\ (1\text{-}31)} * CSF$$

$$LADD_{prod\ (1\text{-}31)} = LADD_{prod\ (1\text{-}2)} * ADAF_{(1\text{-}2)} + LADD_{prod\ (2\text{-}6)} * ADAF_{(2\text{-}6)} + LADD_{prod\ (6\text{-}16)} * ADAF_{(6\text{-}16)} + LADD_{prod\ (16\text{-}31)} * ADAF_{(16\text{-}31)}$$

$$LADD_{prod\ x} = \frac{[OHM_{soil}] * PUF * PIR_x * RAF_{c\text{-}produce} * EF_{produce} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

NOTE: These calculations are based on EPA's default method for accounting for early life exposures to mutagenic compounds.

Parameter	Value	Units
CSF	OHM specific	$(mg/kg\text{-}day)^{-1}$
LADD	age/OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
$IR_{(1\text{-}2)}$	100	mg/day
$IR_{(2\text{-}6)}$	100	mg/day
$IR_{(6\text{-}16)}$	50	mg/day
$IR_{(16\text{-}31)}$	50	mg/day
$PIR_{(1\text{-}2)}$	10,910	mg/day
$PIR_{(2\text{-}6)}$	11,958	mg/day
$PIR_{(6\text{-}16)}$	17,451	mg/day
$PIR_{(16\text{-}31)}$	24,432	mg/day
$RAF_{c\text{-}derm}$	OHM specific	dimensionless
$RAF_{c\text{-}produce}$	OHM specific	dimensionless
EF_{ing} or $EF_{derm} = EF_{cancer}$	0.411	event/day
$EF_{produce}$	1	event/day
ED	1	day/event
$EP_{(1\text{-}2)}$	1	years
$EP_{(2\text{-}6)}$	4	years
$EP_{(6\text{-}16)}$	10	years
$EP_{(16\text{-}31)}$	15	years
C	0.000001	kg/mg
$BW_{(1\text{-}2)}$	9.6	kg
$BW_{(2\text{-}6)}$	17.6	kg
$BW_{(6\text{-}16)}$	43.2	kg
$BW_{(16\text{-}31)}$	65.0	kg
AP_{cancer}	70	years
$SA_{(1\text{-}2)}$	1708	cm^2 / day
$SA_{(2\text{-}6)}$	2113	cm^2 / day
$SA_{(6\text{-}16)}$	3875	cm^2 / day
$SA_{(16\text{-}31)}$	5354	cm^2 / day
$SAF_{(1\text{-}2)}$	0.372	mg/cm^2
$SAF_{(2\text{-}6)}$	0.3747	mg/cm^2
$SAF_{(6\text{-}16)}$	0.1702	mg/cm^2
$SAF_{(16\text{-}31)}$	0.1328	mg/cm^2
$ADAF_{(1\text{-}2)}$	10	dimensionless
$ADAF_{(2\text{-}6)}$	3	dimensionless
$ADAF_{(6\text{-}16)}$	3	dimensionless
$ADAF_{(16\text{-}31)}$	1	dimensionless
PUF	OHM specific	dimensionless

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All Mutagens Except Trichloroethylene and Vinyl Chloride

Method 3 Lookup Tables Version v0624

Oil or Hazardous Material (OHM)	EPC (mg/kg)
BENZO(a)ANTHRACENE	
BENZO(a)PYRENE	
BENZO(b)FLUORANTHENE	
BENZO(k)FLUORANTHENE	
CHRYSENE	
DIBENZO(a,h)ANTHRACENE	
DICHLOROMETHANE	
INDENO(1,2,3-cd)PYRENE	

Resident - Soil: Table RS-9a Chemical-Specific Data

Oil or Hazardous Material	CSF (mg/kg-day)$^{-1}$	$RAF_{c\text{-}ing}$	$RAF_{c\text{-}derm}$	$RAF_{c\text{-}prod}$	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic $RAF_{nc\text{-}ing}$	Chronic $RAF_{nc\text{-}derm}$	Subchronic $RAF_{nc\text{-}ing}$	Subchronic $RAF_{nc\text{-}derm}$	$RAF_{nc\text{-}prod}$	PUF
BENZO(a)ANTHRACENE												
BENZO(a)PYRENE												
BENZO(b)FLUORANTHENE												
BENZO(k)FLUORANTHENE												
CHRYSENE												
DIBENZO(a,h)ANTHRACENE												
DICHLOROMETHANE												
INDENO(1,2,3-cd)PYRENE												

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All Mutagens Except Trichloroethylene and Vinyl Chloride

Resident - Soil: Table RS-2a
Produce ELCR Calculation
Based on Resident Ages 1-31 (Cancer)

***Note: 1) These mutagens do not have any produce uptake (i.e., PUF=0). 2) Vegetable uptake is informational only and NOT included in totals on EPC tab.**

Oil or Hazardous Material	EPC (mg/kg)	Cancer $ELCR_{vegetable*}$
BENZO(a)ANTHRACENE		
BENZO(a)PYRENE		
BENZO(b)FLUORANTHENE		
BENZO(k)FLUORANTHENE		
CHRYSENE		
DIBENZO(a,h)ANTHRACENE		
DICHLOROMETHANE		
INDENO(1,2,3-cd)PYRENE		

Excess Lifetime Cancer Risk (ELCR) Calculations

Oil or Hazardous Material	EPC (mg/kg)	$ELCR_{ingestion}$	$ELCR_{dermal}$	Derm & Ing $ELCR_{total}$
BENZO(a)ANTHRACENE				
BENZO(a)PYRENE				
BENZO(b)FLUORANTHENE				
BENZO(k)FLUORANTHENE				
CHRYSENE				
DIBENZO(a,h)ANTHRACENE				
DICHLOROMETHANE				
INDENO(1,2,3-cd)PYRENE				

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Resident - Soil: Table RS-5
Equations to Calculate Chronic Noncancer Risk for Resident Child (Age 1-8 Years)

