

IN-SITU CHEMICAL OXIDATION TREATABILITY STUDY EVALUATION REPORT

CTS OF ASHEVILLE, INC. SUPERFUND SITE

235 Mills Gap Road
Asheville, Buncombe County, North Carolina
EPA ID: NCD003149556
Consent Decree – Civil Action No. 1:16-cv-380

Prepared for:

CTS Corporation 4925 Indiana Avenue Lisle, Illinois 60532

Prepared by:

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Wood Project 6252-16-2012

May 3, 2019



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May 3, 2019

Mr. Craig Zeller, P.E. U.S. EPA, Region 4 Remedial Project Manager 61 Forsyth Street, S.W. Atlanta, Georgia 30303 zeller.craig@epa.gov

RE:

In-situ Chemical Oxidation Treatability Study Evaluation Report

CTS of Asheville, Inc. Superfund Site

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EPA ID: NCD003149556

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Wood Project 6252-16-2012

Dear Mr. Zeller:

Please find attached the In-situ Chemical Oxidation Treatability Study Evaluation Report (ISCO TS Evaluation Report) for the above-referenced Site. Wood Environment & Infrastructure Solutions, Inc. prepared this ISCO TS Evaluation Report on behalf of CTS Corporation to comply with the Consent Decree for Interim Remedial Design/Remedial Action at the CTS of Asheville, Inc. Superfund Site between the United States of America and CTS Corporation, Mills Gap Road Associates, and Northrop Grumman Systems Corporation (entered on March 7, 2017).

If you have questions regarding this ISCO TS Evaluation Report, please contact us at (828) 252-8130.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

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ACRONYMS

bgs below ground surface cis-1,2-DCE cis-1,2-dichloroethene

CD Consent Decree

DHS Department of Homeland Security

ECD electron capture device
ERH electrical resistance heating
FSAP Field Sampling and Analysis Plan

ft/ft feet per foot

g/kg grams per kilogram Health and Safety Plan **HASP IDW** investigative derived waste **ISCO** in-situ chemical oxidation MDL method detection limit MIP membrane interface probe micrograms per kilogram μg/kg micrograms per liter μg/L NAPL non-aqueous phase liquid

NCDEQ North Carolina Department of Environmental Quality

NOI Notice of Intent

PNOD permanganate natural oxidant demand

PDI Pre-design Investigation psi pounds per square inch PWR partially weathered rock

QA/QC quality assurance/quality control
QAPP Quality Assurance Project Plan
RAO remedial action objective
RDWP Remedial Design Work Plan

TCE trichloroethene (also, trichloroethylene)

TSWP Treatability Study Work Plan

USEPA United States Environmental Protection Agency

VOC volatile organic compound

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) prepared this In-situ Chemical Oxidation (ISCO) Treatability Study Evaluation Report (TS Evaluation Report) for the CTS of Asheville, Inc. Superfund Site (Site). The activities described in this TS Evaluation Report have been performed to comply with Paragraph 3.4 of the Statement of Work to the Consent Decree for Interim Remedial Design/Remedial Action (CD) at the Site between the United States of America and CTS Corporation, Mills Gap Road Associates, and Northrop Grumman Systems Corporation.

1.1 Site Description

The approximate center of the Site is located at north latitude 35°29′36″ and west longitude 82°30′25″ (Figure 1). The Site formerly contained an approximate 95,000-square foot, single-story brick and metal structure on the southern portion of the Site. The building was demolished in December 2011 and the concrete building pad remains intact. The northeastern portion of the Site contains an asphalt-paved parking area, and asphalt-paved driveways are located parallel to the north (front) of the building pad and southeast (rear) of the building pad. A six-foot high chain-link fence surrounds the Site and a locked gate at the north end of the Site controls access to the Site from Mills Gap Road. The Site is unoccupied. The Site and adjacent property boundaries are illustrated on Figure 2.

1.2 Background

Previous investigations have identified a dissolved-phase volatile organic compound (VOC) groundwater plume in the Northern Area of the Site, with trichloroethene (TCE) being the primary contaminant. A Non-aqueous Phase Liquid (NAPL) Area Focused Feasibility Study Addendum was conducted to evaluate potential remedial alternatives for the Northern Area of the Site. ISCO was selected as the recommended alternative (Wood, 2015a).

ISCO using emplaced potassium permanganate has been proposed in the Northern Area to reduce TCE concentrations in groundwater. The remedial action objective (RAO) is to reduce TCE concentrations in groundwater in the Northern Area by 95 percent.

A Pre-design Investigation (PDI) was performed in May and June 2017 to collect additional information regarding the vertical and horizontal extent of contamination in the Northern Area. Data regarding the potassium permanganate natural oxidant demand (PNOD) of the subsurface materials were also collected. These data were used to develop a Treatability Study Work Plan (TSWP) that was submitted to the United States Environmental Protection Agency (USEPA) on November 7, 2017. The TSWP was approved by the USEPA and the North Carolina Department of Environmental Quality (NCDEQ) on November 20, 2017.

This TS Evaluation Report presents the results and recommendations from the ISCO Treatability Study.

1.3 Basis of ISCO Remediation

The proposed interim remedial action is hydraulic emplacement of potassium permanganate resulting in the oxidation/destruction of TCE in groundwater. Potassium permanganate is hydraulically emplaced in the subsurface as a slurry of granular potassium permanganate, water, and a carrier fluid creating a sheet-like sub-horizontal disc in the subsurface. Because of the concentration gradient between the potassium permanganate and surrounding groundwater, the potassium permanganate will diffuse over time into the soil/groundwater surrounding the emplacement. In addition, the potassium permanganate emplacement will be more permeable than the surrounding formation, so groundwater will preferentially flow through the emplacement. Contaminants in groundwater that migrate through the zone of solid potassium permanganate are then oxidized (i.e. destroyed). Also, the potassium permanganate dissolves into the groundwater in the surrounding formation and, via advection and dispersion, creates an "oxidative zone" that oxidizes contaminants in this zone. The potassium permanganate will continue to oxidize VOCs until the oxidative capacity is exhausted.

1.4 ISCO Treatability Study Objectives

The objective of the Treatability Study was to collect information to determine if the proposed remedial action is effective to meet the RAO and, if so, to develop parameters to be used in the full-scale remedial action design. The objectives of the Treatability Study included:

• Evaluate the distribution of the emplaced potassium permanganate.

- Evaluate the diffusive zone created from the emplaced potassium permanganate.
- Evaluate TCE concentrations downgradient of the emplacements.
- Collect/interpret data for implementation of the full-scale ISCO remedial design.

2.0 NORTHERN AREA CONCEPTUAL SITE MODEL

The following Conceptual Site Model is based on data collected to date related to the overburden formation in the Northern Area of the Site.

2.1 Site Physical Setting

The area surrounding the Site is considered rural and contains residential and light commercial properties. The Site is situated on a topographic "saddle" between two prominent mountains - Busbee Mountain to the north and Brown Mountain to the south and southwest. Properties northwest and southeast are topographically downgradient of the Site. The majority of the Site is relatively flat and natural surface drainage at the Site is to the northwest. The surrounding area contains mountains and rolling hills, typical of the eastern flank of the Appalachian Mountain range.

2.2 Geology

Fill material and residual soil (overburden) have been identified in the Northern Area of the Site. Fill material, consisting of loose silty sand with gravel, has been observed to a depth of approximately 20 feet below ground surface (bgs) in the northwestern portion of the Site where two apparent natural intermittent surface water drainage channels were historically backfilled for development/grading. Overburden is located below the fill material, where present, and has been observed to a maximum depth of approximately 81 feet bgs (monitoring well MW-6A) in the Northern Area of the Site, where the apparent top of bedrock is encountered.

The uppermost zone of overburden generally consists of fine to medium sand with 10 to 15 percent silt. The overburden "fabric" ranges from massive (i.e., no apparent geologic structure) to strongly foliated. Foliated zones were observed to be approximately horizontal to steeply dipping. Quartz veins ranging in thickness from less than 0.5 inches to approximately 12 inches, and consisting of sand to gravel-sized fragments, have been observed in the overburden. The partially weathered rock (PWR), which is a zone of less weathered rock than the shallower overburden, has been observed to be approximately 15 feet thick in the Northern Area and typically consists of fine to coarse sand with minor amounts of silt and gravel-sized rock fragments. The fabric of the PWR is similar to the overburden fabric (Wood, 2009).

The depth to bedrock in the Northern Area ranges from approximately 70 feet bgs to approximately 81 feet bgs, based on the depth to drilling refusal using rotary/roller cone drilling equipment (Wood, 2009).

2.3 Hydrogeology

A generally north to south trending groundwater divide is present in the overburden in the north-central portion of the Site. As previously discussed, the Site is located on a topographic saddle between mountains to the north and south. A portion of groundwater that is flowing from each mountain (i.e., from a higher elevation) is presumed to be toward the saddle. Therefore, a groundwater divide has developed where groundwater in the overburden flows from the mountains and turns east or west to respective discharge zones. The position and shape of the groundwater divide likely changes in response to precipitation/infiltration.

The direction of shallow groundwater flow (water table) and groundwater flow in the PWR zone are similar. Groundwater flow in the southern portion of the Site appears to flow radially, to the north and east. From the north/central portion of the Site, groundwater flows northwest and east/southeast toward the respective groundwater discharge zones.

In November/December 2018, the depth to the water table in the Northern Area ranged from approximately 17 to 33 feet bgs in monitoring wells MW-7 and MW-6, respectively. Considering the depth to the water table and the depth to bedrock, the aquifer thickness ranges from approximately 30 to 60 feet.

Based on depth to water measurements collected in 2015, the horizontal hydraulic gradient in the shallow overburden from the source area to the Northern Area is approximately 0.031 feet per foot (ft/ft). The horizontal hydraulic gradient in the shallow overburden in the Northern Area of the Site toward the discharge zone east of the Site is approximately 0.066 ft/ft and the horizontal gradient from Northern Area of the Site toward the discharge zone west of the Site is approximately 0.015 ft/ft (Wood, 2015a).

The horizontal hydraulic gradient in the PWR from the source area to the Northern Area is approximately 0.018 ft/ft. The horizontal hydraulic gradient in the PWR from the Northern Area of

the Site toward the discharge zone east of the Site is approximately 0.063 ft/ft and the horizontal

gradient from the Site toward the spring west of the Site is approximately 0.014 ft/ft (Wood, 2015a).

Upward vertical hydraulic gradients were observed in the Northern Area between proximal

overburden shallow and PWR monitoring wells, based on the November/December 2017

monitoring events. An upward gradient (-0.055 ft/ft) was measured at the MW-6/6A well pair and a

relatively small upward vertical gradient (-0.001 ft/ft) was measured at the MW-7/7A well pair,

which is located at/near the groundwater divide.

Groundwater elevations have fluctuated since monitoring wells were installed in 2009. From 2009

to 2013, groundwater elevations in the Northern Area increased 10.8 feet and 12.5 feet at

monitoring wells MW-7A and MW-6A, respectively. This period represents a transition from

generally drought conditions to above-average rainfall conditions. Groundwater elevation increases

in the shallow (water table) monitoring wells were similar during this period (i.e., 11.1 feet at MW-7

and 11.2 feet at MW-6). From 2013 to 2017, groundwater elevations decreased approximately 7 to

8 feet and increased approximately 6 feet in the first half of 2018.

The groundwater seepage velocity (v) is calculated as:

 $v = ki/n_e$, where

k = hydraulic conductivity

i= hydraulic gradient

 n_e = effective porosity

Based on the average hydraulic conductivity of 2.3 x 10⁻⁴ cm/sec determined by slug testing

conducted for the non-aqueous phase liquid (NAPL) Area FFS Report (Wood, 2015a) and an

assumed effective porosity of 0.25, the groundwater seepage velocity from the Northern Area

(monitoring well pairs MW-6/6A and 7/7A) ranges from 13 feet per year to the western discharge

zone, to 63 feet per year to the eastern discharge zone (monitoring well pairs MW-5/5A and MW-

7/7A).

2.4 Nature and Extent of Contamination

As determined from previous investigations, and confirmed during the 2013/2014 NAPL

Investigation, the contamination source area is located below the south-central portion of the

6

former building and extends to the immediate south. The nature of the chlorinated VOC contamination, whether from pure product or from a mixed material/liquid containing a portion of chlorinated VOCs, is unknown. The primary release mechanism(s) associated with the chlorinated VOC contamination at the Site is also unknown.

The petroleum contamination identified in the source area at the Site consisted primarily of fuel oil. The primary release mechanism(s) associated with the petroleum contamination observed at the Site is unknown; however, the petroleum is suspected of originating from an aboveground fuel oil storage tank formerly used to store and supply fuel oil to the facility's boiler.

In 2018, electrical resistance heating was implemented to remediate the LNAPL source area.

Concentrations of TCE in saturated soil, groundwater, and LNAPL were reduced greater than 95 percent, indicating that the source area has largely been removed.

Based on results from the NAPL Investigation, a significant portion of TCE partitioned into (i.e., dissolved into) the petroleum light NAPL (LNAPL). Based on geochemical parameters, primarily the octanol-water coefficient, TCE more readily partitions into LNAPL than it dissolves into groundwater; however, via equilibrium conditions, the TCE will dissolve into groundwater over time (Wood, 2014). Therefore, TCE in the LNAPL acted as the primary source to the dissolved-phase groundwater plume, which extends generally north to east from the LNAPL zone. From the Northern Area of the Site, the dissolved-phase groundwater plume extends east and west to discharge zones. Based on previous investigations, there is no evidence of NAPL (either light or dense) in the overburden in the Northern Area of the Site.

2.4.1 Unsaturated Soil

Unsaturated soil samples collected to date from the overburden in the Northern Area do not indicate a source of soil contamination that contributes to the contaminated groundwater plume in the Northern Area.

2.4.2 Saturated Soil

Saturated soil samples were collected during the NAPL Investigation and PDI. TCE concentration in saturated soil samples collected from the Northern Area are relatively low (up to 5,000 micrograms

per kilogram, mg/kg) compared to TCE concentrations in saturated soil samples collected in the LNAPL source area prior to remediation (up to 1,120,000 mg/kg), which is indicative of the majority of the TCE mass being dissolved in groundwater and not sorbed to soil.

2.4.3 Groundwater

The dissolved-phase chlorinated VOC plume in overburden extends from the source NAPL Area to the Northern Area and then east and west toward groundwater discharge zones. Based on data collected during the NAPL Investigation (Wood, 2014) and the Western Area Remedial Investigation (Wood, 2015b), the Northern Area dissolved-phase chlorinated VOC groundwater plume likely does not extend north of Mills Gap Road.

TCE is the primary chlorinated VOC present in groundwater in the Northern Area. Minor concentrations of chlorinated VOC degradation products, such as 1,2-cis-dichloroethene (cis-1,2-DCE), have been detected in groundwater samples collected from the Northern Area. The lack of elevated concentrations of degradation products indicates that natural biodegradation is not readily occurring in the Northern Area. The pH of groundwater in the Northern Area is generally between 5 and 6. Furthermore, the aquifer is mildly aerobic (i.e., dissolved oxygen generally between 1 and 4 milligrams per liter) and reducing conditions are not present (i.e., oxidation reduction potential generally in the 100 to 300 millivolt range). These aquifer conditions could be factors limiting the ability of microbes to anaerobically biodegrade TCE to cis-1,2-DCE.

Concentrations of TCE vary horizontally and vertically in the Northern Area (from tens of micrograms per liter [µg/L] to tens of thousands µg/L). Based on TCE concentrations in collected groundwater samples and electron capture device (ECD) responses measured during the NAPL Investigation and the ISCO PDI, chlorinated VOC concentrations generally increased with depth (Note: the ECD probe did not advance to the depth of bedrock due to limitations of the drilling equipment; the ECD probe generally advanced to a depth of approximately 40 to 50 feet bgs). Nearest the source area, VOC concentrations increased rapidly at the water table based on ECD response data. However, farther away from the source area, VOC concentrations began to increase 5 to 20 feet below the water table. For example, at MIP-80 near the source/LNAPL area, the water table is estimated to be at 19 feet bgs, and the ECD response immediately increased to a maximum reading just below this depth. Conversely, at MIP-100 in the downgradient plume area (Northern

Area), the water table is at approximately 20 feet bgs, but the ECD responses began to increase at approximately 35 feet bgs and maximum readings were not obtained until a depth of approximately 42 feet bgs. Figure 3 of the ISCO PDI Evaluation Report depicts the soil boring locations referenced in this section (Wood, 2017).

In the west-central area of the Site, VOC concentrations began to decrease after a zone of elevated readings. For example, at MIP-105, ECD responses increased at approximately 30 feet bgs, but began to decline at approximately 45 feet bgs. Two drainage swales formed by intermittent streams were formerly located in this area of the Site, indicating that there was at one time an upward gradient and discharge zone. This 'upwelling' could be inhibiting the downward migration of groundwater containing VOCs in this area.

Based on the results of the NAPL Investigation, an area generally to the east and northeast of the former building was identified where groundwater was not highly contaminated (i.e. outside of the dissolved-phase TCE plume core). However, data collected for the ISCO PDI identified elevated TCE concentrations in this area deeper than during the NAPL Investigation. For example, MHP-11 was advanced in this area during the NAPL Investigation to a refusal depth of approximately 42 feet bgs, and a groundwater sample collected at 42 feet bgs indicated a TCE concentration of 419 μ g/L. During advancement of MIP-102 and MIP-103 in this area for the ISCO PDI, ECD responses began to increase at 40 feet bgs and maximum responses were measured at 45 to 48 feet bgs. A groundwater sample collected at 52 feet bgs at MIP-102 indicated a TCE concentration of 17,800 μ g/L.

Petroleum constituents have not been detected at elevated concentrations in groundwater samples collected in the Northern Area of the Site. Relatively minor concentrations of petroleum constituents (i.e., compared to reported TCE concentrations) were detected in soil and groundwater samples collected nearest the NAPL source area. In general, the petroleum constituents that have been detected/estimated are ring-structured hydrocarbons (e.g., benzene, toluene, and xylenes) which more readily dissolve into groundwater from a petroleum fuel source. Petroleum constituents in groundwater in the Northern Area are not considered to contribute significant mass to the overall contaminated groundwater plume.

2.5 Potassium Permanganate Natural Oxidant Demand

In addition to the contaminants present in the area to be treated, the subsurface formation contains organic and inorganic materials that will be oxidized by the chemical oxidant (potassium permanganate). This natural oxidant demand will consume some portion of the injected oxidant. Therefore, the PNOD was measured during the ISCO PDI to determine the magnitude of the PNOD that will potentially be consumed by the potassium permanganate, in conjunction with the contaminants present in the groundwater.

PNOD samples were collected from the saturated zone in the ISCO treatment area. Each soil sample was analyzed in triplicate. The average PNOD results for each sample ranged from 0.9 grams per kilogram (g/kg) to 2.2 g/kg (Wood, 2017). The results indicate that the PNOD does not vary greatly in the Northern Area and is relatively low; therefore, PNOD would not be expected to consume a significant portion of the potassium permanganate.

2.6 Fate and Transport

The fate and transport of contaminants in soil and groundwater is influenced by numerous factors, including the primary and secondary release mechanisms; the physical and chemical properties of the constituents that were released; and the characteristics of the subsurface medium through which the contaminants migrate.

2.6.1 Contaminant of Concern

The primary contaminant of concern for the Northern Area is TCE.

2.6.2 Contaminant Transport Pathways

The primary transport pathway for contamination in the overburden in the Northern Area is via groundwater. The unsaturated soil pathway, where contaminants leach from the soil to the underlying groundwater, is not considered a transport pathway, as evidence of contamination in the unsaturated soil has not been identified in the Northern Area. The dissolved-phase groundwater plume in the Northern Area discharges at surface water features east and west of the Site resulting in an airborne contaminant pathway via volatilization of VOCs, as well as a surface water contaminant transport pathway.