Method 3 Lookup Tables Version v0624

Chronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP_{chronic}}$$

Chronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP_{chronic}}$$

Chronic Noncancer Risk from Homegrown Produce

$$HQ_{produce} = \frac{ADD_{produce}}{RfD}$$

$$ADD_{produce} = \frac{[OHM_{soil}] * PUF * PIR * RAF_{produce} * EF_{produce} * ED * EP * C}{BW * AP_{chronic}}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
$IR = IR_{(1-8)}$	100	mg/day
$PIR = PR_{(1-8)}$	1,210	mg/day
$RAF_{nc\text{-}ing}$	OHM specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM specific	dimensionless
$RAF_{nc\text{-}produce}$	OHM specific	dimensionless
EF_{ing} or $EF_{derm} = EF_{chronic}$	0.411	event/day
$EF_{produce}$	1	event/day
ED	1	day/event
$EP = EP_{(1-8)}$	7	years
C	0.000001	kg/mg
$BW = BW_{(1-8)}$	19.0	kg
$AP_{chronic}$	7	year
$SA = SA_{(1-8)}$	2244	cm^2 / day
$SAF = SAF_{(1-8)}$	0.3740	mg/cm^2
PUF	OHM specific	dimensionless

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Resident - Soil: Table RS-6

Equations to Calculate Subchronic Noncancer Risk for Resident Child (Age 1-2 Years)

Method 3 Lookup Tables Version v0624

Subchronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP_{subchronic}}$$

Subchronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP_{subchronic}}$$

Subchronic Noncancer Risk from Homegrown Produce

$$HQ_{produce} = \frac{ADD_{produce}}{RfD_{subchronic}}$$

$$ADD_{produce} = \frac{[OHM_{soil}] * PUF * PIR * RAF_{produce} * EF_{produce} * ED * EP * C}{BW * AP_{subchronic}}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
$IR = IR_{(1-2)}$	100	mg/day
$PIR = PR_{(1-2)}$	10,910	mg/day
$RAF_{nc\text{-}ing}$	OHM specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM specific	dimensionless
$RAF_{nc\text{-}produce}$	OHM specific	dimensionless
EF_{ing} or $EF_{derm} = EF_{subchronic}$	0.714	event/day
$EF_{produce}$	1	event/day
ED	1	day/event
$EP = EP_{sc}$	0.575	years
C	0.000001	kg/mg
$BW = BW_{(1-2)}$	9.6	kg
$AP_{subchronic}$	0.575	year
$SA = SA_{(1-2)}$	1708	cm^2 / day
$SAF = SAF_{(1-2)}$	0.3740	mg/cm^2
PUF	OHM specific	dimensionless

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Resident - Soil: Table RS-7
Definitions and Exposure Factors

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing=ingestion, derm=dermal)
CSF - Cancer Slope Factor	chemical specific	$(mg/kg\text{-}day)^{-1}$	Chemical-specific, see Tables RS-9 and RS--9c.
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Tables RS-2, RS-3, RS-4a, RS-4b, and RS-4c
LADE - Lifetime Average Daily Exposure	chemical specific	$\mu g/m^3$	Pathway specific. See Tables RS-2, RS-3, RS-4a, RS-4b, and RS-4c
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
RfD - Reference Dose	chemical specific	mg/kg-day	Chemical-specific, see Tables RS-9 and RS-9c.
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Tables RS-5, RS-6
EPC - Exposure Point Concentration	chemical specific	mg/kg	
PUF - Plant Uptake Factor	chemical specific	dimensionless	See Table RS-9. Plant Uptake Factor is defined as the ratio of the contamination in the plant to the contamination in soil: (mg-OHM/kg-plant)/(mg-OHM/kg-soil)
$IR_{(1-8)}$ - Soil Ingestion Rate for age group 1-8	100	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. (http://www.mass.gov/dep/ors/orspubs.htm)
$IR_{(8-15)}$ - Soil Ingestion Rate for age group 8-15	50	mg/day	Ibid $IR_{(1-8)}$ Notes.
$IR_{(15-31)}$ - Soil Ingestion Rate for age group 15-31	50	mg/day	Ibid $IR_{(1-8)}$ Notes.
$IR_{(1-2)}$ - Soil Ingestion Rate for age group 1-2	100	mg/day	Ibid $IR_{(1-8)}$ Notes.
$IR_{(2-6)}$ - Soil Ingestion Rate for age group 2-6	100	mg/day	Ibid $IR_{(1-8)}$ Notes.
$IR_{(6-16)}$ - Soil Ingestion Rate for age group 6-16	50	mg/day	Ibid $IR_{(1-8)}$ Notes.
$IR_{(16-31)}$ - Soil Ingestion Rate for age group 16-31	50	mg/day	Ibid $IR_{(1-8)}$ Notes.
$PIR_{(1-8)}$ = Produce Ingestion Rate for age group 1-8	1,210	mg/day	see Table RS-8
$PIR_{(8-15)}$ = Produce Ingestion Rate for age group 8-15	1,781	mg/day	Ibid $PIR_{(1-8)}$ Notes.
$PIR_{(15-31)}$ = Produce Ingestion Rate for age group 15-31	2,442	mg/day	Ibid $PIR_{(1-8)}$ Notes.
$PIR_{(1-2)}$ = Produce Ingestion Rate for age group 1-2	10,910	mg/day	Ibid $PIR_{(1-8)}$ Notes.
$PIR_{(2-6)}$ = Produce Ingestion Rate for age group 2-6	11,958	mg/day	Ibid $PIR_{(1-8)}$ Notes.
$PIR_{(6-16)}$ = Produce Ingestion Rate for age group 6-16	17,451	mg/day	Ibid $PIR_{(1-8)}$ Notes.
$PIR_{(16-31)}$ = Produce Ingestion Rate for age group 16-31	24,432	mg/day	Ibid $PIR_{(1-8)}$ Notes.
RAF_c - Relative Absorption Factor for Cancer Effects (exposure route-specific)	chemical specific	dimensionless	
$EF_{subchronic}$ - Exposure Frequency for subchronic ingestion or dermal exposure	0.714	event/day	5 days/week
$EF_{chronic}$ - Exposure Frequency for chronic ingestion or dermal exposure	0.411	event/day	5 days/week, 30 weeks/year
EF_{cancer} - Exposure Frequency for cancer, ingestion or dermal exposure	0.411	event/day	5 days/week, 30 weeks/year
$EF_{produce}$ - Exposure Frequency for produce ingestion, cancer and noncancer	1	event/day	
ED - Exposure Duration	1	day/event	
$EP_{sc\ (1-2)}$ - Exposure Period for age group 1-2	0.575	years	30 weeks
$EP_{(1-8)}$ - Exposure Period for age group 1-8	7	years	
$EP_{(8-15)}$ - Exposure Period for age group 8-15	7	years	
$EP_{(15-31)}$ - Exposure Period for age group 15-31	16	years	
$EP_{(1-2)}$ - Exposure Period for age group 1-2 for mutagenic effects	1	years	30 weeks
$EP_{(2-6)}$ - Exposure Period for age group 2-6 for mutagenic effects	4	years	

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Resident - Soil: Table RS-7
Definitions and Exposure Factors

$EP_{(6-16)}$ - Exposure Period for age group 6-16 for mutagenic effects	10	years	
$EP_{(16-31)}$ - Exposure Period for age group 16-31 for mutagenic effects	15	years	
$BW_{(1-8)}$ - Body Weight for age group 1-8	19.0	kg	50th percentile female body weight from US Department of Health and Human Services (USDHHS), adjusted according to the MassDEP risk assessment methodology. (See MCP Method 1 Forms and documentation, https://www.mass.gov/doc/summary-of-proposed-mcp-method-1- standards-revisions/download.) Data source: USDHHS: Margaret A. McDowel, M.A, et al., "Anthropometric reference data for children and adults: United States, 2003-2006," National Health Statistics Reports, Number 10, October 22, 2008, Table 1, p 5. (https://www.cdc.gov/nchs/data/nhsr/nhsr010.pdf)
$BW_{(8-15)}$ - Body Weight for age group 8-15	46.1	kg	Ibid $BW_{(1-8)}$ Notes.
$BW_{(15-31)}$ - Body Weight for age group 15-31	64.5	kg	Ibid $BW_{(1-8)}$ Notes.
$BW_{(1-2)}$ - Body Weight for age group 1-2	9.6	kg	Ibid $BW_{(1-8)}$ Notes.
$BW_{(2-6)}$ - Body Weight for age group 2-6	17.6	kg	Ibid $BW_{(1-8)}$ Notes.
$BW_{(6-16)}$ - Body Weight for age group 6-16	43.2	kg	Ibid $BW_{(1-8)}$ Notes.
$BW_{(16-31)}$ - Body Weight for age group 16-31	65.0	kg	Ibid $BW_{(1-8)}$ Notes.
$AP_{subchronic}$ - Averaging Period for subchronic noncancer	0.575	years	30 weeks
$AP_{chronic}$ - Averaging Period for chronic noncancer	7	years	
$AP_{C\ (1-2)}$ - Averaging Period for cancer for the age group 1-2 for vinyl chloride (mutagenic)	1	years	
$AP_{lifetime}$ - Averaging Period for lifetime for cancer effects	70	years	
$ADAF_{(1-2)}$ - Age Defined Adjustment Factor for mutagenic effects for age group 1-2	10	dimensionless	
$ADAF_{(2-6)}$ - Age Defined Adjustment Factor for mutagenic effects for age group 2-6	3	dimensionless	
$ADAF_{(6-16)}$ - Age Defined Adjustment Factor for mutagenic effects for age group 6-16	3	dimensionless	
$ADAF_{(16-31)}$ - Age Defined Adjustment Factor for mutagenic effects for age group 16-31	1	dimensionless	
$SA_{(1-8)}$ - Surface Area for age group 1-8	2244	cm^2/day	SSA - 50th percentile female body surface area from EPA EFH 2011, adjusted by MassDEP risk characterication methodology. (See MassDEP MCP Method 1 Forms and documentation, https://www.mass.gov/doc/summary-of-proposed-mcp-method-1- standards-revisions/download..) Sources of data: (1) EPA Exposure Factors Handbook, 2011 Edition (EPA EFH 2011), Chapter 7, "Table 7-11. Mean and Percentile Skin Surface Area (m2) Derived From U.S. EPA Analysis of NHANES 1999–2006 for Children <21 Years and NHANES 2005–2006 for Adults >21 Years, Females", p 7-43. EPA/600/R-090/052F, September 2011. (https://rais.ornl.gov/documents/EFH_2011.pdf); and (2) EPA Exposure Factors Handbook (1997, Final Report), Table 6-7 (child), and Table 6-3 (age 18+) (https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=12464). (50th percentile of face (1/3 head), forearms, hands, lower legs,
$SA_{(8-15)}$ - Surface Area for age group 8-15	4051	cm^2/day	Ibid $SA_{(1-8)}$ Notes.
$SA_{(15-31)}$ - Surface Area for age group 15-31	5322	cm^2/day	Ibid $SA_{(1-8)}$ Notes.
$SA_{(1-2)}$ - Surface Area for age group 1-2	1708	cm^2/day	Ibid $SA_{(1-8)}$ Notes.

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Resident - Soil: Table RS-7
Definitions and Exposure Factors

$SA_{(2-6)}$ - Surface Area for age group 2-6	2113	cm^2/day	Ibid $SA_{(1-8)}$ Notes.
$SA_{(6-16)}$ - Surface Area for age group 6-16	3875	cm^2/day	Ibid $SA_{(1-8)}$ Notes.
$SA_{(16-31)}$ - Surface Area for age group 16-31	5354	cm^2/day	Ibid $SA_{(1-8)}$ Notes.
$SAF_{(1-8)}$ - Surface Adherence Factor for age group 1-8	0.3740	mg/cm^2	SAF developed for Short Forms according to procedures outlined in MassDEP MCP Risk Characterization Guidance for Disposal Sites, 2024. See SSA tab in Method 3 Lookup Tables Version v0624.xlsx.
$SAF_{(8-15)}$ - Surface Adherence Factor for age group 8-15	0.1365	mg/cm^2	Ibid $SAF_{(1-8)}$ Notes.
$SAF_{(15-31)}$ - Surface Adherence Factor for age group 15-31	0.1329	mg/cm^2	Ibid $SAF_{(1-8)}$ Notes.
$SAF_{(1-2)}$ - Surface Adherence Factor for age group 1-2	0.3717	mg/cm^3	Ibid $SAF_{(1-8)}$ Notes.
$SAF_{(2-6)}$ - Surface Adherence Factor for age group 2-6	0.3747	mg/cm^4	Ibid $SAF_{(1-8)}$ Notes.
$SAF_{(6-16)}$ - Surface Adherence Factor for age group 6-16	0.1702	mg/cm^5	Ibid $SAF_{(1-8)}$ Notes.
$SAF_{(16-31)}$ - Surface Adherence Factor for age group 16-31	0.1328	mg/cm^2	Ibid $SAF_{(1-8)}$ Notes.