2.6.3 Mass Distribution

The NAPL source area at the Site contains the largest mass of contaminants. The downgradient dissolved-phase plume contains chlorinated VOC degradation compounds and minor concentrations of petroleum constituents. Groundwater in the Northern Area contains concentrations of TCE ranging from hundreds μ g/L to tens of thousands μ g/L. As previously described, concentrations of TCE vary horizontally and vertically in groundwater in the Northern Area.

3.0 TREATABILITY STUDY ACTIVITIES

The ISCO Treatability Study was conducted to collect data for the full-scale remedial design. Copies of the field logbook and field data records generated during the Treatability Study are included in Appendix A.

3.1 Treatability Study Location

The Treatability Study was conducted in the north-central area of the Site within the Northern Area. This location was selected for the following reasons:

- The Treatability Study area was located downgradient of the electrical resistance heating (ERH) remediation area, such that upgradient groundwater remediation activities would not influence TCE groundwater concentrations that 'entered' the treatment area during the evaluation period.
- The Treatability Study area was located in the vicinity of a groundwater divide, where groundwater flow diverges and flows to the east and west. The greatest certainty of the direction of groundwater flow was in the Treatability Study area.
- The Treatability Study area was located outside of where construction activities for the ERH remediation that were on-going during the evaluation period.
- Existing monitoring wells MW-7 and MW-7A with historical groundwater concentration data are located in the Treatability Study area.

3.2 Monitoring Well Installation

Eight monitoring wells were installed in the Treatability Study area to monitor VOC concentrations and geochemical parameters during performance of the Treatability Study (Figure 3). Monitoring wells were installed in pairs, with one shallow and one deep well per location. Monitoring well construction details are summarized in Table 1. Monitoring well construction diagrams and NCDEQ GW-1 well construction records are included in Appendix B.

Borings for the monitoring wells were advanced using nominal 4.25-inch inner diameter hollow stem augers. The borings were advanced to the proposed depths and a Type II monitoring wells were installed. A two-inch diameter Schedule 40 polyvinyl chloride (PVC) riser pipe and two-inch diameter, five-foot long, Schedule 40 PVC 0.010-inch slotted screen was installed in each of the borings. The annulus of each well was filled with filter sand and topped with a bentonite seal and grout in accordance with North Carolina Well Construction Standards. Monitoring wells were

developed by the pump and surge method using a submersible pump. Water quality parameters (pH, temperature and conductivity) were monitored during development.

The wells were completed with a flush-mount wellhead and equipped with a locking well cap. An approximate four square-foot concrete pad was placed around each wellhead and well identification labels were placed inside the wellheads. The monitoring wells were surveyed by a North Carolina Professional Land Surveyor.

3.3 Emplacement Well Installation

The three emplacement wells/casings were installed to advance the emplacements (Figure 3). The emplacement well borings were advanced using a sonic drill rig and an 8-inch nominal diameter casing bit. The boreholes were extended to apparent bedrock, which was approximately 75 feet. The emplacement wells consist of a solid (un-screened) 4-inch diameter, schedule 40, PVC flush-threaded casing. Centralizers were installed at an approximate 15-foot spacing in the annulus of the borehole. The surrounding approximate 2-inch annular space between the casing and soil was pressure grouted from the bottom of the borehole to ground surface using a tremie pipe and grout pump. The emplacement wells were completed flush with ground surface and be equipped with a locking cap. Emplacement well construction diagrams are included in Appendix B.

3.4 Emplacement Installation

FRx, Inc., an environmental injection contractor, mobilized equipment and materials for the emplacement activities. Granular research-grade potassium permanganate, which is marketed as RemOx® S by Carus Corporation, was delivered in 2,000-pound weather-proof 'super sacks' and stored on wooden pallets.

The emplacement process occurred in two steps. First, a high velocity water jet was used to cut the PVC casing/grout at the target depth and create a kerf, or notch, in the surrounding formation. Second, the potassium permanganate was mixed with water and bentonite and the slurry was injected into the formation using a positive displacement pump. During both processes, inflatable packers were used to isolate the emplacement interval. The emplacements were completed at sixfoot intervals from the deepest target depth to the shallowest target depth. Table 2 contains a summary of the quantities of potassium permanganate emplaced at each location.

Potassium permanganate in quantities exceeding the screening threshold quantity of 400 pounds is regulated by the Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards. Upon receipt of the potassium permanganate at the Site, a Top-Screen survey was completed and submitted to DHS. Upon completion of the emplacements, DHS was notified that the potassium permanganate had been used/injected into the subsurface and was no longer stored at the Site.

3.5 Performance Monitoring

Performance monitoring was conducted using several methods, as described below.

3.5.1 Groundwater Monitoring

Performance groundwater monitoring was conducted to determine the effectiveness of the emplaced potassium permanganate at reducing TCE concentrations in groundwater. Groundwater samples were collected from the eight new monitoring wells and existing monitoring wells MW-7 and MW-7A. Baseline groundwater sampling was conducted in December 2017, and quarterly groundwater sampling was conducted in May, August, and November 2018.

The groundwater samples were collected using low-flow purging/sampling techniques, as described in the Remedial Design Work Plan (RDWP) Field Sampling and Analysis Plan (FSAP). Water quality parameters (pH, temperature, conductivity, oxidation reduction potential, dissolved oxygen and turbidity) were monitored during purging. The presence of potassium permanganate in the purged groundwater was measured using a colorimeter. The groundwater samples were submitted for analysis of Site-specific VOCs (TCE, cis-1,2-DCE, trans-1,2-dichloroethene [trans-1,2-DCE], and vinyl chloride) via USEPA Method 8260. Quality assurance/quality control procedures were implemented in accordance with the RDWP Quality Assurance Project Plan (QAPP); however, the groundwater samples were submitted for a Level 2 data package and abbreviated data validation was conducted. The groundwater sampling field data records are included in Appendix A and the analytical reports are included in Appendix C.

3.5.2 Potassium Permanganate Distribution Evaluation

In December 2018, the distribution of the emplacements was investigated. A direct-push technology rig was used to collect continuous soil samples in the vicinity of the emplacements.

Borings were advanced at 15 locations surrounding the emplacement wells and the soil was visually observed to identify potassium permanganate. The soil boring locations are depicted in Figure 4 and soil boring logs are included in Appendix D.

3.5.3 Additional Groundwater Sampling

Based on the groundwater analytical data collected from December 2017 to November 2018, additional groundwater data was collected in March 2019 to support the development of the design for full-scale implementation of ISCO in the Northern Area of the Site. The activities included collection of groundwater samples in zones where potassium permanganate was visually identified in soil, and collection of groundwater samples from monitoring wells where concentrations of TCE had decreased since implementation of the ISCO Treatability Study.

A direct-push technology rig was mobilized to the Site for the additional groundwater sampling activities. Soil borings were advanced at four locations (Figure 5; one location had two soil borings advanced to different depths). A temporary monitoring well consisting of one-inch diameter PVC well screen (five feet in length) and casing was placed in each boring at the target depths.

The groundwater samples were collected using low-flow purging/sampling techniques, as described in the RDWP FSAP. Water quality parameters (pH, temperature, conductivity, oxidation reduction potential, and dissolved oxygen) were monitored during purging. The presence of potassium permanganate in the purged groundwater was measured using a colorimeter. The groundwater samples were submitted for analysis of Site-specific VOCs (TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) via USEPA Method 8260.

Where potassium permanganate was identified in groundwater during purging, ascorbic acid was added to the sample container to neutralize the potassium permanganate, as described in USEPA's Groundwater Issue: Ground Water Sample Preservation at In-Situ Chemical Oxidation Sites – Recommended Guidelines, dated August 2012. Quality assurance/quality control procedures were implemented in accordance with the RDWP QAPP; however, due to the addition of ascorbic acid added to the sample containers, unpreserved sample containers (i.e., not containing hydrochloric acid) were used and the laboratory was notified that a seven-day hold time was applicable. Also, the groundwater samples were submitted for a Level 2 data package and abbreviated data

validation was conducted. The groundwater sampling field data records are included in Appendix A and the analytical report is included in Appendix C.

Upon completion of the groundwater sampling activities, the temporary monitoring well materials were removed from the borings and the borings were backfilled with bentonite.

3.6 Investigation Derived Waste

Investigative derived waste (IDW), such as soil cuttings and purged groundwater were managed in accordance with the RDWP FSAP. The completed manifests for IDW are included in Appendix E.

4.0 TREATABILITY STUDY EVALUATION

The following sections describe the results from the ISCO Treatability Study.

4.1 Potassium Permanganate Distribution

Fifteen soil borings were advanced in the vicinity of the potassium permanganate emplacements (Figure 4) to collect data regarding the potassium permanganate emplacements (e.g., presence and aperture) and the diffusion zone that developed vertically above and below the emplacements.

Table 3 and Figure 4 contain a summary of the observations and photographs are included in Appendix F.

Potassium permanganate exhibits a distinct pink to dark color purple color (see Photograph 1) depending on the concentration. Although the color of soil at the Site generally ranges from red to orange to brown, zones containing potassium permanganate were readily identifiable in the soil cores. Potassium permanganate was identified in 12 of the 15 borings. At two locations where potassium permanganate was not identified, SB-126 and SB-130, the borings were located 10 feet from the nearest emplacement wells, EPW-1 and EPW-2, respectively. A third location (SB-123) was located 18 feet from the nearest emplacement well EPW-3. These three borings were generally located east/northeast of the nearest emplacement well.

Potassium permanganate was identified at 24 intervals in the 12 borings where potassium permanganate was observed. Potassium permanganate emplacement material (e.g., granular potassium permanganate) was identified at 6 locations (see Photograph 2). The aperture of the observed potassium permanganate emplacements ranged from 0.01 feet at SB-122 (depth of 44.2 feet) to 0.13 feet at SB-132 (depth of 43.7 feet).

Potassium permanganate diffusion zones were identified where the six emplacements were observed and at locations where emplacements were not observed. Potassium permanganate diffusion zones ranged in thickness from 0.1 feet (SB-129) to 12.8 feet (SB-132) and ranged in color from pink to dark purple. In general, where an emplacement was observed, the diffusion zone below the emplacement was thicker than above the emplacement. Where an emplacement was not observed but potassium permanganate diffusion was observed, the aperture of the emplacement

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could have been so thin that it was not readily identified in the soil core, or the diffusion zone was the result of the migration of groundwater containing dissolved potassium permanganate. The latter is the likely scenario where the observed potassium permanganate was light to medium purple (see Photographs 3 and 4, respectively).

Based on visual identification of the potassium permanganate in six of the soil cores, the radius of the emplacements is approximately ten feet. The radius and shape of the emplacements is expected to vary at each location, but generally have an oval shape and dip upward away from the emplacement well to some degree.

4.2 Groundwater Monitoring Results

Baseline and quarterly groundwater monitoring were conducted between December 2017 and November 2018, and additional groundwater monitoring was conducted in March 2019. Table 4 and Figure 5 contain a summary of the analytical results and Table 5 contains a summary of groundwater elevations and water quality parameters. A graph of the TCE concentrations detected in groundwater samples collected during the Treatability Study is included in Figure 6.

Monitoring wells MW-19 and MW-19A were installed upgradient of the Treatability Study area. Groundwater remediation was conducted from June to November 2018 upgradient of MW-19 and MW-19A. Concentrations of TCE in groundwater samples collected from MW-19 and MW-19A were generally similar during the upgradient remediation period, so it does not appear that the upgradient groundwater remediation influenced TCE concentrations in groundwater samples collected during performance of the Treatability Study.

Concentrations of TCE in the baseline groundwater samples ranged from 55.9 μ g/L (MW-7) to 36,600 μ g/L (MW-20). TCE breakdown products (cis-1,2-DCE, trans-1,2-DCE and vinyl chloride) were not detected in the baseline groundwater samples above the method detection limits (MDLs).

Concentrations of TCE decreased by 13 to 29 percent in groundwater samples collected from six of the eight monitoring wells (MW-7A, MW-20, MW-20A, MW-21, MW-21A, and MW-22) in the Treatability Study area (i.e., not including upgradient monitoring wells MW-19/19A) during the first quarterly groundwater monitoring event. Concentrations of TCE generally increased to near

baseline concentrations during the second quarterly groundwater monitoring event, with the exception of MW-7 and MW-21A. Potassium permanganate was identified in groundwater purged from MW-21A, which is the likely cause of the 96.6 percent decrease in TCE in groundwater collected from MW-21A (from 15,800 μ g/L in May 2018 to 538 μ g/L in August 2018; 538 μ g/L is the average of the field and duplicate samples).

Concentrations of TCE decreased in groundwater samples collected from monitoring wells MW-7, MW-20, MW-20A, MW-22, and MW-22A in November 2018. Potassium permanganate was not identified in groundwater purged from these five wells, so the TCE concentration decreases might be due to the fluctuation of groundwater elevations and/or typical fluctuation of TCE concentrations within the dissolved phase plume.

The concentration of TCE detected in groundwater samples collected from MW-21 decreased by 63 percent from 33,900 μ g/L in August 2018 to 12,400 μ g/L in November 2018. The TCE concentration then decreased to 4.1 μ g/L in March 2019, a 99.9 percent reduction from the baseline TCE concentration. Potassium permanganate was not observed in the May, August, and November sampling events, but was observed in the groundwater purged from MW-21 in March 2019, indicating the successful TCE concentration reduction in the presence of potassium permanganate.

The concentration of TCE detected in the groundwater samples collected from MW-21A decreased by 96.5 percent from 15,800 μ g/L in May 2018 to 538 μ g/L (average of the field sample and duplicate) in August 2018. Potassium permanganate was observed in the purged groundwater in August 2018, indicating the presence of potassium permanganate resulted in the TCE concentration reduction. The TCE concentration increased to 7,130 μ g/L in the groundwater sample collected from MW-21A in November 2018 and then to 44,900 μ g/L in March 2019. Only a slight purple coloration was observed in purge water during the March 2019 sampling event. The increases in TCE concentrations after a significant reduction at this location suggest that contaminated groundwater from upgradient (vertically or horizontally) has migrated to the monitoring well and/or the potassium permanganate in the vicinity of monitoring well MW-21A became depleted over time.

Concentrations of TCE in groundwater samples collected from the five temporary monitoring wells in March 2019 ranged from non-detect (i.e., not detected above the MDL) to 1,610 μ g/L. Potassium permanganate was observed in groundwater purged from each of the temporary wells. Baseline TCE concentrations in groundwater in the Treatability Study area at the depths of the temporary monitoring wells ranged from 13,200 μ g/L (MW-22A) to 36,600 μ g/L (MW-20). Assuming the baseline TCE concentrations in the temporary wells were similar to concentrations in the monitoring wells, TCE was reduced from 87.8 percent (using the 13,200 μ g/L and 1,610 μ g/L TCE concentrations) to 100 percent, where TCE was not detected above the MDL.

In general, where potassium permanganate was not identified in a monitoring well, the TCE concentration did not decrease significantly. The monitoring wells are located 20 to 30 feet from the emplacement wells. Monitoring wells MW-21 and MW-21A are located approximately 20 feet southeast of EPW-1 and approximately 20 feet northeast of EPW-2. Potassium permanganate was observed in groundwater purged from MW-21 and MW-21A during at least one sampling event. Potassium permanganate was not observed in monitoring wells located further from the emplacement wells indicating more time is required for the dissolved potassium permanganate to migrate to the monitoring wells and/or the potassium permanganate is being depleted prior to groundwater migrating to the monitoring wells.

5.0 CONCLUSIONS AND PRELIMINARY REMEDIAL DESIGN PARAMETERS

The results of the ISCO Treatability Study indicate that, where potassium permanganate was identified in groundwater, TCE concentrations were reduced an estimated 87 to 100 percent in approximately one year. The proposed remedial alternative relies on natural groundwater flow for the potassium permanganate from the emplacements to contact and oxidize TCE in the dissolved-phase groundwater plume. Based on the Treatability Study results, this approach will require time (i.e., on the order of three to five years) for the RAO to be achieved in the Northern Area of the Site.

Based on the soil evaluation, the radius of the emplacements was approximately 10 feet. In order to achieve a ten-foot radius or greater, at least 750 pounds of potassium permanganate are recommended for each emplacement. Additionally, to create greater viscosity of the slurry and potentially aid in the creation of emplacements with a greater radius, it is recommended that additional bentonite and/or sand be considered to be added to the potassium permanganate slurry.

Based on identification of potassium permanganate in two monitoring wells located 20 feet horizontally from the emplacement wells within one year, a 30- to 40-foot spacing between emplacement wells is recommended (and considering the longer timeframe of the full-scale implementation as compared to the timeframe of the Treatability Study). The 30- to 40-foot spacing confirms the preliminary spacing assumptions in the Focused Feasibility Study Addendum.

The emplacements for the Treatability Study were installed six feet apart vertically. The results of the soil evaluation, which was conducted 11 months after the emplacements were installed, indicated good development of diffusion zones above and below the emplacements where granular potassium permanganate was visually identified and where the granular potassium permanganate was not identified. A six-foot vertical emplacement spacing is recommended for the full-scale implementation.

6.0 REFERENCES

- Wood, 2009. Report of Phase I Remedial Investigation. Mills Gap Road Site, July 27, 2009.
- Wood, 2012. NAPL Investigation Work Plan (Revision 1), CTS of Asheville, Inc. Superfund Site, November 9, 2012.
- Wood, 2015a. Final NAPL Area Focused Feasibility Study Report Addendum, CTS of Asheville, Inc. Superfund Site, November 25, 2015.
- Wood, 2015b. Western Area Remedial Investigation Report (October 9, 2015).
- Wood, 2017. ISCO Pre-Design Investigation Evaluation Report, CTS of Asheville, Inc. Superfund Site, September 11, 2017.

TABLES

TABLE 1
Monitoring Well Construction Details
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Wood Project 6252-16-2012

		Well	Screened			Ground Surface	Top of Casing	Depth to Groundwater	Groundwater Elevation
Monitoring	Installation	Depth	Interval			Elevation	Elevation	12-28-2017	12-28-2017
Well	Date	(bgs)	(bgs)	Northing	Easting	(feet MSL)	(feet MSL)	(feet TOC)	(feet MSL)
MW-7	3/6/2009	30.4	20.4 - 29.8	653002.14	956615.19	2,412.04	2,411.86	19.00	2,392.86
MW-7A	3/6/2009	71.5	66.8 - 71.3	652995.30	956613.20	2,412.04	2,411.8	20.20	2,391.59
MW-19	11/30/2017	45.2	40.0 - 44.8	652910.26	956607.78	2,415.50	2,415.19	21.32	2,393.87
MW-19A	11/30/2017	64.9	59.7 - 64.5	652912.35	956610.29	2,415.54	2,415.36	21.30	2,394.06
MW-20	12/5/2017	50.5	45.3 - 50.1	652961.32	956614.24	2,413.48	2,413.24	19.45	2,393.79
MW-20A	12/6/2017	64.7	59.5 - 64.3	652965.29	956615.48	2,413.55	2,413.31	19.53	2,393.78
MW-21	12/4/2017	44.9	39.7 - 44.5	652980.11	956650.26	2,414.57	2,414.33	20.73	2,393.60
MW-21A	12/5/2017	60.7	55.5 - 60.3	652982.88	956651.78	2,414.54	2,414.07	20.20	2,393.87
MW-22	12/4/2017	55.7	50.5 - 55.3	652953.67	956646.62	2,415.59	2,415.24	21.60	2,393.64
MW-22A	12/1/2017	70.5	65.3 - 70.1	652949.68	956644.60	2,415.59	2,415.35	21.56	2,393.79

Notes:

1. bgs - below ground surface; MSL - mean sea level; TOC - top of casing

Prepared By: SEA 4/8/19 Checked By: GLH 4/16/19

TABLE 2
Summary of Potassium Permanganate Emplacements
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Wood Project 6252-16-2012

		Potassium	Bentonite
	Emplacement Depth	Permanganate	Slurry
Date	(feet bgs)	(pounds)	(gallons)
	Emplacement We	ell (EPW-1)	
1/31/2018	68	1,000	140
1/31/2018	62	1,000	80
1/31/2018	56	1,000	80
1/31/2018	50	1,000	80
1/31/2018	44	1,000	80
1/31/2018	38	750	60
2/1/2018	32	500	60
	Emplacement We	ell (EPW-2)	•
2/1/2018	65	1,000	80
2/1/2018	59	1,000	80
2/1/2018	53	1,000	80
2/1/2018	47	1,000	80
2/1/2018	41	750	60
2/1/2018	35	500	40
	Emplacement We	ell (EPW-3)	
2/1/2018	68	1,000	80
2/1/2018	62	1,000	80
2/3/2018	56	1,500	110
2/3/2018	50	1,600	100
2/3/2018	44	1,400	90
2/3/2018	38	1,000	100
2/3/2018	32	1,000	130

Note:

bgs - below ground surface

Prepared By: SEA 3/22/19 Checked By: RMC 3/26/19

TABLE 3 Potassium Permanganate Distribution Observations CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

	Distance from	Observed Emplacement	Emplacement	Diffusion Zono	Diffusion Zone	Diffusion Zone	Drilling Refusal	
	Nearest EPW	Depth	Aperture	Depth	Thickness	Permanganate	Depth	
Boring	(feet)	(feet bgs)	(feet)	(feet bgs)	(feet)	Appearance	(feet bgs)	Comments
		not identifiable	N/A	38.2 - 38.7	0.5	light		
SB-121	6	44.2	0.08	43.3 - 46.6	3.3	light to dark	50	no recovery from 40 to 42.5 feet
SB-122	11	44.2	0.01	43.7 - 47.8	4.1	light to dark	48	j
SB-123	18		potassium	permanganate no	t observed	J	48	
SB-124	5	36.5	0.03	34.8 - 38.0	3.2	light to dark	44	
SB-125	10	32.3	0.08	30.0 - 37.0	7.0	light to dark	48	no recovery from 30 to 31 feet and 35 to 36 feet
SB-126	10		potassium	permanganate no	permanganate not observed			
SB-127	10	not identifiable	N/A	33.6 - 39.0	5.4	light to dark	45	
SB-128	15	not identifiable	N/A	29.2 - 30.8	1.6	light	45	saturated with permanganate stained groundwater from 30 to 30.8 feet
		not identifiable	N/A	42.6 - 43.4	0.8	light		
		not identifiable	N/A	28.6 - 28.7	0.1	light		
		not identifiable	N/A	33.9 - 34.4	0.5	light		
SB-129	15	not identifiable	N/A	38.7 - 39.2	0.5	light	55	
30-123	13	not identifiable	N/A	42.8 - 43.3	0.5	light	33	
		not identifiable	N/A	44.2 - 46.4	2.2	light to medium		saturated/water from 45 to 46.4; no recovery from 45 to 46 feet
SB-130	10	potassium permanganate not observed						-
_		not identifiable	N/A	39.8 - 44.6	4.8	light to medium	_	
SB-131	5	not identifiable	N/A	45.8 - 46.3	0.5	light	62.5	
		not identifiable	N/A	54.4 - 62.5+	>8.1	light to dark		

TABLE 3 Potassium Permanganate Distribution Observations CTS of Asheville, Inc. Superfund Site Asheville, North Carolina

Wood Project 6252-16-2012

Boring	Distance from Nearest EPW (feet)	Observed Emplacement Depth (feet bgs)	Emplacement Aperture (feet)	Diffusion Zone Depth (feet bgs)	Diffusion Zone Thickness (feet)	Diffusion Zone Permanganate Appearance	Drilling Refusal Depth (feet bgs)	Comments
		not identifiable	N/A	39.3 - 39.8	0.5	light	60	
		43.7	0.13	40.0 - 52.8	12.8	medium to dark		no recovery from 50 to 51.3 feet (saturated)
SB-132	5	not identifiable	N/A	55 - 60 (see comment)	>1.0	medium to dark		no recovery from 55 to 59 feet; liner is stained purple from groundwater; no permanganate in drill rod shoe
SB-133	10	not identifiable	N/A	43.9 - 46.0	2.1	medium	60	
SB-134	10	58.3	0.04	57.8 - 60.0+	>2.2	medium to dark	60	
		not identifiable	N/A	34.0 - 35.0	1.0	light		
SB-135	10	not identifiable	N/A	39.2 - 43.3	4.1	light to dark	59	no recovery from 40 to 41 feet
		not identifiable	N/A	58.8 - 59.0+	>0.2	light		

Notes:

- 1. EPW emplacement well; bgs below ground surface.
- 2. "not identifiable" potassium permanganate emplacement could not be identified in the diffusion zone.
- 3. Where potassium permanganate was observed at the depth of drilling refusal, a '+' is indicated for the bottom of the diffusion zone depth, and '>' is indicated for the diffusion zone thickness.

Prepared By: SEA 3/26/19 Checked By: RMC 3/26/19

TABLE 4 Summary of Groundwater Analytical Results CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

Monitoring Well	Date	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
	12/28/2017	55.9	<0.19	<0.49	< 0.62
MW-7	5/3/2018	1,250	<2.4	<6.1	<7.8
10100-7	8/8/2018	177	<0.38	<0.98	<1.2
	11/6/2018	86.5	<0.19	< 0.49	< 0.62
	12/29/2017	25,000	<47.5	<122	<155
MW-7A	5/3/2018	20,300	<38.0	<98.0	<124
IVIVV-77A	8/8/2018	23,500	<38.0	<98.0	<124
	11/6/2018	28,600	57.2 J	<98.0	<124
	12/28/2017	2,770	<7.6	<19.6	<24.8
MW-19	5/3/2018	3,730	<9.5	<24.5	<31.0
(upgradient)	8/8/2018	6,380	<7.6	<19.6	<24.8
	11/7/2018	4,590	15.6 J	<19.6	<24.8
	12/28/2017	15,800	<23.8	<61.2	<77.5
	12/28/17 (duplicate)	16,700	<23.8	<61.2	<77.5
MW-19A	5/3/2018	10,600	2,610	<49.0	<62.0
(upgradient)	8/8/2018	13,200	3,300	<49.0	<62.0
	11/7/2018	12,400	3,090	<49.0	<62.0
	11/7/2018 (duplicate)	14,800	3,550	<49.0	<62.0
	12/29/2017	36,600	<76.0	<196	<248
MW-20	5/2/2018	29,300	<47.5	<122	<155
5	8/8/2018	33,900	<47.5	<122	<155
	11/7/2018	22,600	<38.0	<98.0	<124
	12/29/2017	18,800	<19.0	<49.0	<62.0
MW-20A	5/2/2018	13,300	<19.0	<49.0	<62.0
	8/8/2018	17,500	<19.0	<49.0	<62.0
	11/7/2018	16,800	<19.0	<49.0	<62.0
	12/28/2017	33,100	<38.0	<98.0	<124
	5/2/2018	28,800	530	<122	<155
MW-21	8/7/2018	33,900	452	<122	<155
	11/7/2018	12,400	<19.0	<49.0	<62.0
	3/11/2019	4.1	<0.29	<0.25	<0.24
	3/11/19 (duplicate)	12.7	<0.29	<0.25	<0.24

TABLE 4 Summary of Groundwater Analytical Results CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

Monitoring Well	Date	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
	12/28/2017	19,300	<23.8	<61.2	<77.5
	5/2/2018	15,800	<19.0	<49.0	<62.0
MW-21A	8/7/2018	424	<0.48	<1.2	<1.6
1V1VV-21A	8/7/18 (duplicate)	652	< 0.95	<2.4	<3.1
	11/6/2018	7,130	<9.5	<24.5	<31.0
	3/12/2019	44,900	<116	<102	<96.8
	12/28/2017	28,800	<47.5	<122	<155
MW-22	5/2/2018	21,500	<47.5	<122	<155
10100-22	8/7/2018	29,600	325	<122	<155
	11/7/2018	24,300	<38.0	<98.0	<124
	12/28/2017	13,200	<19.0	<49.0	<62.0
	5/2/2018	13,900	550	<49.0	<62.0
MW-22A	5/2/18 (duplicate)	12,300	515	<49.0	<62.0
	8/7/2018	18,400	206	<49.0	<62.0
	11/7/2018	17,300	73.2 J	<49.0	<62.0
GW-121-45	3/12/2019	<0.22	<0.29	<0.25	<0.24
GW-122-46	3/12/2019	<0.22	<0.29	<0.25	<0.24
GW-131-59	3/11/2019	<0.22	<0.29	<0.25	<0.24
GW-132-48	3/11/2019	1,610	<3.6	<3.2	<3.0
GW-132-58	3/11/2019	160	<0.29	<0.25	<0.24

Notes:

- 1. Concentrations are in micrograms per liter (µg/L).
- 2. '<' Constituent not detected above the indicated method detection limit.
- 3. J Concentration is estimated.

Prepared By: SEA 4/2/19 Checked By: RMC 4/12/19

TABLE 5 Summary of Groundwater Elevations and Water Quality Parameters CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

Monitoring Well (screened interval, feet bgs)	Sample Date	Groundwater Elevation (feet MSL)	TCE Concentration (μg/L)	рН	ORP (mV)	Dissolved Oxygen (mg/L)	Permanganate Concentration (mg/L)
3 /	12/28/2017	2,392.86	55.9	5.5	178	3.6	DNM
MW-7	5/3/2018	2,395.57	1,250	5.7	111	3.6	DNM
(20.4 - 29.8)	8/8/2018	2,399.26	177	4.3	-181	4.3	0.1
,	11/6/2018	2,395.18	86.5	5.2	182	3.9	1.2
	12/29/2017	2,391.59	25,000	7.3	87	0.4	DNM
MW-7A	5/3/2018	2,395.42	20,300	7.7	31	2.8	DNM
(66.8 - 71.3)	8/8/2018	2,398.54	23,500	7.0	7.0	7.0	7.0
	11/6/2018	2,395.24	28,600	7.4	159	0.5	0.3
MW-19	12/28/2017	2,393.87	2,770	4.9	195	0.3	DNM
(40.0 - 44.5)	5/3/2018	2,396.40	3,730	4.9	186	0.6	DNM
,	8/8/2018	2,399.35	6,380	3.8	-258	0.3	0.5
upgradient	11/7/2018	2,395.35	4,590	5.6	148	??	1.6
MW-19A	12/28/2017	2,394.06	16,250*	5.8	-283	1.5	DNM
(59.7 - 64.5)	5/3/2018	2,395.93	10,600	6.3	-7	0.5	DNM
,	8/8/2018	2,399.21	13,200	5.1	-280	0.4	0.5
upgradient	11/7/2018	2,395.46	13,600*	6.5	-2	2.5	0.0
	12/29/2017	2,393.79	36,600	4.3	148	2.1	DNM
MW-20	5/2/2018	2,395.99	29,300	5.6	90	0.4	DNM
(45.3 - 50.1)	8/8/2018	2,399.70	33,900	4.9	-257	1.1	1.1
	11/7/2018	2,395.67	22,600	5.9	172	??	0.7
	12/29/2017	2,393.78	18,800	7.2	18	0.5	DNM
MW-20A	5/2/2018	2,396.19	13,300	6.8	30	1.0	DNM
(59.5 - 64.3)	8/8/2018	2,398.76	17,500	6.1	-286	0.7	0.1
	11/8/2018	2,395.56	16,800	7.0	349	0.7	3.2

TABLE 5 Summary of Groundwater Elevations and Water Quality Parameters CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

Monitoring Well (screened interval, feet bgs)	Sample Date	Groundwater Elevation (feet MSL)	TCE Concentration (μg/L)	рН	ORP (mV)	Dissolved Oxygen (mg/L)	Permanganate Concentration (mg/L)
	12/28/2017	2,393.60	33,100	4.9	132	0.7	DNM
MW-21	5/2/2018	2,396.14	28,800	4.9	138	1.9	DNM
	8/7/2018	2,400.13	33,900	4.4	-264	1.8	1.3
(39.7 -44.5)	11/7/2018	2,395.70	12,400	4.9	434	5.8	0
	3/11/2019	2,401.37	8.4*	4.0	905	15.6	113 - 151**
	12/28/2017	2,393.87	19,300	5.9	80	2.0	DNM
MW-21A	5/2/2018	2,396.41	15,800	5.6	45	0.3	DNM
	8/7/2018	2,400.07	538*	6.3	-123	0.8	7.7
(55.5 - 60.3)	11/6/2018	2,395.74	7,130	6.0	681	0.7	9.8
	3/12/2019	2,400.99	44,900	6.3	DNM	DNM	0.2
	12/28/2017	2,393.64	28,800	5.8	95	0.6	DNM
MW-22	5/2/2018	2,396.10	21,500	12.2	-118	0.8	DNM
(50.5 - 55.3)	8/7/2018	2,399.84	29,600	6.8	-342	0.9	0.0
	11/7/2018	2,395.39	24,300	11.4	108	0.9	2.9
	12/28/2017	2,393.79	13,200	6.4	-274	0.3	DNM
MW-22A	5/2/2018	2,396.14	13,100*	5.8	24	1.4	DNM
(65.3 - 70.1)	8/7/2018	2,399.95	18,400	5.3	-350	0.6	0.2
	11/7/2018	2,395.50	17,300	6.5	225	0.8	0.6
GS-132-48 (45 - 50)	3/11/2019	DNM	1,610	4.7	837	2.8	113 - 151**
GW-132-58 (55 - 60)	3/11/2019	DNM	160	4.3	903	3.8	151 - 188**
GW-131-59 (56 - 61)	3/11/2019	DNM	<0.22	5.7	815	7.2	151 - 188**

TABLE 5

Summary of Groundwater Elevations and Water Quality Parameters CTS of Asheville, Inc. Superfund Site Asheville, North Carolina Wood Project 6252-16-2012

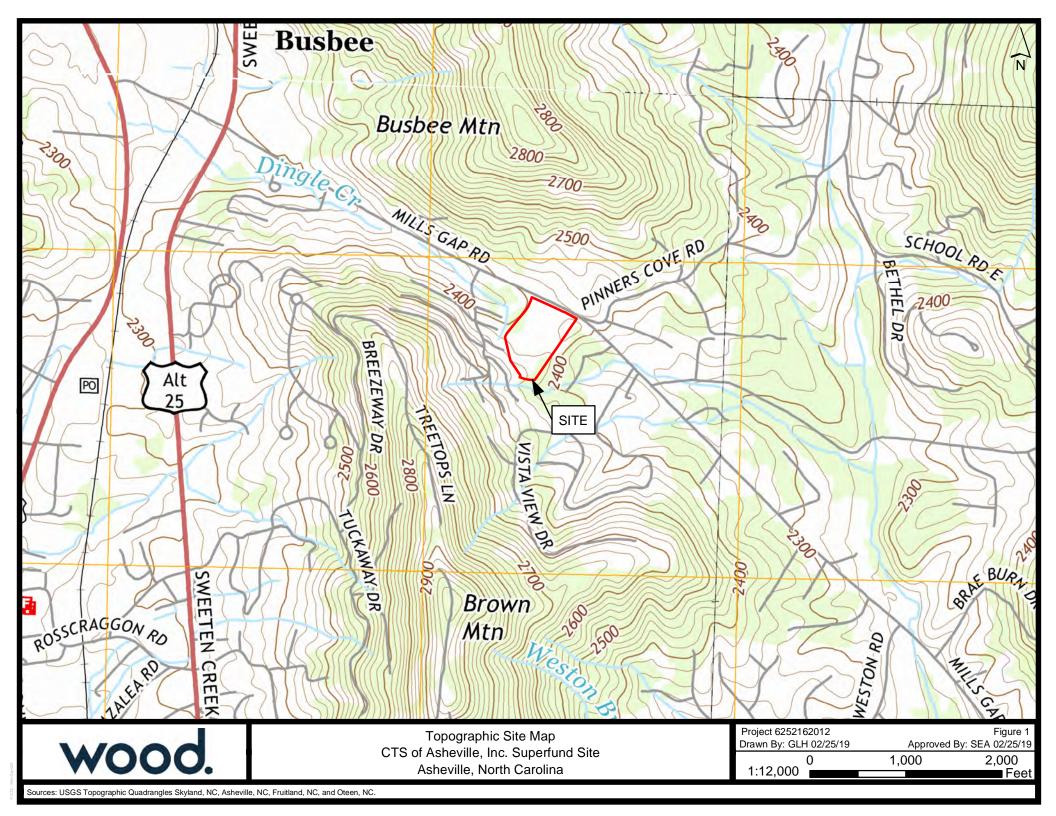
Monitoring Well (screened interval, feet bgs)	Sample Date	Groundwater Elevation (feet MSL)	TCE Concentration (µg/L)	рН	ORP (mV)	Dissolved Oxygen (mg/L)	Permanganate Concentration (mg/L)
GW-121-45 (42 - 47)	3/12/2019	DNM	<0.22	4.0	DNM	DNM	188 - 376 **
GW-122-46 (43 - 48)	3/12/2019	DNM	<0.22	3.7	DNM	DNM	188 - 376 **

Notes:

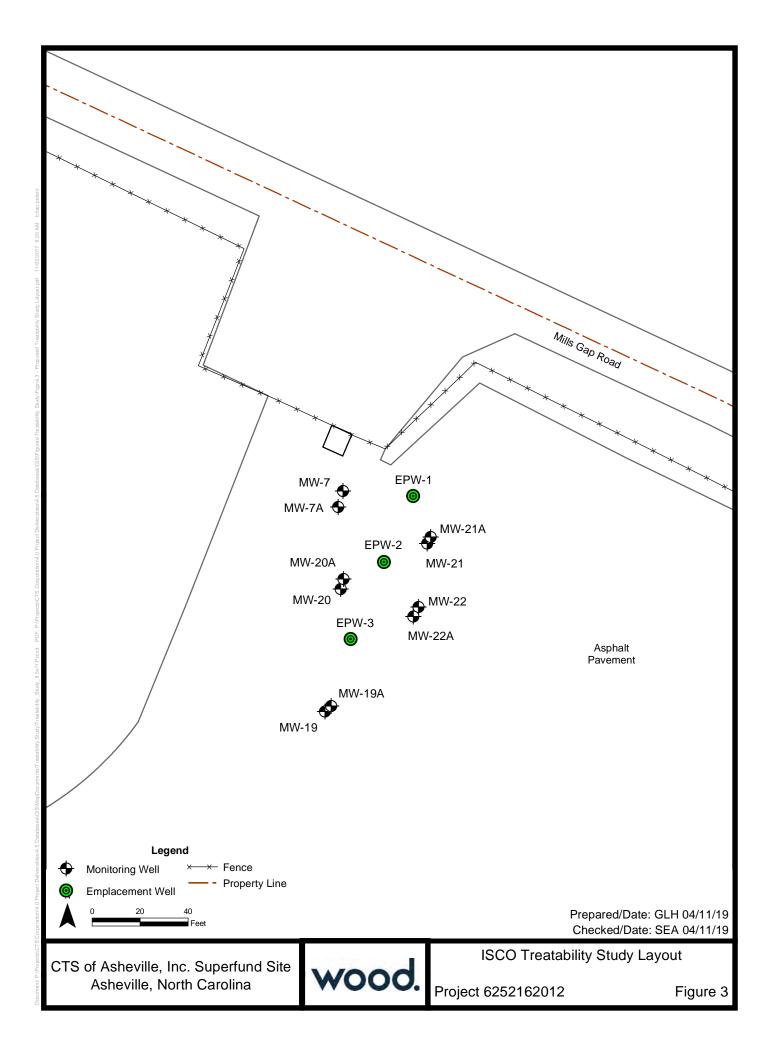
- 1. bgs below ground surface; MSL mean sea level; μg/L micrograms per liter; ORP oxidation reduction potential; mV millivolts; mg/L milligrams per liter; DNM did not measure
- 2. * where a duplicate groundwater sample was collected, the average TCE concentration of the field sample and duplicate is indicated.
- 3. ** permanganate concentration exceeded measurement with colorimeter. Concentration is based on a color chart in EPA's "Ground Water Sample Preservation at ISCO Sites Recommended Guidelines," dated August 2012.
- 4. '<' concentration is less than the indicated method detection limit.