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Resident - Soil: Table RS-8
Homegrown Produce Ingestion Rate

Data on mean produce ingestion rates (wet weight, ww) in the Northeast was obtained from the 1994-1996 Continuing Survey of Food Intakes by Individuals (USDA). Data for both genders were used for children under 6, while data for males was used for individuals 6 and older. The mean ingestion rates presented in the survey represent the arithmetic average of all individuals surveyed, regardless of whether or not they had consumed the produce item (e.g., an individual that did not consume the produce item was assigned a rate of 0 g/day). To determine the mean ingestion rate for individuals who ate each produce item, the ingestion rate for all individuals (consumers and nonconsumers) was divided by the percentage of individuals who ate the item (Table RS-8A). These mean ingestion rates for the produce consumers were summed to determine the total produce ingestion rate for each age-group and converted to dry weight assuming the produce items were all 90% water.

To convert mean ingestion rates for the age-groups studied in the survey to age-groups used in risk calculations, each age-group ingestion rate from the survey (i.e., 1 - 2 year olds, 3 - 5 year olds, 6 - 11 year olds, 12 - 19 year olds, and 20 - 39 year olds) was weighted according to the number of years spent in the risk calculation age group (i.e., 1 - 8 year olds, 8 - 15 year olds, and 15 - 31 year olds) (Table RS-8B). It was assumed that 25% of produce ingested was home-grown (Table RS-8C).

Table RS-8A

Age-groups studied in survey	White Potatoes: Ingestion Rate for All g/d (ww)	White Potatoes: % of individuals that consumed item.	White Potatoes: Ingestion Rate for Consumers g/d (ww)	Dark-green vegetables: Ingestion Rate for All g/d (ww)	Dark-green vegetables: % of individuals that consumed item.	Dark-green vegetables: Ingestion Rate for Consumers g/d (ww)	Deep-yellow vegetables: Ingestion Rate for All g/d (ww)	Deep-yellow vegetables: % of individuals that consumed item.	Deep-yellow vegetables: Ingestion Rate for Consumers g/d (ww)
1-2	28	40.3	69.5	6	10.1	59.4	5	12.7	39.4
3-5	30	37.1	80.9	5	6.5	76.9	7	12.7	55.1
6-11	47	44.2	106.3	6	9.1	65.9	2	8.5	23.5
12-19	59	40.3	146.4	2	2.3	87.0	11	15.8	69.6
20-39	76	45.1	168.5	25	14.7	170.1	4	5.7	70.2

NOTE: For ages older than 5 years, intakes reported separately for males and females. Male intakes used because they are more conservative on a g/kg body weight basis than female intakes.

Table RS-8A (continued)

Age-groups studied in survey	Tomatoes: Ingestion Rate for All g/d (ww)	Tomatoes: % of individuals that consumed item.	Tomatoes: Ingestion Rate for Consumers g/d (ww)	Lettuce: Ingestion Rate for All g/d (ww)	Lettuce: % of individuals that consumed item.	Lettuce: Ingestion Rate for Consumers g/d (ww)	Green Beans: Ingestion Rate for All g/d (ww)	Green Beans: % of individuals that consumed item.	Green Beans: Ingestion Rate for Consumers g/d (ww)
1-2	10	27.9	35.8	1	6	16.7	7	12.1	57.9
3-5	10	37.1	27.0	4	14	28.6	3	5.7	52.6
6-11	20	42	47.6	8	14.9	53.7	1	2	50.0
12-19	29	45.2	64.2	19	28.7	66.2	2	2.4	83.3
20-39	48	50.9	94.3	18	29.6	60.8	4	3.7	108.1

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Resident - Soil: Table RS-8
Homegrown Produce Ingestion Rate

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Table RS-8A (continued)

Age-groups studied in survey	Corn, Green peas, Lima beans: Ingestion Rate for All g/d (ww)	Corn, Green peas, Lima beans: % of individuals that consumed item.	Corn, Green peas, Lima beans: Ingestion Rate for Consumers g/d (ww)	Melons, berries: Ingestion Rate for All g/d (ww)	Melons, berries: % of individuals that consumed item.	Melons, berries: Ingestion Rate for Consumers g/d (ww)	Totals Wet Weight WWI g/day	Totals Dry Weight DWI g/day
1-2	12	15	80.0	7	9	77.8	436.4	43.6
3-5	14	21.7	64.5	14	11.6	120.7	506.3	50.6
6-11	9	13.6	66.2	5	5.9	84.7	498.0	49.8
12-19	14	9.9	141.4	17	5	340.0	998.1	99.8
20-39	12	7.3	164.4	6	4.5	133.3	969.7	97.0

Table RS-8B

Age-groups studied in survey	Years Spent in Age Group: 1-8 year old	8-15 year old	15-31 year old	2-6 year old	6-16 year old	16-31 year old
1-2	2			2		
3-5	3			3		
6-11	2	4			6	
12-19		3	4		4	4
20-39			12			11
Number of Years in Age Group	7	7	16	5	10	15

Table RS-8C

	Produce Intake, dry weight: Child 1-2 years g/day	Child 1-8 years g/day	Child 8-15 years g/day	Adult 15-31 g/day	Child 2-6 years g/day	Child 6-16 years g/day	Adult 16-31 g/day
All Produce:	43.6	48.4	71.2	97.7	47.8	69.8	97.7
Homegrown:	10.9	12.1	17.8	24.4	12.0	17.5	24.4

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MassDEP ORS
Contact: Azin Kavian
Azin.Kavian@mass.gov

Resident - Soil: Table RS-9
Chemical-Specific Data

Oil or Hazardous Material	CSF $(mg/kg\text{-}day)^{-1}$	$RAF_{c\text{-}ing}$	$RAF_{c\text{-}derm}$	$RAF_{c\text{-}prod}$	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic $RAF_{nc\text{-}ing}$	Chronic $RAF_{nc\text{-}derm}$	Subchronic $RAF_{nc\text{-}ing}$	Subchronic $RAF_{nc\text{-}derm}$	$RAF_{nc\text{-}prod}$	PUF	Notes
TCDD, 2,3,7,8- (equivalents)	1.5E+05	1.00	0.10		7.0E-10	7.0E-10	1	0.1	1	0.1			
PENTACHLOROPHENOL	4.0E-01	1.00	0.30		5.0E-03	5.0E-03	1	0.3	1	0.3			

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MassDEP ORS
Contact: Azin Kavian
Azin.Kavian@mass.gov

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APPENDIX G

Notice of Activity and Use Limitation

Form 1075

Note: Pursuant to 310 CMR 40.1074(5), upon transfer of any interest in or a right to use the property or a portion thereof that is subject to this Notice of Activity and Use Limitation, the Notice of Activity and Use Limitation shall be incorporated either in full or by reference into all future deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer. Within 30 days of so incorporating the Notice of Activity and Use Limitation in a deed that is recorded or registered, a copy of such deed shall be submitted to the Department of Environmental Protection.

NOTICE OF ACTIVITY AND USE LIMITATION
M.G.L. c. 21E, § 6 and 310 CMR 40.0000

Disposal Site Name: The Southern Portion (Bentley Development) of the Former New England Log Homes Site, Great Barrington, Massachusetts
DEP Release Tracking No.: 1-00682

This Notice of Activity and Use Limitation ("Notice") is made as of this __ day of ____2026, by the Community Development Corporation of South Berkshire (CDCSB) DBA Impact South Berkshire, together with their successors and assigns (collectively "Owner").

W I T N E S S E T H:

WHEREAS, CDCSB is the owner in fee simple of, that certain parcel of land located at 100 Bridge Street in the Town of Great Barrington, Berkshire County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed recorded with the Berkshire County District Registry of Deeds in Book _____, Page ___;

WHEREAS, said parcel of land, which is more particularly bounded and described in **Exhibit A** attached hereto and made a party hereof ("Property"), is subject to this Notice of Activity and Use Limitation. The Property is shown on a plan recorded in the Essex South District Registry of Deeds in Plan Book _____, Plan ___ ;

WHEREAS, a portion of the Property ("Portion of the Property") is subject to this Notice of Activity and Use Limitation. The Portion of the Property is more particularly bounded and described in **Exhibit A-1**, attached hereto and made a part hereof. The Portion of the Property is shown on a plan recorded with the Berkshire County District Registry of Deeds in Plan Book ____, Plan ____;

WHEREAS, the Portion of the Property comprises a portion of a disposal site as the result of a release of oil and/or hazardous material.

Exhibit B is a sketch plan showing the relationship of the Portion of the Property subject to this Notice of Activity and Use Limitation to the boundaries of said disposal site existing within the limits of the Property and to the extent such boundaries have been established, and the location of any Engineered Barriers, permanent caps, Active Exposure Pathway Mitigation Measures or other barriers or systems subject to the provisions of this Notice of Activity and Use Limitation. Exhibit B is attached hereto and made a part hereof;

WHEREAS, one or more response actions have been selected for the Disposal Site in accordance with M.G.L. c. 21E ("Chapter 21E") and the Massachusetts Contingency Plan, 310 CMR 40.0000 ("MCP"). Said response actions are based upon (a) the restriction of human access to and contact with oil and/or hazardous material in soil and/or (b) the restriction of certain activities occurring in, on, through, over or under the Portion of the Property. A description of the basis for such restrictions, and the oil and/or hazardous material release event(s) or site history that resulted in the contaminated media subject to the Notice of Activity and Use Limitation is

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attached hereto as **Exhibit C** and made a part hereof; and

WHEREAS, attached hereto as **Exhibit D** pursuant to 310 CMR 40.1074(2)(c) is documentation consistent with conveyancing standards and practices verifying that the individual signing this Notice of Activity and Use Limitation has the authority to sign such document;

NOW, THEREFORE, notice is hereby given that the activity and use limitations set forth in this Notice of Activity and Use Limitation are as follows:

1. Activities and Uses Consistent with Maintaining No Significant Risk Conditions. The following Activities and Uses are consistent with maintaining a Permanent Solution and a condition of No Significant Risk and, as such, may occur on the Portion of the Property pursuant to 310 CMR 40.0000:

(i) Multi-family residential use limited to managed residential use (e.g., apartments or condominiums) where individual unit tenants and/or owners do not perform subsurface gardening/landscaping outside of designated planting areas constructed with clean soil; commercial activities and uses, including without limitation retail, office, laboratory, warehouse, fitness center, hotel and restaurant uses; industrial activities and uses; and other associated and/or accessory activities and uses, including, but not limited to, outdoor seating, vehicular parking and pedestrian and vehicular traffic, provided that all activities and uses in this Paragraph 1(i) are subject to Paragraphs 3(i) and 3(ii) of this Notice;

(ii) Maintenance activities, and landscaping and utility repair(s) when such activities occur above the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice (e.g., when such activities in landscaped areas do not disturb soils located beneath the demarcation fabric which vary across the Portion of the Property);

(iii) Emergency repair of underground utilities at the Portion of the Property;

(iv) Such other activities or uses which, in the Opinion of a Licensed Site Professional, shall present no greater risk of harm to health, safety, public welfare or the environment than the activities and uses set forth in this Paragraph; and

(v) Construction activities likely to disturb the soils located below the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice, provided such activity is conducted in accordance with a Soil Management Plan and a Health and Safety Plan prepared and implemented in accordance with Paragraphs 3(v) and 3(vi) of this Notice prior to the commencement of such activity;

(vi) Such other activities or uses which, in the Opinion of a Licensed Site Professional, shall present no greater risk of harm to health, safety, public welfare or the environment than the activities and uses set forth in this Paragraph; and

(vii) Such other activities and uses not identified in Paragraph 2 as being Activities and Uses Inconsistent with maintaining No Significant Risk Conditions.