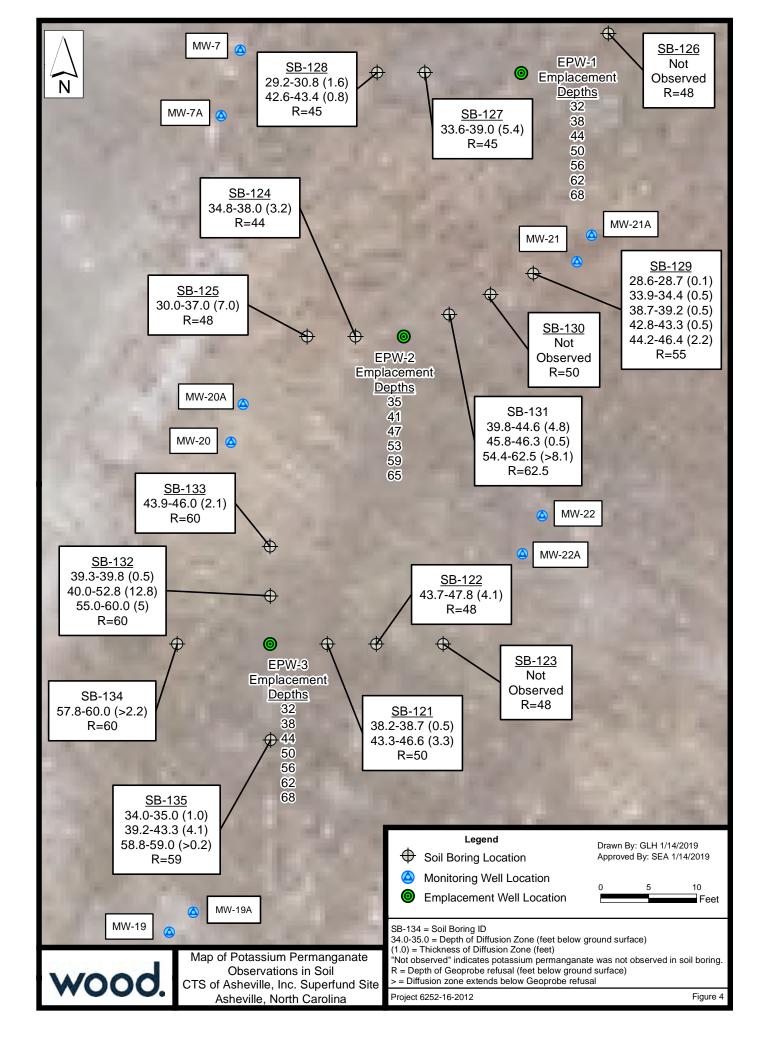
Prepared By: SEA 4/2/19 Checked By: RMC 4/12/19 CTS of Asheville, Inc. Superfund Site ISCO Treatability Study Evaluation Report Wood Project 6252-16-2012 May 3, 2019

FIGURES











MW-7 12/28/17: 55.9 5/3/18: 1,250 8/8/18: 177 11/6/18: 86.5

EPW-1

0

MW-7A

12/29/17: 25,000 5/3/18: 20,300 8/8/18: 23,500 11/6/18: 28,600

MW-21A

12/28/17: 19,300 5/2/18: 15,800 8/7/18: 538* 11/6/18: 7,130 3/12/19: 44,900

MW-20A

12/29/17: 18,800 5/2/18: 13,300 8/8/18: 17,500 11/7/18: 16,800

GW-131-59 3/11/19: <0.22

EPW-2

(9)

MW-21

12/28/17: 33,100 5/2/18: 28,800 8/7/18: 33,900 11/7/18: 12,400 3/11/19: 8.4*

MW-20

12/29/17: 36,600 5/2/18: 29,300 8/8/18: 33,900 11/7/18: 22,600 **MW-22** 12/28/17: 28,800 5/2/18: 21,500

8/7/18: 29,600 11/7/18: 24,300

GW-132-48 3/11/19: 1,610

GW-132-58 3/11/19: 160

MW-22A 12/28/17: 13,200

5/2/18: 7,565* 8/7/18: 18,400 11/7/18: 17,300

EPW-3 (0)

GW-121-45 3/12/19: <0.22

GW-122-46 3/12/19: <0.22

MW-19A

12/28/17: 16,250* 5/3/18: 10,600 8/8/18: 13,200 11/7/18: 13,600*

MW-19

12/28/17: 2,770 5/3/18: 3,730 8/8/18: 6,380 4,590 11/7/18:

Sample Date

Sample ID

MW-22

Trichloroethene Concentration (µg/L)

12/28/17: 28,800 5/2/18: 21,500 8/7/18: 29,600 11/7/18: 24,300

μg/L = micrograms per liter

* = The average of the field sample and duplicate is indicated

< = Constituent not detected above the indicated method detection limit

Prepared/Date: GLH 4/16/19 Checked/Date: SEA 4/16/19

Project 6252162012

TCE Concentrations in Groundwater

Wood.

Legend

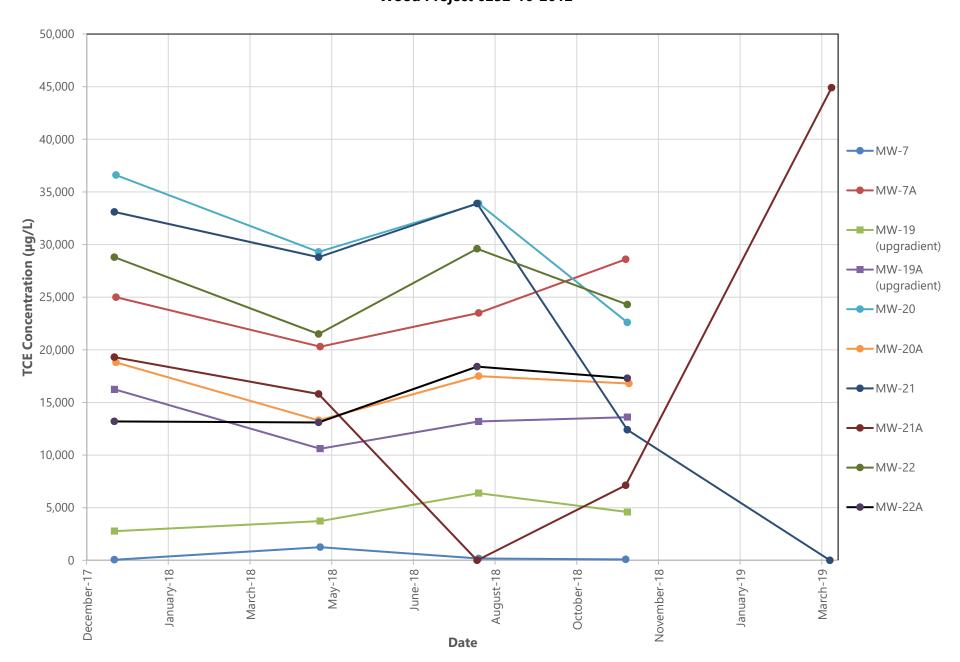
Emplacement Well

Groundwater Sample Location

CTS of Asheville, Inc. Superfund Site Asheville, North Carolina

Figure 5

FIGURE 6
Concentrations of TCE in Groundwater During the Treatability Study
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
Wood Project 6252-16-2012



CTS of Asheville, Inc. Superfund Site ISCO Treatability Study Evaluation Report Wood Project 6252-16-2012 May 3, 2019

APPENDIX A LOGBOOOK AND FIELD DATA RECORDS

1820-6 1820-6 1820-6 1820-6 1820-8 1820-8 1820-8	
2 CTS of Askaville, Superfield Star 11/30/17 6152.16-2012 AME 1800 - Accided one the Sex doill Claw one the Mance Coster Wheeled surveyor or site Wheeled surveyor or site - Co-duct tith S meeting - Co-duct tith S meeting - Co-duct tith S meeting - Co-duct tith S meeting 1500 - Surveyor or site 1500 - Surveyor or site 1500 - Surveyor or site 1500 - Surveyor or site 1500 - Surveyor or site 150 - Attempt to install 2" PUC well who be odding 2000 - Survey to install 2" PUC well Who be adding	10510le HSA, Pull HSAS 2 coo. 1300 - Lunch 1200. 1300 - Lunch 1300. CEX clean oct augers in sawa coodware augers in sawa bacing to wit Sty (195 bacing to wit Sty (195 - Install tremie MW. 19 (196 - Contained to dill cutting (500 to)

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of Asteville, Inc	6252-16-2012	1 do	7	,	10	trenie	MW-	62, 4	٢	A Chor	- 4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4	7		-	No.										
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G 20	7/1/21	Jan Line	SE Tremie	Container's	1640-5	Sure CAN	N			-				1			

onsite for ERHadwha David Hall, Touch Morsiel Edwarde Chares 0830-J. Hetten (sucreyal) w/ ANECEN 1100- 6EX completes disting cetting - Surveyors survey ERH related grouting in stages renduing Par. 142 0900- Dallass often Greater MUN-22 GOCIOS to appx 55' Cazz Jano Pewson (sucayie) - Install monitoring well OBIS - R. Clark W/ AMECEW posite 0850 - GEX drill craw costte Least Cuthing and satisfy to doill MW122 1130-1 GEX begins transla - Contrat 4 \$ 5 Maching -GEX setsup to duit DALL CIELD NOTES MW. 22 Contain Soil 175 of Ashewille loc S22-16-2012 かんという ひょうし 500ing lacations GER FOR ORZOL Patriot Secold シナック (xes form)

Page 242 1248 - GEX ansito (Decontamnate HIA): - losto 11 monthornag or QU (502 town) 3 begins drilling to US. 1755- Driller remove water meter 1600-Complete drilling MW21 440-Decortamontes augers 10 of 45A deing earl stage CTS of Asterville, Inc. Systust Site at bysleast for the day Jex cortinues tremie 1200-66X offsite for luck in stages yatrict longiete 1805-CEX personnel # R. - Bean Hemie growthes 1235 - Clear gradel DAILY FIELD NOTES 625-16-2012 granting MW-22 140 - GCK AME 12/4/17 exell? 1730-Complete success leave -Cortainorizod 21/1/2

lite in Se Pain.

12W 22ACi 16EX include make. となっなみ Segin fremia growing and moter on withou (see form -Measured death to top at quet lastall mountains well 1130 - Complete transes growing 1250-GEX returns trea una 201 toll 8 CTS of Ashewillo lac Sportano 1000 DAILY FICED NOTES MW-214 drill 6252-16.2012 1111-20 Gaves Li D. Hall J. Messiel organ a NW-221 0415-R. Op. 1. J. AMKCOJ -GEX decontaminates dx set of te -GEK cleans out NOB HOLE **\$** 0,0 2 - Setsup on 12 NW-71 (80) Patrick - Conduct H& してくると 190 - SOZI しのうろうかり 10° 1330-6 12/2/12 xedy がある。 ダング

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MW-20A Capilot Z 1245 - GEX booms developing 10 GS of Ashavilla, los Synorting Ste -GEX installs water water - Contain water/mind overflow 0715 - R. Clark W/AMEGUN, SCK, 265 648 Cottanger 1150-GEX OPCONTANINATOR Monthalling wells (see baint)
- Setup & MW-19/19A
WI 2 Seperate submersible removal to water table 29t8 - Install monitoring in stacks of 10" HSA -Gex sets be on NWL Boom of the MSAS pomps o Containerize purge Soil cuttings (Soo topul Tremis growt. MW-204 Patriot asite wall (see toom) 6252-16-2012 SOUTH STEEL NOTES 1208-1243- Purch file the day 2612

MW-22 w/ 1-seperate submille DATUS FIELD NOTES PAGE 242 1205 - Patriot GEX and Rad pumps. Containerize prog water and costains Southward water in drums. Plastic from 20A w/two subnarsible pumps. MW-21 Les Submeriste pumps CTS of Ashowille Inc. Superford Site deson plad also containerized w/ AME leave site for the day. 1200-GEX removes water matter 1515-Setup on MW-214 and 1610-50 tup on MW-20 and MW-1400-Setup on MW-120, and purpe water 340 - December te fumps. -Containerize purapo moster. 1600-Decontaminate pounds. Decoxtaminate Punps 12/6/17 G22-16-2012 M. Hach PContainering See forms (see forms). /SOS

tto in 12 Rain.

water (see forms).

12 CTS of Asherville Inc. Spectford Sitter	CTS of Asherillo. Lic Sugarfund Sto 13
	12/24/7 6252-16-2012 KM
DALLY SIELD NOTES	DAIN FIELD
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al ossite. (L)	At WM. 7A
SZYD-Coduct 475 Machina	peristatic pump for low-flow
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dun strang alea.	Mach groundwater &
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well pads for MW-20/20A	- 1
-(XEX cuts sticking on MW.	
20 to -0.2 (bas lean horms).	
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water colating to ERM on och	
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1100- Orless leave for level	
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- Package wets grality notes 15 of Astorille In Supation Site. 15 - Calibrate water quality meters Cite in the Pain sample from MW-20 - Confusionerses puras unter in a SS-gallon chow overTe sangle from MW 2017 1016- Sofup on MW-20 W/a 0800 - R. Clark 16, Hutchnes WJ conose method water. One - Setup on MW-2014 wit ONLY FIELD NOTES 1. 12/12/13 GES2162512 porstaltite pumpi pertstatic pump. AMECKW consiste. 1145. Leave 514 1112-5016H for cetural - Collect groundworks shape 1050-Collect gourduoter sauge tram MANA 1100-501-1000 MW-19 cuparistatic pump. 1200- Collect goindusta sauple Long Marigh 1350-Collect grounducted souples from 1812. 1550-5etypor" MW-2 (w/apartathe pomp Sat of a NW #7 w/ a perisphic 1545- Collact groundwater sample flore MW. 219 14:45. Callect growder stay sources from MW-21A w/a partaltie pery. pump for low flew sampling. 1300-Set up on MW-72 was parstaltic pung. CTS of Ashaville, la Superdud Site 0800 R. Clark / G. Hetching wil AMECEW arive onsite. Calibrate water 16:18 Collect groundwater Emple Hon Setup on MW-R w/a peristating pring. Carternarize purge water in quality meters (see form). CARK FIELD NOTES deem orate 6252167012 5-MW wes 12-27 1700-10ave SS galla

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is brown sily m-f sand (sm)	
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(515 of Asheville P. 1/2 17)	145-5. Avvit Amectin arrives at site 1684 view is on site and	meeting with Pictork Amertin	Casing to get time 8" & casing	805-8" & casing is unstruk and they advance casing to tweet	good turket depth set up to install casing sow!	set of 10,251 40,55 and 70 Lags	Soft and 8" Ofran 30" to 75" (t	125- casing gravted up to 304; clean	1240-1335 dvillers take londa	1 140
16 CTS of ASheville P. 14 V/8/18 6252-16-2012 SAVIH AMOREN	920 Jarrive at 51 to 915 - (720)0910 Exploration crew	930 - W. Flank Ametho arrives	of work for emplacement		a separate log book.					

820 - at 754; set us to install casing - install 4" 0 casing with centra-M30 of 75 PM, Set up to install casing 215-5 AVOIT avolves at site , GEX craw R. Clark Amec PW undocts satety 411/18 6252162012 S.AVCIT/AMECFON 740- (JEX sets up and advances 6"4 1615 - Finished grouping, clashing 1230-CONTINUE ad verning chisings and 0 10 casings to 75 ft bas -begin tremie granting casing 1100- advancing 6"0 and 10" p 11200 st 15, 30, 42, 55, and 1200-1230 - drillers tolke lineth S. May or ten 1500 - framia saying 10th Pinish growthing -set centralizers アノスインが、本である CTS of Asheville and load is at site CAS)ngs 49 1930-advancions tooling at EPW/2 1/10/18 4252142012 5 Avit Homaster なのな 1200 at 20 Ct with 6:88 0 1815 12 Arcit and CARY Leave Site 245 - clean in drilling area without obtaining soil come -top off avortal EDW-1 radivanace 10"19 cassing 28 CTS of Ashersile Casings

to the charlette had CTS of Asheville 一元一つのあべる ヤンド Ivery in to the power water 1/23/18 625262012 SAVIT HAMBETY - with le Richard pounding drunk Note: dims P. Clark is punoing Anne FW to purp outwater 1430 - SAVIHIAMELFW Arriver Casinge, which consists primarily of potable water installation of emplacement are considered "hazardar - get set up with R. Clark 1500 monitoring wells and 102/15/10-2/18:10 to "bulged due to the water out and from installation of collect (DW-1500-1 (14:45) s. Avril colleds samples of waster gangrated during WESTE, Hugy are bronn well from drowns that have to new drowns using total 10c analy sis 20 CTS of Asheville るうち Jan al

423/18 6252162012 S.Avrit/Ames P.W. warning (you'ld) to pace Analytin Sampling, and winter frais decor - continue on size for theth activities in Asheville for coorier delivery development and porging for - will deliver samples in the

1 (31/18 G252162012 S. AVIH /AMELEN	setting of site, pex at site power blaster frazen intreese	monitoring wells in pillot Study area muertin arrives	in pilot stray area. 1150 - leak test packers	13 B	emplace emplace	3 4 3 7 0 1
22 CTS of Asheville P.1/5 179/18 4252402012 5.Avrill AmorED	1015-with of at Site, the personno) are at site	of work and discuss stoke - Fex unloads equipment and prepares tooking	1200-1300 lunch 1 1500 - S. Anrit accepts delivery of 20,000 lles of potassium	y wang		

2/1/18 052162012 5.Avrit/AmecFin	earitoiment winterize	water to come town off	1800- Fly of Asheville sevenne 1830- City of Asheville sevenne heve and settly thous off	ly ob leave site		223	
24 95 of Asheville 5.4vit/Amerin	Site some hoses are freen 51th some hoses are freen 50 th acts from untrisen	and Daving letter (EDA and Daving 1272)	c her	interpolate of 37.44 interpolate of 57.44 interpolate of 65	to lond	set lemplace at all more tooling to be	

representation of the second s	· · · · · · · · · · · · · · · · · · ·	Assum MW-21 for analysis of site specific (55) VOC & Pack all samples collected on itemphalishs) - Sot up or MW-214 W peringung new tills.	1235 Strp on MW-22 Westpomptrenthing 1322-Collet an Sangle from MW22 to analysis	1380- Set up on MW-22A whosis pour Historian 1420-Collet GNSampleton MU-22A fir SS WSGED) 1430-Setupon MW-20A whosi pang then thing for	1510-Collect SW Sample from Mouth the SE. West 1550-Set up on MW-20 cuperingeng Mass for Sallies 1610-Collect OW sample from MWB for SALLES	ite a Segaller ohm onsite (see te; u) " 1700-lawe site to the lay (see te; u) " 374/18 (sternishlar.)
2/3/18 6152162012 S.AVVIT HADRITU	atety me		Wveh m a	- charle box lers to look for ovidence of sermanginate inmonitoring wells more	1600 al personnel leure site	