2. Activities and Uses Inconsistent with Maintaining No Significant Risk Conditions. The following Activities and Uses are inconsistent with maintaining a Permanent Solution and a condition of No Significant Risk pursuant to 310 CMR 40.0000, and, as such, may not occur on the Portion of the Property:

(i) Use of the Portion of the Property for single-family residences and other sensitive uses such as schools, playgrounds, or recreational areas;

(ii) Use of the Portion of the Property for agricultural purposes where subsurface soil is used for growing fruits and vegetables for human consumption;

(iii) Any activity, other than emergency utility repairs or activities that do not extend below the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice, including but not limited to excavation, which is likely to disturb soil located below the bottom of the protective barriers without the prior development and implementation of a Soil Management Plan and a Health and Safety Plan in accordance with Paragraphs 3(v) and 3(vi) of this Notice;

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(iv) Any activities that result in the removal of the protective barriers described in Paragraph 3(i) of this Notice which are not followed by repair of the protective barriers or replacement with another protective barrier that meets the requirements of Paragraph 3(i); and

(v) Relocation of soil located below the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice from within the Portion of the Property to a location outside the Portion of the Property unless such activity is first evaluated by a Licensed Site Professional who renders an Opinion which states that such relocation is consistent with the MCP; and

3. Obligations and Conditions. The following obligations and/or conditions are necessary and shall be undertaken and/or maintained at the Portion of the Property to maintain a Permanent Solution and a condition of No Significant Risk:

(i) All soil subject to permitted uses described in Paragraphs 1(i) and 1(ii) of this Notice must be covered by a protective barrier approved by a Licensed Site Professional. The protective barriers must be one or more of the following: building foundation, pavement, and/or concrete with associated clean base-course (minimum 1-foot thickness) or landscaped area with a clean soil layer (1 foot underlain by a demarcation fabric and geogrid or 3 foot underlain by a demarcation fabric, depending on location). The locations of the protective barriers installed at the Portion of the Property are shown on **Exhibit B-1**;

(ii) The protective barriers described in Paragraph 3(i) of this Notice must be maintained. The protective barriers may be removed for construction or utility activities undertaken in accordance with Paragraph 1(iii) or 1(v) of this Notice. Following the completion of any such construction or utility activity, a protective barrier of similar protective value must be promptly reinstalled and maintained;

(iii) The foundation of the existing buildings at the Portion of the Property must be maintained so that underlying soil remains inaccessible;

(iv) A Soil Management Plan must be prepared by a Licensed Site Professional and implemented prior to the commencement of any activity, other than emergency utility repair work, which is likely to disturb soil located below the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice. The Soil Management Plan must describe appropriate soil excavation, handling, storage, transport, and disposal procedures and include a description of engineering controls and air monitoring procedures that may be necessary to ensure that workers and receptors in the vicinity are not negatively affected by fugitive dust. On-site workers involved in an excavation project, other than emergency utility repair work, must be informed of the requirements of the Soil Management Plan, and the plan must be available on-site throughout the course of the project;

(vi) A Health and Safety Plan must be prepared by a Certified Industrial Hygienist or other qualified individual sufficiently trained in worker health and safety requirements and implemented prior to the commencement of any activity, other than emergency utility repair work, which is likely to disturb soil located below the bottom of the protective barriers at the subject location as described in Paragraph 3(i) of this Notice. The Health and Safety Plan shall specify the type of personal protection, engineering controls, and environmental monitoring that may be necessary to prevent unacceptable worker exposures to contaminated soil through dermal contact, ingestion, and/or inhalation. Workers involved in an excavation project, other than emergency utility repair work, must be informed of the requirements of the Health and Safety Plan, and the plan must be available on-site throughout the course of the project; and

(vii) A Monitoring and Maintenance Plan must be prepared by a Licensed Site Professional such that the land use and condition of protective barriers (i.e., buildings, pavement, landscaped areas) are monitored and/or maintained.

4. Proposed Changes in Activities and Uses. Any proposed changes in activities and uses at the Portion of the Property which may result in higher levels of exposure to oil and/or hazardous material than currently exist shall be evaluated by a Licensed Site Professional who shall render an Opinion, in accordance with 310 CMR 40.1080, as to whether the proposed changes are inconsistent with maintaining a Permanent Solution and a condition of No Significant Risk. Any and all requirements

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set forth in the Opinion to meet the objective of this Notice shall be satisfied before any such activity or use is commenced.

5. Violation of a Permanent or Temporary Solution. The activities, uses and/or exposures upon which this Notice is based shall not change at any time to cause a significant risk of harm to health, safety, public welfare, or the environment or to create substantial hazards due to exposure to oil and/or hazardous material without the prior evaluation by a Licensed Site Professional in accordance with 310 CMR 40.1080, and without additional response actions, if necessary, to maintain a condition of No Significant Risk.

If the activities, uses, and/or exposures upon which this Notice is based change without the prior evaluation and additional response actions determined to be necessary by a Licensed Site Professional in accordance with 310 CMR 40.1080, the owner or operator of the Portion of the Property subject to this Notice at the time that the activities, uses and/or exposures change, shall comply with the requirements set forth in 310 CMR 40.0020.

6. Incorporation Into Deeds, Mortgages, Leases, and Instruments of Transfer. This Notice shall be incorporated either in full or by reference into all future deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer, whereby an interest in and/or a right to use the Property or a portion thereof is conveyed in accordance with 310 CMR 40.1074(5).

Owner hereby authorizes and consents to the filing and recordation and/or registration of this Notice, said Notice to become effective when executed under seal by the undersigned Licensed Site Professional, and recorded and/or registered with the appropriate Registry(ies) of Deeds and/or Land Registration Office(s).

WITNESS the execution hereof under seal this _____ day of _____ 2023.

Community Development Corporation of South Berkshire

By: _____
James Harwood
Authorized Representative

COMMONWEALTH OF MASSACHUSETTS

_____, ss _____, 20___

On this ____ day of _____, 2026, before me, the undersigned notary public, personally appeared _____ (_____), proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose as Authorized Representative for Community Development Corporation of South Berkshire, a corporation.

(official signature and seal of notary)

_____

Print Name:_____

My commission expires:_____

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The undersigned Licensed Site Professional hereby certifies that in his Opinion this Notice of Activity and Use Limitation is consistent with a Permanent Solution and maintaining a condition of No Significant Risk.

Date: _____

_____
Timothy J. Snay (LSP #3373)

STATE OF NEW HAMPSHIRE

COUNTY OF HILLSBOROUGH

On this ____ day of _____, 2026, before me, the undersigned notary public, personally appeared Timothy J. Snay, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose.

_____
Notary Public:
My commission expires:

Upon recording, return to:

Community Development Corporation of South Berkshire
PO Box 733
Great Barrington, Massachusetts 01230

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Exhibit C

NOTICE OF ACTIVITY AND USE LIMITATION OPINION
Southern Portion (Bentley Development) of the
Former New England Log Homes Site
100 Bridge Street
Great Barrington, Massachusetts
MassDEP Release Tracking No. 1-0682
Tier I Permit #548535

In accordance with the requirements of 310 CMR 40.1074(2)(e) through 310 CMR 40.1074(2)(g), this Opinion has been prepared to support a Notice of Activity and Use Limitation ("AUL") for the 3.94-acre Portion of the Property located 100 Bridge Street in Great Barrington, Massachusetts (the Property). The Portion of the Property is part of an approximately 8.034-acre-Property identified as a Disposal Site tracked by MassDEP Release Tracking No. ("RTN") 1-0682.

The purpose of this Notice of AUL Opinion is to provide a narrative description of the basis for the Notice of AUL for the Portion of the Property. The Notice of AUL Opinion includes the relevant property use and release history, the reason for the Notice of AUL, and a description of the contaminated media to which the Notice of AUL applies.

LAND USE HISTORY

The Property is identified by the Great Barrington Assessor's Office as Lot 61 on Map 20 (Parcel ID 20-61-0) and is currently owned by the Community Development Corporation of South Berkshire ("CDCSB") d/b/a Impact South Berkshire. The Property is bounded by the Housatonic River to the west, Bridge Street and Bentley Road to the north and east, respectively, and undeveloped wooded land to the south. The areas to the north and east are primarily residential; the central commercial district is nearby, northwest of the Site and to the west of the Housatonic River. To facilitate redevelopment, the Property was subdivided into four lots (Lots 1 through 4). Lots 1 and 2 are in the northern and eastern portions of the Property. Lot 4 is an L-shaped parcel located along the southern and western property boundaries, while Lot 3 is comprised of the remaining land located south of Lot 2 and north and east of Lot 4. **This Notice of AUL applies to all of Lot 3 and the abutting portions of Lot 4 located south and west of Lot 3 (i.e., the Portion of the Property).**

The Property was first developed in 1894 with a manufacturing plant for bedspreads and cotton goods. The main factory building was located in the northwest quadrant of the Property (primarily on Lot 4 but also extending to the northern portion of Lots 3 and 4). The linens operations ceased in 1963 and the Property remained vacant until 1971. Petroleum use at the Property likely began with the Property's first industrial development. Gasoline and diesel fuel were stored in aboveground storage tanks ("ASTs") in a concrete containment structure located east of the former main building along Bentley Road; No. 2 heating fuel was stored in several ASTs located within the main building and in a 1,000-gallon underground storage tank ("UST") located outside of the east side of the main building.

From 1971 through 1993, New England Log Homes ("NELH") occupied the Property and manufactured log homes. NELH used several types of wood preservatives including PCP (which was one of the most widely used biocides in the U.S. prior to1987), zinc naphthenate, and copper arsenate. Finished wood products were submersed in three "dip-tanks" containing wood preservative; the dip tanks were located on the east and west sides of the main building and by the southeast corner of the main building. Prior to use in the dip tanks, the preservatives were stored in 55-gallon drums and ASTs in the main building.

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Mineral spirits, also stored inside in 55-gallon drums, were used to remove residues of pitch and tar from equipment during the production of wood products.

Finished, treated wood products were stockpiled outside in unpaved areas, particularly in the southern Portion of the Property but also in the east and north along Bentley and Bridge Streets, respectively. Notably, there was an approximately 12,000-square-foot area located in the southwest corner of the Portion of the Property where treated wood waste was buried to a depth of up to 14 feet below the ground surface ("bgs").

In 2001, the main building was significantly damaged by fire with greater than 50 percent of the building having burned to the ground. Soot from the fire was deposited on the ground surface across the Property, and fire debris was present in the central portion until the remaining buildings were demolished and most of the debris was removed in 2012. Some debris piles were left at the Property, including piles of wood waste, metal, concrete, and brick intermixed with surface soils. The debris piles were later screened to remove the soil and relocated to the southern end of the Portion of the Property during the site preparation activities conducted in 2014.

RELEASE DISCOVERY

The MassDEP identified the Property as a Disposal Site as defined by the Massachusetts Contingency Plan ("MCP") in January 1990 due to the presence of elevated concentrations of dioxins/furans and pentachlorophenol ("PCP") in soil, with secondary impacts from metals, petroleum hydrocarbons, and polycyclic aromatic hydrocarbons ("PAHs"). Elevated concentrations of PCP are present in groundwater at the northern portion of the Property; however, groundwater at the Site as defined in this Notice of AUL is currently not significantly impacted by oil or hazardous materials ("OHM").

This AUL Opinion was developed based on the results of assessment and response actions completed at the Site through September 2025 performed by Pinchin, LLC (formerly Ransom Consulting, LLC [Ransom]), and historical data provided by the United States Environmental Protection Agency ("U.S. EPA"), Fuss and O'Neil, and others.

SUMMARY OF COMPLETED RESPONSE ACTIONS

Lot 3, located in the southern portion of the Property, was redeveloped with the Bentley Apartments in 2021, along with the southern portion of Lot 4, which includes a soil berm (the Southern Berm) and a stormwater retention area (Southern Stormwater Area). Lots 1 and 2, located in the northern and northeastern portion of the Property, are proposed for future remediation and redevelopment. The northern portion of Lot 4, located west of Lot 2, is proposed for future development as a public park. Only the Portion of the Property as defined herein are subject to the Notice of AUL.