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SHESPECIFIC (SS) VOC. े दिवर्त एस्ट्री निव्द भरपाट्ट oung & now teans March Contest pung & neceta 18:15-14:45-10:10-5/5/thp wou "Mico Collect GINSample fro 11:00 Adve ensite Collecte collected for the day 12-55 22-52 NW-22 22-52 13:05 Collact growndunder PO100 Ĭ, 6252162017 drom sow today しつず N Stop or for MW-24A for Myds Satup on ortainering 1330 Setupo 123 hope of the Coulle CHELD water goality 16:30 - Cellect MW. 22 a \$5.30/100 o Bristal to MW-24 Fer 15.45. Colleci 2001 YNDC! purpass 8112/18 perista See M God 4:00 100 Sotup on MW-7 wifeer purso I vaitebre 14:28 Clect 6W sample from MW7A CASS-Collect Coordwoter (CW) sample from MW-19 for sale sport (cK) (CS). 0815 - Setup on MW-19 W/a peripeno THO Lolled GW sangle from MW.99A for 55, UCE Deschilledente waterquety 15- Perform ERHICHAMILES 300 Setyp or MW-7A wpor, pengos Mes (8250) 438-Packasp sumplas to ろち 200 Collect an Sungo Forig & transfer Met Cos form 0252162017 of Aspaille Site spectific 4012 The Thirty 215-1300 Und boulding to now

Pite in the Pain 025H0 Deliver cooler 6252162012 1530-1600- Packy of Ashowille - Cartaineriza CONDO 6w 1630-A+ 1a6e1 21/8/8 (515) MW-7 w/a pecipump & 1001 t Dung & Mol 3:00 Sotuper MW-74 w Lor 3 35 S. 500 Scape How DAKS - Accres B new tub 90CIS+01 Loon くつう

CTS 11/2/18	Of 30 R. Clark listood onsite	oso wate dren for parage natel	pang & pour testing against a GU Sample	63.30 MW-21 For 55. VOC:	1030-Collect a Susangle	1030- 0801St	11.30 Collect a SW Sample	12:20 Setup on Mw-19 w/a portstath	13:30 Collect a D. Sample Low MWIN Famille	yestedin, 14:30 Collect a Con source	435-507, 2 on MW-20 11/2 solichely	1530 Collecte Giller Labora.	135-Cotain porte water later when
le Page	1100-R. Clark will whose appressing	Topes waste dim far penge with	peristatic pung 3 very thousang	3200	A ()	16:00-50tup co MW-21 A W	a peristaltic pung 3 new tilong	S.W. Genoluate	Specific	in payon to sond		Bulghill I	

CTS of Asheville p.1/2 85 [2/17/118 025462012 S.Avri#/wood	830 - Lastade arrives	and discuss sampling plan 895-Cascade unloads rig, Fills	- locate emplacements (2 have become filled in with soil)	drilling with dood type	1035-refusal at 5044 1050-set up at 58-122, 114 east	1195 - vetusal at 4867	1200-1245 lunch 1245-set of and drill SB-123, 1844	1330 -refusal at 484	1345 -move to 58-124, 5ft west of EMP-2	1480, refused at 44.54 1450, move to 58-125, 10 east of EMP-2	1545 - refusal at 48'
11/8/18 6252162012 RUGHT	ce loted activities	11:00 Collect a Gles sawold	which was	- Packy Samples & fill	1305 Leave Site	45 PAG (ab In)			12/11/11/QO		

	end cascade at site	- conduct tail a et e satety meething - move ria to SB-127, 10 feet ausst so injulio	945-Vetusal of 45pt 1000-move to 5B-128, 15 was + of EPW-1	1100-move to 5B-129 15' JE of EDW-2 (between FDM-2 and IMM-21/214	1150-1240 words 1240-resume di Ilingiat 5B-129	1335 - refused at 5544 1340 - 5 Aug 44 offs, to	1350-5etup on SB-130, 10 NC of CRUT EPW-2, between MW-21/21 A 21/21A	530-Refusa (a) 50 695	05 ERW-2, 604 WELL SIS-151, 5 NE 05 ERW-2, 604 WELL SIZIA & CRW2 1630-R04,591 0) G7 C	1710. Dillas oftsite	Peter was lain
36 CTS of Asheville P. 2/2 12/17/18 6252162012 S.AVr. # /Wood 1600 - Move to 513-126, 10' N/NF	1635 - refusal ext 4841					22/2			All thinks a fisher is		

72 74 32 34 7 8		
the state of the s	of Asheville	
and the second s	19/18 6252162012 SAVCA	
the state of the s	15- orrive at site (cusuade on site.	7
and the second s	- travel to store to parchase indep	1020 - Gooles Carlo Carlo Carlo Carlo
The state of the s	cards	with 1 Confict 435 Mothing
The state of the s		Bealibrate water anlite Mater
The state of the s	ŀ	1036, 000 MW-7.3 cula peristallic ouns
A second control of the control of t	ſ	to now thing for history of what states
1 The second	1	Sompling
st Edwid 134 134 15 equipment	120-vetusal of 50-133 at 609	102 - CX 11/2 1 1/1 (1) 2012 07
SB-134 to A west of EPW-3 SB-135 to A south of EPW-3 at 59A (18-135) S and begin growting and then load equipment Sonnel lewle site Out of EPW-3	130-1200 Junch	Contrata to the tent of the te
SB-135 10 ft south of Epw-3 at 59ft (SB-135) Sand beging rowting and then load equipment Sannel leave site	58-134	- Cot /11.137 /12822 25
SB-135 10 H South of Epw-3 at 89ft (18-135) Sand begin growting Sannel leave site Out of Burent	at 40	1/2 2 2 2 2 2 2 C WI (DECV)
at 59ft (58-135) Sand begin graving Sannel leave site 2 and 4 and 12 an	SB 135	* 10-401 - 1" 4000 000 11 1000 10 1095
personne leave site	वर इतिम्	INC R CI-1- 1- (Cont. Cons.)
personnel leura site		MW-21 for site sport (se) 10/1
Devsomme leave site	oles and then lo	1 1/2/10 a Call 1/2/14 a Call 1/2/14/14/14/14/14/14/14/14/14/14/14/14/14/
	Dersonne lewie	on the pass tech of the Colored
	9	14.10 - Cellect GW-132-48 GW Sand
* Installs 1" temp PV well w/5' screan - Set up on Gw-132-58 w/a perist Pump * new tobing for low flow Wasa 6:30 Collect Gw. 132-58 Gw sample - Cartainesize soil \$ purge water in onsitte de 15:40-66X advances noccosore to 35:605 @ 5w-131 \$ solidopom+ to 61		4:20-GEX advances solid point to 60
Pump & new tobing to low that CW son Pump & new tobing to low that CW son 15:30 Collact GW. 132-58 GW Somple - Cantainecize soil & purge water in owsite de 15:40-06X advances maccocore to 35:60 S & GW. 131 & solid pownt to 61		* Installs 1" temp. PV well cu/5' screar.
Figo Collect Gw. 132-58 Gw Sample Containerize soil & purge water in owsite du 15:40-66X advances macco-core to 35:60 5 @ FW-131 3 solid pomt to 61		-84 up on GW-132-58 w/a paristell
15:30 Collect Gw. 132-58 Gw Sample Containerize soil & purge water in oursifie de 15:40-66X advances maccocore to 35:60 5 @ Gw. 131 3 solid pount to 61.		Dump & now tobing too low flee (SN) samp
SS. Gas & GW-131 & soligount to 61.	The state of the s	5:30 Collact Gw.132-58 Gw Sample.
15:40-66X advaccas maccocora ta 35:695 @ GW-131 \$ soligopout to 61		Containerize soil & purge water in oursite days
35'695 @ GW-131 \$ soligepont to 61		15:40-66X advarces macro-ora to
		35 695 @ GW-131 \$ solig powt to 616
- Sety or GW 131: State / a peristalfit	The state of the s	- Sety or GW-131: State / a peristaltic

Rola Mas 3/12/19 6252-16:2012 R. Chald Man Jou Charles Notes	with OBOO-R. Clark w/word orsite - Paceto call GEX will be late.		1000 - Return to site , Calibrate waterquality,	Advence nacrecole \$30' \$ solld	PUC Well CUIS 5 SCRECTO SOURCE GOOD CONTROLLES	pure & new tabing to bow flow GW sample	* CEX sots up on Gw-122 w/ 78/2/11	14:30 Cottestime Setup on Sw-122.46 w/a peristaltic	14:40 Collect 6w-122-46 GUSANG	days agite - Gex pulls PVCs wells & abandon Stem suffern
3/11/19 6252-16-2012 ROUM Mass	Sumple. Sail & our 131.59 growductor	dring onsite. Riclark leave	Same and				All lay lay			

3/12/19 G2 16.2012 Pladflum 3/12/19 G22 16.2012 Pladflum baselocks w/ bashing chips Cache. For Sardy purp & new tucks For Sardy purp & new	1) of Hohavilla 2/19 6252-16-2012 DATUS STECT NOTES	
PATY SELP NOTES LOS W LESTENTE CHIPS LOCK SET ON MW. 21A W CO SOU FLOW FROM THE CHIPS LOCK SOU FLOW FROM THE SOU FLOW STAND WE SOUND COLOC STAND COLOC ST	OMIN GESTIGIONOTES	43
Les wite this state of state of state of some feet of som	colos w/ bertosite a	
Eath pany & rew tucks but flew grounducted but flew grounducted but first for alay easo, site for alay lay 2/18/19		
Courtie pung & new tuches plus 16:15-5EX leaves 5:14 plus 5:- Nw 214 leaves cite far elan leaves cite far	Sety or MW-21A	
Sur flew grounductel gling 16:15-56× leaves 5th wiewize personather leave site for day leave site for day 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Stattic pung & new	
pins 16:15-6EX leaves site be soon along the sound to site for alay the sound to site for all the sound to s	low flow	
We tron Mw. 714 Caro cite fa day My 3/12/19	-51:91 PM	
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Leaves situ for alay	coile Algemato	
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FIE	LD INSTRUMENT CALI	BRATION REC	CORD	
Project Name: <u>CTS of Asheville, Inc</u>	. Superfund Site	Da	te: 12/2	7/17
Project Number: 6252-16-2012			me: Rodne	Clark
		140	me. Kooca Ly	- Chio
Water Quality Meter Calibration			Value	Acceptance Criteria
Manufacturer: YSI	pH: 4 SU (low)		<i>-O</i> Ĵs∪	+/- 10% of standard
Model No.: 556 MPS	pH: 7 SU (med)		<u>03</u> su	+/- 10% of standard
Unit ID: 5663 26450	pH:10SU (high)	4	<u>.⊘S</u> su	+/- 10% of standard
	Conductivity: 1.413 mS/cm	Conductivity: 1,4	1.3 mS/cm	+/- 10% of standard
	ORP: <u>240</u> mV	ORP: <u>Z</u>	<u>のこ</u> mV	+/- 10% of standard
Turbidity Meter Calibration	Standard Valu	<u>ue</u> <u>Met</u>	er Value	Acceptance Criteria
Manufacturer: Hach	<i>10</i> n	ΓU (low) / <i>l</i>	2 NTU	+/- 10% of standard
Model No.: 2100Q		TU (med)	₿ NTU	+/- 10% of standard
Unit ID: 29537 Z0875		ΓU (high) 10	? NTU	+/- 10% of standard
	<u>800</u> n	ΓU (high)	3_NTU	+/- 10% of standard
	<u></u>			
Photoionization Detector				Acceptance Criteria
Manufacturer:	Background:	_ppmv Meter:	ppmv	within 5 ppmv of Zero
Model No.:	Span Gas:	_ppmv Meter:	ppmv	+/- 10% of standard
Unit ID:	· -			
Calibration Sources				
Source	<u>Value</u>	<u>Lot Number</u>	Expiration Date	<u> </u>
pH (low) PINC	${}$ ${}$ SU ${7}$	GF 303	6/19	
pH (med)		GF 729	6/19	
pH (high)		GG543	7/19	
Conductivity PINE		GD766	3/18,	Tonc
ORP: PINE	<u>240_</u> mv	0204	5/31/27	21
Turbidity (low) HACH	NTU	47227	Nov/18	· .
Turbidity (med): PPCH	<u>20_</u> ntu _	47102	Jul/18	
Turbidity (high): HACH	NTU	4716	HUG-/18	
Turbidity (high): HHUH		A7124	Aug/18	1989 Walabarak
PID gas:	ppmv			
NOTES:	TAX-		W. J. J	
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If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIEL	D INSTRUMENT CALIBRAT	ION RECORD
Project Name: CTS of Asheville, Inc. S	Superfund Site	Date: 12/28/17
Project Number: 6252-16-2012		Name: RMC
Water Quality Meter Calibration Manufacturer: YSI Model No.: 556 MPS Unit ID: 5663 26450	pH: <u>10</u> SU (high)	Meter Value PH: 4.00 SU +/- 10% of standard PH: 7.21 SU +/- 10% of standard PH: 10,44 SU +/- 10% of standard
Manufacturer: Hach	10 NTU (low)	iO.4 NTU +/- 10% of standard
Model No.: 2100Q	20 NTU (med)	20 0 NTU +/- 10% of standard
Unit ID: 29587 70875	100 NTU (high)	NTU +/- 10% of standard
	NTU (high)	NTU +/- 10% of standard
Photoionization Detector Manufacturer: Model No.: Unit ID:	Background:ppmv Span Gas:ppmv	Meter:ppmv within 5 ppmv of Zero Meter:ppmv +/- 10% of standard
Calibration Sources		
pH (low) pH (med) pH (high) Conductivity ORP: Turbidity (low) Turbidity (med): Turbidity (high): Turbidity (high): PID gas:	Value Lot Num 14 SU 7GF3 7 SU 7GF3 10 SU 7GF3 1240 mS/cm 6GF3 240 mV 02 10 NTU A72 20 NTU A73 100 NTU A73 800 NTU A71 ppmv ppmv	Expiration Date 603 6/19 779 6/19 5543 7/19 0766 3/18 07 5/13/21 27 Nov. 18 102 Jul. 18 126 Aug. 18 24 Aug. 18
NOTES:		

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIELD	INSTRUMENT CALIBRA	TION RECORD	_
Project Name: CTS of Asheville, Inc. Su	perfund Site	Date: 12/19	17
Project Number: 6252-16-2012		Name: RMC	/
Water Quality Meter Calibration Manufacturer: YSI Model No.: 556 MPS Unit ID: 5668 ZGUSO	pH:SU (high)	Meter Value pH: \(\mathcal{L}, OZ\) SU pH: \(\chi \) OCL SU pH: \(\lambda \) OCL SU inductivity: \(\lambda \) \(\lambda \) \(\lambda \) mS/cm ORP: \(\lambda \) UO. \(\lambda \) mV	Acceptance Criteria +/- 10% of standard
Turbidity Meter Calibration Manufacturer: Hach Model No.: 2100Q Unit ID: 29537	Standard Value /// NTU (low) 2.6 NTU (med) /// NTU (high)	20.2 NTU 107 NTU	Acceptance Criteria +/- 10% of standard +/- 10% of standard +/- 10% of standard +/- 10% of standard
Photoionization Detector Manufacturer: Model No.: Unit ID:	Background:ppmv Span Gas:ppmv	Meter: ppmv Meter: ppmv	Acceptance Criteria within 5 ppmv of Zero +/- 10% of standard
Calibration Sources			
pH (low) pH (med) pH (high) Conductivity ORP: Turbidity (low) Turbidity (med): Turbidity (high): HACH Turbidity (high): PID gas:	y su 766 7 su 766 10 su 766 1.413 ms/cm 666	Expiration Date	<u>e</u>
NOTES:			

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	CTS of	Asheville, I	nc. Superfund S	ite - 4 00-17/2 6/1 7		UMBER 6	252-16-2012		DATE 12/28/17			
WELL / SAM	IPLE NUMB	SER	14-170	40.1 7	ITY TIME	Start C	<i>900</i> En	d / <i>(/()()</i>	TIME 1000			
QC SAMPLE	S COLLEC	TED		ASSO	CIATED TRI	P BLANK	TB-11					
INITIAL DTW	DTW /9.00 ft (toc) DTW /9.10 ft (toc) Variable-speed submersible											
	PURGE DATA											
TIME	PURGE											
0927	19.00	0.3	14.17	0.152	5.17	4.85	11.8	184.3				
D932	19.02	0.3	15.89	0.146	5.23	4.04	8.91	175.2				
0936	19.05	0,3	16.15	0.147	5.3/	3.86	3.87	173.6	- PA-NA			
0940	19.08	0.3	16.24	0.153	5.39	3.79	2.48	175.3				
0944	19.08	0.3	16.41	0.154	5.45	3.80	2.20	175.7				
0948	19.09	0.3	16.30	0.158	5.50	3.79	1.14	176.0				
0952	19.10	0.3	16.17	0.159	5.51	3.69	0.82	177.3				
0955	19.10	0.3	16.13	0.159	5.57	363	1.61	2775				
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						,						
				,								
	7.											
	·											
ANALYSES	: EPA 82	260 (TCE, cis	s-1,2-DCE, trans	s-1,2-DCE, and vinyl	chloride)	,,	SIGNATURE:	Khu	Mal			

FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	gene 12/27-117											
WELL / SAM	IPLE NUMB	ER 💆	14/7/		ITY TIME	Start /	OO En	a 1645	TIME 1545			
QC SAMPLI	C SAMPLES COLLECTED ASSOCIATED TRIP BLANK											
INITIAL DTW	DTW 20.20 ft (toc) DTW 20.7 ft (toc) Variable-speed submersible											
	SCREENED INTERVAL CG6-71.3 ft (bgs) DEPTH OF INTAKE VG9 ft (toc) Bladder											
PURGE DATA												
PURGE SPECIFIC DTW RATE TEMP CONDUCTIVITY DO TURBIDITY ORP  TIME (ft) (L/min) (C°) (mS/cm) pH (mg/L) (NTU) (mV) COMMENTS												
1612	20.43	04	15.07	0.153	7.72	1.60	3.57	113.4				
616	2051	0.4	1522	0.169	7.56	1.21	. A State of the second	1058				
1620	2068	04	15.39	0173	249	0.88	3.81	1025				
1624	20.73	04	15.64	0.176	7.35	0.68	4.11	98.1				
618	20.75	0.4	15.50	0176	733	0.61	7.65	96.4				
1652	20.73	OH *	15.45	0.175	7.31	0.52	3.14	92.1				
1036	20.75	04	1543	0.175	7.30	0.54	354	91.6	****			
1640	20.75	04	1535	0.174	7.29	048	341	90.5				
1643	20:75	04	15.31	0.174	7.29	0.44	311	87.3				
1646	20.75	04	15 30	0.173	7.29	0.43	2.85	87.2				
	19.				**************************************							
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ANALY\$ES	EPA 82	260 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chlor <b>ide</b> )		SIGNATURE:	Khn	MILL			

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	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE											
WELL / SAM	IPLE NUMBI	ER M	w-19	ACTIVI	TY TIME	Start 0		10:50	TIME (0:50			
QC SAMPLE	ASSOCIATED TRIP BLANK 73 - 11											
INITIAL DTW	VATER LEVEL / PUMP DATA  INITIAL DTW  PUMP TYPE  AMOUNT PURGED  Peristaltic  Variable-speed submersible  Variable-speed submersible											
PURGE DATA												
PURGE SPECIFIC DTW RATE TEMP CONDUCTIVITY DO TURBIDITY ORP TIME (ft) (L/min) ( C°) (mS/cm) pH (mg/L) (NTU) (mV) COMMENTS												
10.20	21.82	0.3	14.54	0.056	525	7.05	2.97	184.6				
10,24	21.87	0.3	15.82	0.043	5.02	1.06	1.91	180.0	· w.*			
	10:28 21.92 0.3 16.08 0.043 5.01 0.67 1.98 181.4											
10:32	<b>~`,</b> 1 1		16.06	0.042	4.95		9.32	184.5				
10:36	21.95		16.15	0.047	4.90	0.41	9.58	186.8				
10:40	21,95	• • •	16.20	0.041	4.89	0.36	13.0	189.7				
10:44	21.96	0.3	16.19	0.042	4.87		8.69	192.7				
10:48	21.96	0.3	16.18	0.042	4.85	0.12	5.16	195.2				
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									100-100-100-100-100-100-100-100-100-100			
ANALYSES NOTES:	: EPA 82	60 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)		SIGNATURE:	Kly	u/ll			

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 2/28/17												
WELL/SAM	VELL / SAMPLE NUMBER MW - 19A ACTIVITY TIME Start End 1200 TIME 1200												
QC SAMPLE	C SAMPLES COLLECTED FD - 13 ASSOCIATED TRIP BLANK 78-11												
WATER LEV INITIAL DTW	VATER LEVEL / PUMP DATA  INITIAL DTW  PUMP TYPE  AMOUNT PURGED  V Peristaltic  V Peristaltic  Variable-speed submersible												
SCREENED   Co-65 ft (bgs)   DEPTH OF   INTAKE   C2.5 ft (toc)   Bladder   Variable-speed submersible   Bladder													
	PURGE DATA												
PURGE   SPECIFIC   DO TURBIDITY   ORP													
81.11	TIME         (ft)         (L/min)         ( C° )         (mS/cm)         pH         (mg/L)         (NTU)         (mV)         COMMENTS												
11:22	11:22 23.39 0.25 15.72 0.097 5.74 2.26 71.1 -102.5												
11:26	23.96	0.25	15.72	0.089	5.82	1.82	70.9	-144.7	Bearn				
(1:70	24.58		15.74	0.085	5.77	147	37.5	-174.6	Collected before				
11:34	25,00	0.25	16.01	0.082	5.49	0.99	29.7	-220.3					
11:38	25.05	0.15	15.88	0.080	5.82	1.57	16.4	-148.7	eslow flow rate				
11:42	25.02		15.83	0.078	5.82	1.60	16.3	-261 7					
11:46	24.92	0.15	15.93	0.078	5.80	0.94	16.1	-273.					
			15.73	0.077	5.85	2.28	118	-282.1					
11:55	24,05	0.15	15.73	0.077	5.84	1.49	13.3	-282.9					
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ANALYSES NOTES:	: EPA 82	60 (TCE, cis	-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)		SIGNATURÉ:		. M.M.				