Remediation activities were performed at the Property in 2019 and 2020 in accordance with a Phase IV Remedy Implementation Plan ("RIP") – Revision 5, approved by MassDEP. The goal of the remediation efforts was to prevent exposure to contaminated soils following redevelopment of the Property. Surface soils impacted by OHM were relocated from the proposed development areas to soil berms located on Lots 1 and 4. The berm located on the southern portion of Lot 4 was completed with an Engineered Barrier. Once the remediation goal was achieved, up to 7 feet of clean fill was imported to the Portion of the Property to achieve the grades needed for construction. A risk assessment completed following construction indicated that soils within the Portion of the Property subject to the Notice of AUL met the criteria for concluding that a condition of No Significant Risk ("NSR") had been achieved with respect to potential exposures to soil. The concentration of PCP in groundwater beneath portions of this Portion of the Property precluded the achievement of a Permanent Solution. A Partial Temporary Solution Statement

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with Conditions (Partial TSSC) was submitted to MassDEP for this Portion of the Property in March 2021.

Following submittal of the Partial TSS, quarterly groundwater samples were collected from wells on this Portion of the Property from June 2021 through March 2022. The quarterly samples indicated that contaminant concentrations in groundwater were less than their corresponding GW-1 Standards at the Portion of the Property. Additional samples collected in September 2025 confirmed that groundwater contaminant concentrations remained below the GW-1 Standards at the Portion of the Property

NATURE AND EXTENT OF CONTAMINATION

The contaminant present in soils at the Property is dioxins/furans. Based on the current development, there are separate potential exposure scenarios for the Bentley Apartments on Lot 3, and the Stormwater Basin and the Southern Berm on Lot 4. The extent of contamination in soil is discussed below for each area. Groundwater has not been adversely impacted so has been dismissed as a medium of concern.

On April 17, 2025, the MassDEP issued a communication detailing revised recommendations for the Toxicity Equivalency Factors ("TEFs") used to calculate dioxins/furans Toxicity Equivalency Quotients ("TEQs") for assessments completed under the MCP. MassDEP is currently using the TEFs derived and adopted by the World Health Organization ("WHO") in 2005. As noted in the communication, the revision aligns MassDEP TEF values with those of the U.S. EPA (2010), California Environmental Protection Agency (OEHHA 2011) and multiple state organizations. MassDEP noted that the revised TEFs (DEP 2025 – TEFs) supersede those previously recommended by MassDEP that were in use at the time that the remediation activities were completed at the Site. The TEQs referenced herein are based on the 2025 MassDEP TEFs.

Bently Apartments: Dioxins/furans were detected in soil at concentrations expressed as TEQs ranging from 1 to 69 nanograms per kilogram (ng/kg), with an average concentration of 14 ng/kg. At least 4 feet of clean fill is present over soils with TEQs greater than 20 ng/kg.

Southern Stormwater Area: Dioxins/furans were detected in soil in the area of the Stormwater Retention Area at concentrations expressed as TEQs ranging from 1 to 35 ng/kg, with an average concentration of 20 ng/kg. At least 1 foot of clean fill is present over soils with TEQs greater than 20 ng/kg.

Southern Berm: Based on the pre-remediation site characterization activities and the current TEFs, dioxins/furans are expected to be present at concentration expressed as TEQs of up to 1,105 ng/kg. The Southern Berm is covered by an Engineered Barrier.

METHOD 3 RISK CHARACTERIZATION

Using the current soil and groundwater air data collected at the Site, a Method 3 Risk Characterization was completed for this Portion of the Property to assess site-specific risks. Potential risks were evaluated quantitatively for construction/utility workers, residents, Site workers, and visitors/ trespassers. Potential risks to safety were evaluated qualitatively. Potential risks to public welfare were evaluated qualitatively and through comparisons of exposure point concentrations to their corresponding soil and groundwater Method 3 Ceiling Limits. Potential risks to environmental receptors were evaluated with a Stage I Environmental Screening.

Ransom estimated both cancer (as expressed as Excess Lifetime Cancer Risk ["ELCR"]) and non-cancer risk (as measured by a Hazard Index ["HI"]) for residents. Evaluation of residential exposures is protective of lesser exposed individuals, such as visitors and trespassers, who may be present, but for

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shorter frequency and duration The ELCRs and HIs are summarized by receptor and exposure pathway below.

Receptor – Accessible Soil	**Total ELCR**	**Subchronic HI**	**Chronic HI**
Resident, Bentley Apartments	8×10^{-7}	0.14	0.045
Resident, Southern Stormwater Retention Area	3×10^{-6}	0.58	0.19
MCP Acceptable Level	1×10^{-5}	1	1

As shown in this summary, the total ELCRs and total HIs for all receptors are below their corresponding MCP risk limits.

The following conclusions were reached:

1. A condition of NSR exists for soil exposure to current residents and lesser-exposed construction workers and trespassers with the use of fill, barriers, and a Notice of AUL to restrict direct contact exposure to soil in specified areas of the Bentley Apartments, Riverfront Area, and Stormwater Retention Area. Other specified areas above the barriers (i.e., accessible soil) of the Bentley Apartments, Riverfront Area, and Stormwater Retention Area do not require restrictions on use.
2. A condition of NSR exists for future use of groundwater within the Site as drinking water relative to concentrations of dioxins/furans and PCP, but not for the remainder of the Disposal Site. In addition, the Property is serviced by municipal water and on-site groundwater is not used for drinking water.
3. A condition of NSR exists for public welfare and safety.
4. A condition of NSR for the environment exists for the aquatic environment for the Portion of the Property but not the remainder of the Disposal Site based on the potential for groundwater to discharge into the Housatonic River.

REASON FOR ACTIVITY AND USE LIMITATION

Based on the results of response actions completed at the Disposal Site and the findings of a Method 3 Risk Characterization, Pinchin concludes that a condition of NSR of harm to human health, safety, and the environment exists for the Portion of the Property under current conditions. Therefore, a Permanent Solution has been achieved at this Portion of the Property and additional response actions are not warranted.

Because the Method 3 Risk Characterization found that a condition of NSR relies on limiting exposure to dioxin/furan-impacted soils located beneath an Engineered Barrier and at the Portion of the Property, a Notice of AUL is required to maintain the existing Engineered Barrier and current use such that the condition of No Significant Risk is maintained.

LSP: _____
Timothy J. Snay, Licensed Site Professional

Date: ___, 2026

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APPENDIX H

Public Comment Period Documentation

APPENDIX I
Notifications to Public Officials

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