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	CTS of	Asheville, I	nc. Superfund S	ite	JOB N	UMBER 6	3252-16-2012		DATE 12/24/17				
WELL / SAN	IPLE NUMB	ER M	w-20	ACTIV	ITY TIME	Start 0:	10 End	d	JIME [[:12				
QC SAMPLE	ASSOCIATED TRIP BLANK TB - 1												
INITIAL DTW SCREENE													
	PURGE DATA  PURGE DATA												
PURGE   SPECIFIC   DTW   RATE   TEMP   CONDUCTIVITY   DO   TURBIDITY   ORP   COMMENTS   TIME   (ft)   (L/min)   (C°)   (mS/cm)   pH   (mg/L)   (NTU)   (mV)   COMMENTS													
1016	14.95	0.25	15,28	0.080	5.68	3.71	4.94	57.2					
10.20	111 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1												
10:24	14,48		1549	0.078	5.19	3.49	1.75	74.8					
10:38	20.00		15.57	0.077	5.07	3.37	1.51	83.3					
1031	2001		17.77	0-077	5.27	377	1.22	91.4					
(0.36	20.05		15.71	0.077	251	3.26	0.79	100,5					
10:40	30.02		15.78	0.075	5.14	3.17	0.83	105.9					
10:44	20.03		15.62	0.073	5.01	7.87	0.66	113.7					
- 10 युष्ठ	2003		15.37	0.072	4.85	2.62	0.68	121.0					
(0.5)	20.03		15.47	0.071	4.56	246	1.09	175.7					
10.56	20.03		15.14	0.070	443	2,33	0.94	134,2	7-Mary 1-24				
11.00	20.03		15.78	0.069	4.37	2,25	0.85	174, 3					
11:05			15.45	0.069	4.33	2.14	0.66	147.6					
lito	20,01		15,43	0.068	4.10	2,08	0.32	198,4					
ANALYSES	: EPA 82	260 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chioride)		SIGNATURE:						

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FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 12/21/t}												
WELL / SAM	IPLE NUMB	er Mu	-20A	ACTIVI	TY TIME	Start 9.1	8 Enc	10:0	3 TIME 10.03				
QC SAMPLE	ASSOCIATED TRIP BLANK TB-11												
INITIAL DTW SCREENEI	WATER LEVEL / PUMP DATA  PUMP TYPE  AMOUNT PURGED  INITIAL  I (												
	INTERVAL 60-60 ft (bgs) INTAKE 67.5 ft (toc) Bladder												
PURGE DATA  PURGE SPECIFIC DTW RATE TEMP CONDUCTIVITY DO TURBIDITY ORP  TIME (ft) (L/min) (C°) (mS/cm) pH (mg/L) (NTU) (mV) COMMENTS													
9.20	TIME (ft) (L/min) (C°) (mS/cm) pH (mg/L) (NTU) (mV) COMMENTS  9: 20: 20: 0.3   4:98   0.190   8:15   1.74   29: 5   124: 6												
	9-24 20.05 0.3 15.16 0.170 8.15 0.65 15.6 125.8 Showdown signify												
9,28	3613		15.55	0.158	7.80	0,46	21.0	104.2					
9.32	20,13	0.3	15.45	0.152	7.61	0.38	23.0	97.8					
9.36	20.13		15. 59	0.141	74a	0.36	26.2	82.2					
9:40	20.15	0.3	15,45	0.134	7,24	0.32	4.8	68,8					
9.48	20.12	0.3	1530	0.13	721	0.37	15.2	56.6 46.6					
452			[5, 74	0.128	7.21	042	11.5	34.9	Greed up 61: MH1,				
9.56	20.06		15.27	0.127	716	0.45	10.8	25.2	1200 4 11 111				
(0.00	20.06	<del>-</del>	15.16	0.127	7.17	-	10.7	18.3					
							7.7						
	<del></del>												
								· · · · · · · · · · · · · · · · · · ·					
ANAL VOES		200 /765	10.505 :	40.005									
ANALYSES NOTES:	: EPA 82	260 (T <b>C</b> E, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)		SIGNATURE;		Juli -				

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	CTS of	Asheville, li	nc. Superfund S	ite	JOB N	UMBER 6	3252-16-2012		DATE 12/28/17				
WELL / SAN	IPLE NUMB	ER MV	v-21	ACTIV	ITY TIME	Start /5	1 <i>50</i> Enc	16:18	TIME 1618				
QC SAMPLE	S COLLEC	TED	12-13-181	10 12/28/ASSOC	CIATED TRI	PBLANK	TB-11	<b>V</b> -	•				
ľ	VATER LEVEL / PUMP DATA PUMB TYPE AMOUNT PURGED												
DTW	DTW 20.73 ft (toc) DTW 21.23 ft (toc) Variable-speed submersible												
	SCREENED INTERVAL U0-45 ft (bgs) DEPTH OF INTAKE 42.5 ft (toc) Screen Submersible Bladder												
	PURGE DATA												
TIME													
15:56	21.27	0.3	15.18	0.036	5.13	2.39	1.43	1085					
16:00	21.24	0.3	15.02	0.037	4.97	1.99	0.60	114.7					
16:04	21,25	0.3	14.97	0.038	4.90	1.29	0.92	119.7					
1608	21.23	0,3	14.94	0.038	4,88	0.82	0.54	123.8					
16:12	2123	0.3	14.92	0.038	4.88	0.69	0.89	128.0					
16:16	21,23	0,7	14.82	0.037	4.86	0.74	1.73	131.5					
	·												
		L											
	***********						:						
			,										
ANALYSES	: EPA 82	60 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)				1,				
NOTES:							SIGNATURE:		Mille				

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	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT												
WELL / SA	MPLE NUME	BER Mu	-214	ACTIVI	ITY TIME	Start 15.	PO End	, 15:45	TIME (5:45			
QC SAMPI	LES COLLEC	TED M	150	ASSOC	CIATED TRI	P BLANK	TB-11					
INITIAL DTW SCREEN	1 /6 /1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
PURGE DATA												
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS			
5:09		- 4	15.56	0.068	6.50	7.20	51.0	49.5				
15:12	22,00		15.51	0.067	6.14	4.99	28.1	56.4 58.9				
15:16 22.08 0.35 15.46 0.065 6.14 4.05 14.1 58.9 15:20 22.15 0.35 15.51 0.063 6.10 3.36 15.3 62.4												
15:24	22.17		15.50	0.061	6.10	2,93	8.08	63.1				
5:28			15:43	0.058	6.00	2.65	3.59	68.2				
15:32	22.18		15.43	0.056	5.95	2.10	8.24	70.5				
15:36		0.35	(5:46	0.054	5.93	210	7.30	74.8				
1540	22.(3	0.35	15.26	0.053	5.89	2.08	5.52	17,9	****			
15,44	22.19	0.35	15.24	0.051	5.88	2.03	2.87	80.3				
								- 130-				
						<u> </u>						
-												
									77. 74.1			
ANALYSE	S: EPA 8	260 (TCE, cis	s-1,2-DCE, trans	L -1,2-DCE, and vinyl	chloride)	<u> </u>	<u> </u>		///			
NOTES:		. = : :, •::	, - <u>-</u> , <i>a</i>	, , ,	,		SIGNATURE:	Henry	, sell			

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			FIELD [	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, I	nc. Superfund S	ite	JOB N	UMBER (	3252-16-2012		DATE 12/28/17
WELL / SAN	IPLE NUMB	ER M	W-22	ACTIV	ITY TIME	Start 13:	15 End	13:4	7 TIME 13.50
QC SAMPLE	S COLLEC	TED		ASSOC	CIATED TRI	PBLANK	173.1		
WATER LEV	/EL / PUMP	DATA					P TYPE		AMOUNT PURGED
INITIAL DTW	21.	60 ft	(toc) FINAL	21.7	O ft (toc)		Peristaltic Variable-speed	cubmoroible	0.75 gal.
SCREENE INTERVAL		55 ft (	DÉPTH bgs) INTAK		ft (toc)		Bladder	adome( albie	
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	Hq	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
13:26	21.60	0.15	15.46	0.062	6.08	1,81	13.2	91,7	
13:30	21.65	0.15	15.23	0,060	5.92	0.97	9.25	92.8	
13:34	21.70	0.15	14.71	0.058	5.87	066	8.60	94.9	
1338	21.70	0.15	14.51	0.058	5.85	0.63	6.93	95.5	•
1342	21.70	0.15	14.31	0.058	5:84	0.59	5.85	97.4	
1346	21.70	0.15	14.77	0.057	5.84	0.58	3.21	95.0	
								<u> </u>	
									1
ANALVEE	- FDA 00	100 (TOF all	10 005 4	40005 4.1	-1-11-1->				
ANALYSES	. EMA 82	.00 (TOE, CI	a-1,2~DGE, IIANS	-1,2-DCE, and vinyl	onionae)		SIGNATURE:	Luky	MICH

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FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	CTS of	f Asheville, l	nc. Superfund S	ite	JOB N	UMBER 6	3252-16-2012		DATE 12/28/17				
WELL / SAN	IPLE NUMB	ER MI	V-22/	ACTIV	ITY TIME	Start 4.	OO En	14:4	5 TIME 14:45				
QC SAMPLE	QC SAMPLES COLLECTED ASSOCIATED TRIP BLANK TB-1												
WATER LEV INITIAL DTW	DTW $(1.56 \text{ ft (toc)})$ DTW $(2.97 \text{ ft (toc)})$ gal.												
	SCREENED INTERVAL 70-65 ft (bgs) DEPTH OF INTAKE 67.5 ft (toc) Gal.  Variable-speed submersible Bladder												
	INTERVAL [10-67 ft (bgs)] INTAKE 6.7 ft (toc) Bladder  PURGE DATA												
PURGE													
4:07	TIME (ft) (L/min) (C°) (mS/cm) pH (mg/L) (NTU) (mgV) COMMENTS  H: 07 22.13 0.25 16.00 0.080 640 147 72.6 -15.0 Tailor Property  too high												
14:11	14:11 21.93 0.25 15.81 0.083 6.44 0.89 65.1 -173.3												
1 41.15	H:15 21.94 0.25 16.04 0.082 6.46 0.74 43.8 -136.8												
14:19	21,94	0,	16.11	0.081	647	0.66	304	260.5					
4:23	2195	0.25	15.88	0.080	6,46	0,48	23.2	-263 5	/				
14.27	21.97		16.06	0.078	6.42	6.38	15.6	-263.4					
[4]	2197	0.25	15.96	0.077	640	0.36	14.6	-266.3					
14.55	21.97	0.25	16.05	0.077	6.37	0.34	12.5	-267,5					
14.39	21.97	0.25	16.05	0.076	6.36	0.35	(2.8	-270.9					
14;43	21.97	0.20	16.19	0.075	6.36	0.32	12.9	-273.6					
	<del>-</del>								·				
							- TV	11 <u>1</u>					
			•										
ANALYSES	: EPA 82	260 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)								
NOTES:							SIGNATURE:		INKL				

	FIEL	D INSTRUMI	LIBRATI	ON RECO	RD		
Project Name: O	CTS of Asheville, Inc.	Superfund Site			Date:	5/2/	110
Project Number:			<u> </u>	•	Name:	Rocher	Charle
-							
_	Meter Calibration	<u>Standard</u>			Meter Va		Acceptance Criteria
Manufacturer:		pH: 4			pH: 4,00		+/- 10% of standard
Model No.:	556 MPS	pH:7		,	pH: 70	<u> </u>	+/- 10% of standard
Unit ID: F	Pine R16097	pH:10	` `	•	рН: <u>[[], () (</u>		+/- 10% of standard
		Conductivity: 1.41			E3 - WED (2)	/2	+/- 10% of standard
		ORP: 240	)mV		ORP: <u>231.</u>	<u>{</u> m∨	+/- 10% of standard
Turbidity Meter	r Calibration		Standard V	<u>′alue</u>	<u>Meter V</u>	<u>′alue</u>	Acceptance Criteria
Manufacturer:	Hach		_10	NTU (low)	9.9	NTU	+/- 10% of standard
Model No.: 21	00Q	_	20	- NTU (med)	20.3	NTU	+/- 10% of standard
Unit ID: Pine	26433		100	- NTU (high)	101	NTU	+/- 10% of standard
			800	NTU (high)	805	NTU	+/- 10% of standard
Photoionizatio	n Detector			<u> </u>			Acceptance Criteria
Manufacturer:		Background:		ppmv	Meter:	ppmv	within 5 ppmv of Zero
		Span Gas:		ppmv	Meter:	ppmv	+/- 10% of standard
Unit ID:							
Calibration Sou	urces						
•	Source	<u>Value</u>		Lot Nun	<u>nber</u>	Expiration Date	<u>∍</u>
pH (low)	Ricca Chemica	<u> </u>	_su	7GI00	06	9/2019	
pH (med)	Aqua Phoenix	7	SU	8GA6	87	1/2020	
pH (high)	Aqua Phoenix	10	su	8GA5	43	1/2020	
Conductivity	Aqua Phoenix	1.413	mS/cm	8GA8	35	1/2019	
ORP:	Hanna	240	mV	2062	2	10/2022	
Turbidity (low)	Hach (formazin	)10	NTU	A736	<u> </u>	3/2019	
Turbidity (med):	Hach (formazin	)20	NTU	A734	-8	3/2019	
Turbidity (high):	Hach (formazin	) 100	NTU	A734	-6	3/2019	
Turbidity (high):	Hach (formazin	) 800	NTU	A736	<u> </u>	4/2019	
PID gas:			ppmv				
				<u> </u>			
NOTES:							

	FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te		JOB NI	UMBER 6	252-16-2012		DATE 5/3	1/18		
WELL / SAN	IPLE NUMB	ER	NW-7		ACTIVI	TY TIME	Start	Enc	I	TIME /	Z00		
QC SAMPLE	S COLLEC	TED	None		ASSOC	CIATED TRIE	P BLANK	TB. 1	3				
INITIAL DTW	OTW 16.68 ft (toc) DTW 16.68 ft (toc) Variable-speed submersible												
	PURGE DATA												
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIF CONDUCT (mS/cr	<b>CIVITY</b>	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENT	s		
11.28	16.68	.35	17.39	0.160	<u>/</u> ጋ	582	4.85	13.8	59.3 85.2		<del></del>		
11.38	(6,68	.15	17.93	0.16		5.79	4.17	7,42	89.3	77 T-147 A-147 A-1	, , <u></u>		
1143	16.68	0.15	17.83	0,6		5.74	4	5-67	95.3				
1137	16.68	0.15	17,86	0.15	<u>8</u>	5.68	3,81	5.19	105.5				
11.52	16 CB	0,19	110	0,15	<u> </u>	5.70 5.71	4.02	4,82	110.9				
11,56	1658	0.(7	17,84	0,15		1,41	3.61	451	110,				
				,							B. (1981)		
	<u> </u>										***		
											<u> </u>		
ANALYSES	5: EPA 82	260 (TCE, ci:	s-1,2-DCE, trans	-1,2-DCE, a	nd vinyl	chloride)		SIGNATURE:	6				
							<u></u>		(_	OI			

FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT WELL / SAM	IPLE NUMBE	R M	W. ZA	ACTIVI	JOB NU	Start 13	252-16-2012 56 Enc		DATE 5/3/18  TIME 14:28			
NATER LEVEL / PUMP DATA 16.62  INITIAL DTW RUC 5/3/18 Peristaltic Peristaltic Peristaltic Variable-speed submersible  SCREENED INTERVAL 66.8-713 ft (bgs) DEPTH OF INTAKE PERISTRESS FINAL DTW Bladder												
PURGE DATA												
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS			
1356	17.59	,25	18.07	0.171	7.22	5.32	11.8	47.7				
1400	17.99	- 25	1774	0.170	7.36	3.92	9.36	45.0				
14:04	18.11	,25	1789	0166	7.45	4.23	5.53	428				
14.08	1830	,25	27.71	0.163	750	4.48	6.05	40.1				
4.12	18.40	. 25	17.65	0,141	7.53	3.52	5.28	37.9				
4.16	18:40	125	17.53	0.143	7.59	3,20	2.47	36.2				
14:20		0.25	17,48	0.143	7.67	2.83	1,79	32.5				
14.24		0.25	17.42	0.142	7.66	2.82	1.94	31.1				
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l			<del> </del>			<u> </u>						
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					<del>                                     </del>							
	<del> </del>		<u></u>	<del>                                     </del>	<del>                                     </del>	<del> </del>						
ANALYSES	3: EPA 82	1	s-1,2-DCE, trans	I	I chloride)	<u> </u>	SIGNATURE	Kulla	I.M. Mille			

	FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 5/3/18												
WELL/SAM	NELL/SAMPLE NUMBER NW-19 ACTIVITY TIME Start 09.00 End 09.135 TIME 09.35												
QC SAMPLES COLLECTED TO TONE ASSOCIATED TRIP BLANK TB-18													
INITIAL DTW	DTW 17.12 ft (toc) DTW 17.47 ft (toc) Variable-speed submersible  SCREENED DEPTH OF Variable-speed submersible												
INTERVAL	40.0	-44.5 _{ft (t}	ogs) INTAKE	1/72	· C ft (toc)		Bladder	·······					
	PURGE DATA												
TIME	DTW (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS				
07:03	1940	0.2	16.98	0.054	559	191	17.7	169.0	1.13				
39:08	191.43	0.2	12.43	0.058	4.95	1.15	11.6	1903	0.05				
0912	19.45	0.2	17,12	0.050	4.92	1.06	5.48	184.5	0.03				
S9:16	19.46	0.2	12.12	0.047	4.94	0.83	5.89	186.0	0.06				
0721	1906	0.2	17.19	0.049	4.80	0.61	5.48	19127	0.00				
79.26	10/40	02	17.31	0.044	0.87	0.65	6.82	188,7	0.06				
5930	19.49	0.2	17.38	0.050	4.84	0.87	15.3	1895	0.00				
0735	1949	0.2	17.86	0.045	4.88	0.63	7.89	185.7	0.00				
ANALYSES	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	s-1,2-DCE, and viny	l chloride)		SIGNATURE	Kulo	Mont				

	FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT														
WELL/SAM	IPLE NUMB		MW-19	ACTIV	TY TIME	Start ()	990 Enc	10:40	TIME 10.35					
QC SAMPLE	ac samples collected None associated trip blank TB-18													
INITIAL DTW SCREENEI														
					PURGE	· · · · · · · · · · · · · · · · · · ·	, <u>, , , , , , , , , , , , , , , , , , </u>							
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	На	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS					
9.57	20.50	03	17.05	0.247	6.07	2.27	3),1	698	1.81					
1001	22.05	OUS	17.44	0.218	6.38	1.42	187	-10.3	2.12					
10:08	2255	0.25	2.430	0.193	6.37	0.85	12.4	-15.8	0.68					
10.12	2300	0.15	17.32	0.186	6.34	062	9.57	123	0.33					
1016	23.22	035	14.41	0.275	6.45	(1.50	5.98	-15.6	0.23					
10:00	23.35	0.15	17.55	0.169	0.44	0-50	5.57	-15.5	0.26					
0:24	23.53	0.25	37.45	0.1.74	631	0.35	3,98	-128	0.31					
10,28	23.61	0.1.5	17.33	0.157	6.38	0.52	4.53	-10.9	0.13					
[033	27.63	0.5	17.38	0.1.48	6.32	0.45	9.88	-6.7	0.35					
				<u> </u>					6					
ANALYSES	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	-1,2-DCE, and viny	chloride)		SIGNATURE		M. Mar					

			FIELD D	ATA RECO	RD - GR	OUNDW	'ATER SAI	MPLING	
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB NI	UMBER 6	252-16-2012		DATE 5/2/18
WELL / SAM	PLE NUMB	ER /	NN-50	O ACTIV	ITY TIME	Start K	6) Enc	16:10	// TIME 16:10
QC SAMPLE	S COLLECT	TED	MS/MS	D ASSO	CIATED TRIE	P BLANK	T13-18		
WATER LEV INITIAL DTW SCREENEI INTERVAL	17	7 ~ 8	(toc) FINAL DTW DEPTH bgs) INTAKI		95 ft (toc) 7 ft (toc)	PUMI	P TYPE Peristaltic Variable-speed Bladder		AMOUNT PURGED
	<del></del>				PURGE		· · · · · · · · · · · · · · · · · · ·		
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
15:33	17:62	0.17	20.27	0.069	6.13	9.73	10.3	58.8	0.92
15.37	17.85	0.17	19.64	0.07.2	5.80	1.07	8,89	700	2.17
15.45	1292	016	19.08	0.0-49	0.40	050	7.25	777 C	0.87
Q.30	IZAH	0.17	19,35	0.070	5.57	0.40	5.59	85.8	0.80
52.22	17.8	0.17	1965	0.026	5.69	0.35	3.34	827	0.78
18:00	12.95	0.17	19.96	0.073	5,63		2.25	8S.3	0:73
165	17.2	0.17	19.88	0.079	5.62	0.35	1.60	897	0.65
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ANALYSES NOTES:	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	-1,2-DCE, and viny	l chloride)		SIGNATURE	Sal.	Mille

			FIELD [	OATA RECO	RD - GR	OUNDW	ATER SAI	MPLING						
PROJECT	CTS of	f Asheville, I	nc. Superfund S	ite	JOB N	UMBER 6	252-16-2012		DATE 5-12/16					
WELL / SAM	NELL/SAMPLE NUMBER NW-20A ACTIVITY TIME Start LIHT End 15:20 TIME 15:20  ASSOCIATED TRIP BLANK 13-18													
QC SAMPLE														
WATER LEV INITIAL DTW SCREENEI INTERVAL	17.	17	(toc) FINAL DTW DEPTH		<u> </u>		P TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED					
MILIVAL	<u>'</u>		рузд штак		PURGE		biaudei	<u> </u>						
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS					
H47	1760	0.25	19.19	0.015	691	2.26	50.0	37.9	13.60					
4.52	1760	0.25	18.72	0.094	6.76	0.73	45.7	37	4.45					
14:57	17,60	0,25	19.16	0.083	6.63	0.70	38.0	38.9	2.85					
15.02	17,60	0.25	19.Ft	0.080	6.64	0.55	14.9	41.8	1.69					
1507	1760	0.25	20,56	0.089	6.79	0.48	18.6	37,2	1.57					
12.15	17.60	0.25	21,20	0.098	6.80	0.65	28,4	413	1.84					
15.17	17.60	0,21	21.70	0.098	6.81	1.00	18.5	29,7						
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ļ									77.79 <b>444</b> . 25					
									J					
ANALYSES	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	s-1,2-DCE, and viny	chloride)		SIGNATURE	Jan Son						

PROJECT	CTS of	Asheville, In	ıç, Superfund Si	te	JOB NI	JMBER 6	252-16-2012		DATE 5/2/18
		44	w·21		•	11.	<i>A</i> <b>A</b>	1130	11:70
VELL/SAN	IPLE NUMB			ACTIVI	TY TIME	Start // · (	Enc	0 1	TIME 77.30
	S COLLEC		love_	A\$soc	CIATED TRIF		15-10	<u> </u>	
INITIAL DTW			toc) FINAL DTW	18.7	O ft (toc)	X	P <b>TYPE</b> Peristaltic Variable-speed	submersible	MOUNT PURGED  N Z gal.
SCREENE	39.7.	.44.S _{ft (b}	DEPTH ogs) INTAKE		ft (toc)		Bladder		
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
11.08	18.56	0.15	17.15	0.049	5.77	3.86	14.4	73.4	1.63
102	18.60	0.15	16.60	0.047	5.43	3.20	165	88.0	101
1116	18.78	015	16.67	0.048	5.23	2.40	12.3	98.6	1.00
1119	18.75	0.15	16.62	0.050	5.10	215	9.79	106.7	0.99
1122	18.70	0.15	16.63	0.046	5.02	1.97	5.19	1142	0.98
126	18.70	015	16.61	0.039	4.98	1.85	3.26	123.2	0.94
1130	18.70	0(5	16.62	0.040	4.92	1.87	1.68	1,37.5	1.S6
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FIELD DATA RECORD - GROUNDWATER SAMPLING														
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 5/2/18													
WELL / SAM	PLE NUMB	ER //	1W.Z1/	ACTIV	ITY TIME	Start /	/:40 End	d	TIME 12.15					
QC SAMPLE	S COLLEC	TED /	Jone	ASSO	CIATED TRII	BLANK	TB-18							
WATER LEV INITIAL DTW SCREENEI INTERVAL	78	DATA 2. /C/ ft. 60.3n(	NEBTU		95 ft (toc)		P TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  Solvey of the second s					
					PURGE	DATA		·						
TIME	D <b>TW</b> (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS					
11.46	18.78	0.2	1665	0.108	5.82	2.08	14.3	119.6	2.32					
11:50	18.83	0.2	16.69	0.108	6.17	1.79	10.1	1.05.7	1.98					
11.54	18.88	02	16.65	0.118	6.29	2.44	8.89	97.8	2.43					
1158	18.91		1665	0.125	6.44	0.83	6.14	88.5	1.04					
1202	18.95	0.2	16.63	0.109	6.60	0.45	5.95	-15,1	1.08					
1206	1895	0.2	16.53	0129	6.58	0.42	5.87	693	1.16					
1210	18:95	0,2	1663	0.129	6.60	0.94	2.83	53.7	2. 22					
1214	1895	0.2	16.72	():10 <del>-1</del>	658	032	1.77	45.Z	1. 26					
-														
							<u> </u>							
					<del> </del>									
ANALYSES	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)				7 /					
NOTES:				·			SIGNATURE							

FIELD DATA RECORD - GROUNDWATER SAMPLING														
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 5/2/18													
WELL/SAM	IPLE NUMB	ER /	1W-22	ACTIVI	TY TIME	Start 1275	End	<u> </u>	TIME (3.22					
QC SAMPLE	ASSOCIATED TRIP BLANK TB-18													
INITIAL DTW														
INTERVAL	12//.>	<u>* &gt;&gt; <b>S</b>ft (</u> 1	bgs) INTAK	E <u>56</u>		·	Bladder	<u> </u>						
		PURGE		SPECIFIC	PURGE	DAIA	I							
TIME	DTW (ft)	RATE (L/min)	TEMP (C°)	CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS					
1258	14:50	0.25	16.84	0.704	12.05	1.60	16,8	-62.5	1.06					
12:54	-	0.25	17:13	0.689	12.27	0.78	11.7	-94.4	1.07					
12.59	19.75		17.10	0.642	12.26		11.0	-loo.4	1.05					
13.04		0.25	16.88	0.554	12.18	0.61	11.9	705.9	1.0					
1409	-0 -		16.96	0.502		0.53	8.5	-1074	1.55					
15/15	· · · · · · · · · · · · · · · · · · ·	0.25	17.09	0.467	12.10	0.96	707	-101,1	1,12					
13.20	14,75	0.25	17.94	0.507	12.16	0.82	1.97	-118	1,18					
			414											
				,,,,,,										
	· · · · · · · · · · · · · · · · · · ·													
ANALYSES	: EPA 82	260 (TCE, ci	s-1,2-DCE, trans	s-1,2-DCE, and vinyl	chloride)		SIGNATURE	(A)						

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			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, It	nc. Superfund Si	te	] JOB N	UMBER 6	252-16-2012		DATE 5/2/18
WELL / SAM	IPLE NUMB	ER A	W. 22	ACTIV	TY TIME	Start 13	.40 End	14:20	TIME 14:20
QC SAMPLE	S COLLEC	TED	40-21	ASSO	CIATED TRII	P BLANK	TB-18	<b>,</b>	_
WATER LEV INITIAL DTW SCREENEI INTERVAL	. jc	10-	(loc) FINAL DTW -/ DEPTH bgs) INTAKI				TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  2 gal.
	3	12/18		27-	PURGE	DATA			100,000
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рH	DO (mg/L)	TURBIDITY	ORP (mV)	COMMENTS
1342	19.66	0.2	18.38	0.112	9.05	0.92	253	-72.0	26.04
13:52	19-70	0.2	<i>18.3</i> 5	0.101	2.59	0.43	503	-9.7	3,95
13:56	1970	0.Z	18.16	0.094	7.32	0.38	247	2.2	2.55
14.00	1827	0.2	18.27	0.089	7.15	0.51	185	10.S	2.01
14.05	19-20	0.Z	28.44	0.089	7.04	0.45	10.6	12.6	2.36
14.10	17.70	0.2	17.98	0.085	6.89	0.34	1.3.1	22.4	1.78
74:15	2970	0.2	1.8.30	0.083	6.78	1.37	8.86	24.0	1.69
							<u> </u>	<u> </u>	<u></u>
ANALYSES NOTES:	: EPA 82	260 (TCE, ci:	s-1,2-DCE, trans	-1,2-DCE, and viny	l chloride)		SIGNATURE		

	FIEL	D INSTR	UMEN	NT CALIE	BRATI	ON REC	ORD	,
Project Name: C	TS of Asheville, Inc.	Superfund Site				Date	: 8/7	/18
Project Number:	<del></del>						ie: Rocher	M. Clark
		,				TOIL	No very	
Water Quality N	leter Calibration	<u>Sta</u>	indard V	<u>alue</u>		<u>Meter \</u>	<u>/alue</u>	Acceptance Criteria
Manufacturer:	YSI	. pH:	4	SU (low)		рН: <b>4 ,(</b>	<u>)</u> su	+/- 10% of standard
	556 MPS	. pH:	7	SU (med)		pH:	<b>ွှင</b> su	+/- 10% of standard
Unit ID: P	Pine R7508	. pH:	10	SU (high)		рН: <u>1 ()</u>	. <u>O </u> su	+/- 10% of standard
		Conductivity:	1.413	mS/cm		ctivity: 1.4	<del></del>	+/- 10% of standard
		ORP:	240	mV		ORP: 24	<u>2.5</u> mV	+/- 10% of standard
Turbidity Meter	Calibration			Standard Value	<u> </u>	Mete	r Value	Acceptance Criteria
Manufacturer:I	Hach			<i>10</i> nt	U (low)	10	7. <u>1</u> NTU	+/- 10% of standard
Model No.: 210	00Q			<u>20                                    </u>	U (med)	<u> Zo</u>	<u>.3</u> NTU	+/- 10% of standard
Unit ID: Pine	30257	•		<i>100</i> nt	U (high)	_10	<u>)</u> NTU	+/- 10% of standard
				800 NT	U (high)	79	<u>9</u> NTU	+/- 10% of standard
Photoionization	n Detector			·		·		Acceptance Criteria
Manufacturer:		Backgrou	nd:		ppmv	Meter:	ppmv	within 5 ppmv of Zero
Model No.:		Span Gas	: <u> </u>		ppmv	Meter:	ppmv	+/- 10% of standard
Unit ID:								
Calibration Sou	ırces		•				·····	
	Source		<u>Value</u>		Lot Nur	nber	Expiration Dat	<u>9</u>
pH (low)	AquaPheonix		4	su	8GA2	73	1/2020	
pH (med)	AquaPheonix		7	su	8GA6	87	1/2020	
pH (high)	AquaPheonix		10	su	8GA5	43	1/2020	<del></del>
Conductivity	AquaPheonix	1.	413	mS/cm	8GA9	73	1/2019	
ORP:	Hanna	2	240	mV	206	2	10/2022	
Turbidity (low)	Hach (formazin	<u> </u>	10	NTU	A710	)7	7/2018	
Turbidity (med):	Hach (formazin	)	20	NTU	A810	00	7/2019	
Turbidity (high):	Hach (formazin	<u> </u>	00	NTU	A809	92	7/2019	
Turbidity (high):	Hach (formazin	)8	300	NTU	A809	95	7/2019	
PID gas:	·	<u></u>		ppmv				
NOTES:			· · ·				·····	

	FIELD	INSTRUM	MENT CA	LIBRATI	ON REC	ORD	
Project Name: CT	S of Asheville, Inc. S	uperfund Site			Date	: 8/8/i	8
Project Number: (					Nam	<del>""   ""   "</del>	20
Water Quality M			ard Value		Meter V		Acceptance Criteria
	YSI	-	4 SU (lo			<u>00</u> su	+/- 10% of standard
	556 MPS	•	7 SU (m		pH: <del>/</del> . (	<u>)1</u> su	+/- 10% of standard
Unit ID: Pi	ne R7508	· -	10 SU (hi			<u>03</u> su	+/- 10% of standard
	C	-	.413 mS/cn	n Condu		13 mS/cm	+/- 10% of standard
		ORP: 2	<u>240</u> m∨		ORP: 240	<u> プロ</u> mV	+/- 10% of standard
Turbidity Meter	Calibration		Standard '	Value	Meter	Value	Acceptance Criteria
Manufacturer: H			10	NTU (low)	10.		+/- 10% of standard
Model No.: 210		•	20	NTU (med)	Z0.		+/- 10% of standard
Unit ID: Pine 3			100	` ´ NTU (high)	99.	_	+/- 10% of standard
<del></del>			300	– NTU (high)	79	B NTU	+/- 10% of standard
							:
Photoionization	Detector						Acceptance Criteria
Manufacturer:	,	Background:	·	ppmv	Meter:	ppmv	within 5 ppmv of Zero
Model No.:		Span Gas:		ppmv	Meter:	ppmv	+/- 10% of standard
Unit ID:							e.
Calibration Sour	ces	40' - 8 1 - 01 140' - 141' - 141' - 1 - 1	- Wiles , 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 19	e de la destactor de la constitución de la constitu			The second secon
	Source	<u>Val</u> ı	<u>ue</u>	<u>Lot Nui</u>	<u>mber</u>	Expiration Dat	<u>e</u>
pH (low)	AquaPheonix	4	\$U	8GA2	273	1/2020	
pH (med)	AquaPheonix		su	8GA6	887	1/2020	
pH (high)	AquaPheonix	10	su	8GA5	543	1/2020	<del></del>
Conductivity _	AquaPheonix	1.413	mS/cm	8GA9	973	1/2019	
ORP:	Hanna	240_	mV	206	2	10/2022	
Turbidity (low)	Hach (formazin)	10	NTU	A71	07	7/2018	
Turbidity (med): _	Hach (formazin)	20	NTU	A81	00	7/2019	· ·
Turbidity (high):	Hach (formazin)	100	NTU	A80	92	7/2019	
Turbidity (high):	Hach (formazin)	800	NTU	A80	95	7/2019	<del></del>
PID gas:			ppmv		<u> </u>		
NOTES:						· Park	
HOILU.							
				·			

			FIELD C	ATA	RECOF	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, I	nc. Superfund S	te		JOB NI	UMBER 6	252-16-2012		DATE 8/8/18
WELL/SAM	PLE NUMBI	ER /	1W-7		ACTIVI	TY TIME	Start 14.	UO End	, 15:15	TIME 15/15
QC SAMPLE	S COLLECT	red	N/A		ASSOC	IATED TRII	PBLANK	13-2	0	
WATER LEV INITIAL DTW		DATA GO ft	(toc) FINAL	,	12.5	73 _{ft (toc)}	PUM	P TYPE Peristaltic Variable-speed	submersible	AMOUNT PURGED
SCREENEI INTERVAL	20.4	1-298 _{ft (}	DEPTH bgs) INTAK		~25	). (toc)		Bladder		
				<del>-</del>		PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	CONE	ECIFIC DUCTIVITY 15/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
14.43	17,68	0.1	20.64	0.0	773	4.61	4.99	8.85	-215.4	
14.47	12.72	01	20.02	0.0	771	3.67	4.67	6.90	176.4	
14:51	12.72	01	19.83	0,0	77	3.67	4.56	8.93	175.1	
1436	12,72	0.1	14.80	0.0	<u> 187</u>	3.49	4.43	10.1	-165.7	
501	12.72	01	1952	0.	120	3.SC	4.29	11.6	163.0	B. 11 /c - 100 /c
15:05	12.73	0.1	19.41	0.	<u>120</u> 120	3.62	4.28	13,2		0.14 W/OR. 0.00 W/R
15:10	[C-8]	011	19.59	VV-	628	4.28	7.20	14.1	-/81.3	
									,	
Table 1										
					7					
				_	<u>-</u>					
										7
							<u> </u>			
ANALYSES NOTES:	: TCE, ci	s-1,2-DCE,	trans-1,2-DCE,	vinyl chlo	oride			SIGNATURE	holy	Blath .

			FIELD C	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	•
PROJECT	CTS of	Asheville, i	nc. Superfund Si	te	JOB N	UMBER 6	252-16-2012		DATE 8/8/18
WELL / SAM	PLE NUMBI	er N	1W-71	ACTIV	/ITY TIME	Start 13	.00 En	14:20	TIME 14:15
QC SAMPLE	S COLLECT	red	N/A	ASSO	CIATED TRI	BLANK	TB-20	)	
WATER LEV INITIAL DTW	EL/PUMP	DATA 3. <b>25</b> ft (	FINAL (toc) DTW	13.	25 ft (toc)	1 1 <del>1/</del>	P TYPE Peristaltic Variable-speed	submersible	AMOUNT PURGED  ~ /. O gal.
SCREENEI INTERVAL	66.8	-713 ₁₁	DEPTH bgs) INTAKI		9 ft (toc)		Bladder		
					PURGE	DATA			
TIME	DT <b>W</b> (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
13.32	13.80	0.2	19.88	0.154	5.73	9.03	40.0	-253.0	
13:37	13,72	0.2	20.01	0.151	4.77	2.27	22.5	-2293	
13:40	13.66	6.2	20.56	0.150	558	1.83	9.61	-263.0	~1 dd 4
13:47	<u>13.57</u>	0,2	20.72	0.250	6.01	1.66	8.88	-299.5	Stortley.ref
13:52	13.41	0.1.	21.34	0.148	6.32	1.47	8.53	-301.5 -304.6	
1/1/2	13.35	0.3.	22.04	0.144	6.45	1.21	8.1/ 9 gc	2337	Stopped pumping foot and
14:02	13.25 13.25	0.1	20.99	0179	12.83	1.43	13.6	-353.4	0.00 w/OR/0.58 W/R
	<u> </u>	سدر	20:11	(J. 4.) L	9.11	117	\$ 7.0	))), (	V.WW/OK/D.380/11
		- · · · - · · ·							
			-						
						ļ			
ANALYSES NOTES:	: TCE, ci	s-1,2-DCE,	trans-1,2-DCE, v	vinyl chloride 			SIGNATURE	: Turky	rAM

	FIELD DATA RECORD - GROUNDWATER SAMPLING									
PROJECT	CTS of	Asheville, I	nc. Superfund Si	te	JOB N	JMBER 6	252-16-2012		DATE 8/8/18	
WELL / SAM	IPLE NUMB	ER /	nw-19	ACTIV	TY TIME	Start //	25 En	12:10	TIME 1216	
QC SAMPLE	QC SAMPLES COLLECTED WASSOCIATED TRIP BLANK 713.20									
WATER LEV INITIAL DTW										
SCREENE INTERVAL		)4/5 n (	DEPTH bgs) INTAKI		ft (toc)		Bladder			
					PURGE	DATA				
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTÜ)	ORP (mV)	COMMENTS	
11.25	16,48	0.5	18.32	0.063	4.86	5.02	1.54	-268.1	Slow flaw role	
11:30	16.43	0.2	18.37	0.060	3.72	1.32	38.4	-2SO.7		
11-35	6.42	0.1.	18.23	0.057	3.17	0.58	32.7	-235.4		
11.40	16.47	0.1	18.33	0.056	3.28	0.49	286	-Z31.7		
11:45	16.41	0.7	1.8.44	0.036	3,24	0.34	23.S	-7777		
11.50	16.41	0.1.	1650	0,004	3.43	0.34	16.1	744.8		
11.55	16.47	0.7	18.61	0.054	201	0.32	25.5	-254.0		
2.00	16.40	0.1	18.72	0.053	3.80	0.32	127	1565	0.10 /2 /2 0.1	
<u>  12.05</u>	16,40	(). B	26,78	0.053	3.78	0.32	10.8	-250.2	0.47 w/or /0.25 w/a	
									,	
				``.						
									7	
ANALYSES	TCE, ci	is-1,2-DCE,	trans-1,2-DCE, v	vinyl chloride			SIGNATURE			

			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SA!	MPLING		
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 8/8/18  WELL / SAMPLE NUMBER MW-19A ACTIVITY TIME Start 10:10 End 11:30 TIME 11:15									
	QC SAMPLES COLLECTED NFT ASSOCIATED TRIP BLANK TB-20									
WATER LEVEL / PUMP DATA  INITIAL DTW  PUMP TYPE AMOUNT PURGED Peristaltic Peristaltic Variable-speed submersible  SCREENED INTERVAL  DEPTH OF VGZ-S ft (toc)  Bladder										
					PURGE	DATA				
TIME	DTW (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	На	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS	
10.43	17.4S 17.61	02	18.39	0.214	6.0S 5.89	3.2S 7.8S	23,6 24.1	-309.0 -273.9		
10:45	19.44	0.5	17.15	0.212	4.44	1.18	24.3	-249.8		
10.50.	11.30	0.1	17.41	0.196	4.66 5.31	0.47	25.6	-165.8 -3P.0	Slow flow (ate	
11:00	21.40	01	17.99	0.188	5.26 510	0.50	17.9	-314.8 -281.6		
11:10	21.SO	01	17.95	0.175	5.1.1	0,46	25.3	-312.4	10-0-6	
11:1S	<u>2150</u>	0.1	17.98	0.166	5.06	0.43	27.8	-2863	0.47 W/OR 10.29 W/R	
						:				
ANALYSES	: TCE, c	is-1,2 <b>-D</b> CE,	trans-1,2-DCE,	vinyl chloride			SIGNATURE	Kuly	M. Jul	

			FIELD C	ATA RECO	RD - GR	ROUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, I	nc. Superfund Si	ite	JOB N	UMBER 6	3252-16-2012		DATE 8/8/18
WELL/SAM	IPLE NUMBI	ER N	1w-20	ACTIV	/ITY TIME	Start OG	3G En	1030	) TIME 1010
QC SAMPLE	S COLLECT	TED	NA	ASSO	CIATED TRI	P BLANK	TB-Z	0	
WATER LEV INITIAL DTW SCREENE INTERVAL	13.		(toc) FINAL DTW DEPTH	14.0	01 ft (toc)		P TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  1.0 gal.
				<u> </u>	PURGE				
TIME	DTW (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
0930	14.09	01	18.77	0.077	460	5.42	22.3	-266.7	
0935	14.09		18.45	0.073	5.29	1.61	21.3	-270.4	
0740	14.09		18.3C	0.072	510	1.38	20.2	-272.1	
2945	14.09	,	18.43	0.072	5.04	1.29	22.7	-260.3	
2750	1407		18.47	0.072	5.03	1.24	19.3	-241.1	
0955	14.09		1854	0.070	5.02	1.17	14.9	-274.1	
1000	14.09		1843	0.070	4.99	1.13	13.7	-273.0	
1005	121.09	<u> </u>	18.41	0.070	4.93	1.09	12.2	-286.6	1.11 w/OR 0.86 W/R
									,
		-							
				,					
									1 1
ANALYSES	: TCE, ci	s-1,2-DCE,	trans-1,2-DCE, v	vinyl chloride			SIGNATURE	100	arlle

			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, In	nc. Superfund Sit	te	JOB NU	JMBER 6	252-16-2012		DATE 8/8/18
WELL / SAM	WELL/SAMPLE NUMBER $MW-ZOA$ ACTIVITY TIME Start $O8:30$ End $O9:30$ TIME $O9:20$								
QC SAMPLE	S COLLECT	red	N/A	ASSOC	HATED TRIE	BLANK	TB-20	7	
WATER LEV INITIAL DTW									
SCREENEL INTERVAL	60	-65m	DEPTH ogs) INTAKE		ft (toc)		Bladder		
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
38:45	14.90	0.2	17.62	0.079	6.35	921	29.3	-Z88.1	
08.'SO	1491	0.2	17.30	0.077		1.10	27.6	-250,7	
08:55	14.91	0.2	17.30	0.077	4.84	0.87	29.9	-260.7	
07.00	14.91	0.2	17.44	0.036	5.28	0.78	32.1	-283.8	Slow flow rake
09:05	14.89	0.1	17.53	0.079	5.96	0.75	31.1	-321.8	
09:10	14.87	0.1	17.62	0.079	6.05	0.72	28.5	-352.Z	
09:15	141.87	0.1	17.72	0.079	6-07	0.69	26.0	-299.2	
09:20	1.87	0.1	17.71	0.079	6.05	0.65	75.3	-286.3	0.14 w/oR 10.36 W/R
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								-	
ANALYSES	: TCE, c	is-1,2-DCE,	trans-1,2-DCE,	vinyl chloride			SIGNAFURE		

			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SAI	MPLING	
PROJECT	CTS of	Asheville, la	nc. Superfund Si	te 9/4/4	JOB NI	JMBER 6	252-16-2012		DATE 8/2//8
WELL/SAM	PLE NUMB	ER	NW 24		TY TIME	Start /3	30 Enc	1430	TIME AM
QC SAMPLE	S COLLEC	red f	V/4	ASSOC	CIATED TRII	BLANK	713-20		14.00
WATER LEV INITIAL DTW		17/11	FINAL (toc) DTW	14.4	O ft (toc)	i d	P TYPE Peristaltic Variable-speed	submersible	AMOUNT PURGED  1. 2 gal.
SCREENEI INTERVAL		45 110	DEPTH bgs) INTAKI		ft (toc)		Bladder		
PURGE DATA									
TIME	DTW (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
13:30	14.41	0.1	<u>19.55</u>	0.054	5.40	6.47	16.3	-273S	
13:35	14.40	0.1	19.26	0.049	445	2.25	25.2	-272.8	
13:40	14.40	0.1	1963	0.046	451	1.95	28.9	-268.2	
13:45	14.40	0.1	20.05	0.047	4.61	1.79	31.8	-269.6	
13.50	14.40	01	20.06	0.046	4.56	1.75	268	279.7	
13:ss	14.40	O.1	19.99	0.041	4.49	1.72	29.0	-2169	
14:00	14.40	0.1	19.89	0.041	4.38	1.79	285	-2638	1.27 w/o. R/2.72 w/R
			•						
							<u> </u>		
ANALYSES	: TCE, c	is-1,2-DCE,	trans-1,2-DCE, v	vinyl chloride			SIGNATURE		

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	FIELD DATA RECORD - GROUNDWATER SAMPLING								
PROJECT	CTS of	Asheville, Ir	nc. Superfund Sit		JOB NU	JMBER 6	252-16-2012		DATE 8/7/18 *
WELL/SAM	PLE NUMBE	R A	1W-24A	M)UZIA	TY TIME	Start 12-3	OO End	13:20	TIME 13.05
		-	7 7 LL	LINCS FIRS			TB-20		
QC SAMPLE				ASSOC	IATED TRIF		-		AMOUNT PURGED
INITIAL DTW	INITIAL /// FINAL /// Peristaltic								
SCREENEI INTERVAL	55-	60 ft (1	DEPTH bgs) INTAKE	of 57.5	ft (toc)		Bladder		
					PURGE	DATA			
TIME	D <b>TW</b> (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
12:30	4.62	0.2	19.12	0.294	5.39	6.02	1.39	-152.8	
12:35	H.75	0.2	19.07	0.232	4.84	1.43	2.76	-233.9	
12:40	14.78	0.2	18.91	0.198	498	0.93	5.43	-264.3	slight purple lind
12:45	14.82	೦.ಒ	18.85	0.189	5.06	0A	10.3	-273.0	purpla tent
12:50	14.63	0.1	19.00	0.171	5.53	0.75	22.5	-313.8	Slowflow ruto to 0.1
12.55	14.51	0.1	19.69	0.171	6.20	0.73	31.3	-307.5	purple tint
13.00	144S	0.1	20.43	0170	642	0.74	37.0	-218.0	purple trate
13:05	14.40	01	19.98	0.168	6.30	0.80	38.5	-123.0	7.68 WOR / 7.45 V/R
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						}		_	
ANALYSES	: TCE, ci	is-1,2-DCE,	trans-1,2-DCE,	vinyl chloride					
NOTES:			*				SIGNATURE	1 mil	200

			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, li	nc. Superfund Si	te	JOB N	JMBER 6	252-16-2012		DATE 8/7/18
WELL / SAM	PLE NUMBI	ER N	W.2Z	ACTIV	TY TIME	Start /	'90 En	16:30	TIME 16:30
QC SAMPLE	S COLLECT	red <b>WA</b>		ASSO	CIATED TRIE	BLANK	TB-20		
WATER LEV INITIAL DTW SCREENEI	15	11/2	(toc) FINAL DTW		of ft (toc)		Peristaltic Variable-speed	submersible	AMOUNT PURGED  gal.
INTERVAL		- \n (	<u>bgs)</u> INTAKI		> ft (toc)	<u> </u>	Bladder		
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
15.50	<i>15.</i> 50	0.1	19.85	0.147	8.34	5.73	163	-329.9	
4555	15.50	0.1	1996	0.188	6.99	1.36	19.6	-352.7	<u>.</u>
16.00	15.50 1000	0.1	2011	0189	6.0	1.21	19.3	-358.5	
160.00	15.50	0.1	20.2 <u>3</u> 20.34	0.189	6.88 6.82	0.90	18.7	-361.7 -360.0	
16.1C 16.1S	15.5a	2.1	20.50	0.190	6.81	0.88	100	-341.7	0.00 YOR/0.00W/R
									,
	<u> </u>								
ANALYSES	: TCE, ci	is-1,2-DCE,	, trans-1,2-DCE,	vinyl chloride		<u> </u>	SIGNATURE	- The	

	FIELD DATA RECORD - GROUNDWATER SAMPLING									
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB N	JMBER 6	252-16-2012		DATE 8/7/5	
WELL / SAM	PLE NUMBI	ER N	W. 221	ACTIVI	TY TIME	Start /5	.00 End	15:4	S TIME 15:45	
QC SAMPLE	S COLLECT	LED V	1/A	ASSO	CIATED TRIE	BLANK	TB.20			
INITIAL DTW	DTW 13.36 ft (toc) DTW 15.40 ft (toc) Variable-speed submersible									
INTERVAL	(2)	- 40ft (I	ogs) INTAKI		ft (toc)		Bladder			
			5		PURGE	DATA				
TIME	D <b>TW</b> (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS	
15.08	1586	0.1	18.82	0.078	4.26	11.52	17.1	-276.5		
15:12	15.70	0.1	18.36	0.078	3,50	1.38	6.26	-247.7	,	
1517	15.70	0.1	18.39	0.072	3.78	1.05	7.54	<u>-269.S</u>		
15:21	15.70	0.1	18.33	0.076	4.15	0.89	8.85	-Z99.S		
15.27	15.70	0.1	18.25	0.074	465	0.77	7.38	-308.6		
15:33	1520	0.1	18.32	0.070	5.13	0.69	8.16	~320.1		
IS38.	<u>(S.70</u>	01	1838	0.069	5.25	0.66	7.85	-333.1	0 ,	
15:42	15.70	0.1	18.43	0.069	5.30	0.64	8.10	-349.7	0.20w/o R/0.73 cv/R	
				,						
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	!									
ANALYSES	: TCE, cl	is-1,2-DCE,	trans-1,2-DCE, v	vinyl chloride		***************************************	SIGNATURE			

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FIEL	D INSTRUMENT CALIBRAT	ION RECORD	J. Salar
Project Name: CTS of Asheville, Inc.	Superfund Site	Date:	5/18
Project Number: 6252-16-2012		Name: Roden	Clark
Water Quality Meter Calibration  Manufacturer: Heriba YSI Env.  Model No.: YSI 556  Unit ID: Pine	pH: 7 SU (med) pH: 10 SU (hlgh)	Meter Value  pH: 400 SU  pH: 701 SU  pH: 10.00 SU  ductivity: 1,413 mS/cm  ORP: 240.0 mV	Acceptance Criteria +/- 10% of standard
Turbidity Meter Calibration  Manufacturer: HACH  Model No.: 2100 ©  Unit ID: 18139	Standard Value  10 NTU (low)  20 NTU (med)  100 NTU (high)  800 NTU (high)		Acceptance Criteria +/- 10% of standard +/- 10% of standard +/- 10% of standard +/- 10% of standard
Photoionization Detector  Manufacturer:  Model No.:  Unit ID:	····	Meter:ppmv Meter:ppmv	Acceptance Criteria within 5 ppmv of Zero +/- 10% of standard
Calibration Sources			
pH (low) pH (med) pH (high)  Conductivity  ORP:  Turbidity (low)  Turbidity (med):  HACH  Turbidity (high):  HACH  PID gas:	Value         Lot N           4.6         SU         86A6           7         SU         86A6           10         SU         86A6           1.413         mS/cm         86A6           240         mV         305           10         NTU         A825           100         NTU         A825           20         NTU         A824           800         NTU         A825           ppmv         11618	387 Jan 202 543 Jan 201 535 Jan 201 54 June 202 32 Nov. 19 Nov. 19	20
NOTES:			

FIE	LD INSTRUMENT CA	LIBRATION RE	CORD	İ
Project Name: CTS of Asheville, Inc	. Superfund Site	Da	ate: 11/7	118
Project Number: 6252-16-2012		Na	ame: Rodron	Clark
Water Quality Meter Calibration  Manufacturer: Horiba >ST EN  Model No.: YSI 556  Unit ID: Pine  Turbidity Meter Calibration	PH: 4 SU (kd pH: 7 SU (nd pH: 10 SU (nd pH: 10 SU (nd pH: 1413 mS/critical phi)	ow) pH: <u>4,</u> ned) pH: <u>7,</u> igh) pH: <u>10</u> m Conductivity: <u>1,</u> ORP: <u>24</u>	su 9.00 su 4113 ms/cm 10.0 mV	Acceptance Criteria +/- 10% of standard Acceptance Criteria
Manufacturer: HACH  Model No.: Z1000			NTU	+/- 10% of standard
Unit ID: 18139	100		<u>0.3</u> NTU 5	+/- 10% of standard +/- 10% of standard
1011	800	<del></del>	98 NTU	+/- 10% of standard
Photoionization Detector  Manufacturer:  Model No.:  Unit ID:	Background: Span Gas:	<del></del>		Acceptance Criteria within 5 ppmv of Zero +/- 10% of standard
Calibration Sources				
pH (low) pH (med) pH (med) pH (high)  Conductivity  ORP:  Turbidity (low)  Turbidity (med):  Turbidity (high):  HACH  Turbidity (high):  HACH  PID gas:	Value   Y-O SU   7.0 SU   7.0 SU   7.0 SU   10.0 SU   1.4 13 mS/cm   2.46 mV   1.6 NTU   20 NTU   100 NTU   800 NTU   ppmv	Lot Number 8GA 973 8GA 687 8GA 543 8GA 6 35 3054 A8232 A8248A A8236 A8236	Expiration Date  Jan 202  Jan 202  Jan 202  Jan 202  Jan 202  Jone 20  Nov. 19  Nov. 19  Nov. 19	20 20 19
NOTES:				

FIEL	D INSTRUMENT CA	LIBRATION RECO	RD
Project Name: CTS of Asheville, Inc. Project Number: 6252-16-2012	Superfund Site	Date: Name:	11/8/18 Rodrey Clak
Water Quality Meter Calibration  Manufacturer: Heriba YSI Env  Model No.: YSI 556  Unit ID: Pine	Standard Value           pH:         4         SU (log           pH:         7         SU (m           pH:         10         SU (h           Conductivity:         1.413         mS/cr           ORP:         240         mV	ned) pH: 7.00 igh) pH: 10.00	SU +/- 10% of standard
Turbidity Meter Calibration  Manufacturer: HACH  Model No.: 2100 Q  Unit ID: 18139	Standard 10 20 100 800	Value         Meter V           NTU (low)         10.1           NTU (med)         20.2           NTU (high)         101           NTU (high)         796	NTU +/- 10% of standard
Photoionization Detector  Manufacturer:  Model No.:  Unit ID:	Background: Span Gas:	ppmv Meter:ppmv Meter:	<del></del>
Calibration Sources  Source  pH (low)  pH (med)  pH (high)  Conductivity  ORP:  Turbidity (low)  Turbidity (med):  Turbidity (high):  Turbidity (high):  HACH  Turbidity (high):  HACH  PID gas:	Value   4.0   SU   7.0   SU   10.0   SU   1.413   mS/cm   Z40   mV   10   NTU   20   NTU   800   NTU   ppmv	8GA973 8GA687 8GA543 1 8GA635 3054 1 A8232 A8248A A 8236	Expiration Date Jan. 20 Jan. 20 Jan. 20 Jan. 19 Jan. 13 Nov. 19 Dec 19 Nov. 19 Vov. 19

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 11/6/18												
WELL / SAM	PLE NUMB	ER	mw-7	ACTIV	ITY TIME	Start /4)	:40 En	15:25	TIME 15.25				
QC SAMPLE	S COLLEC	TED	NA	ASSOC	CIATED TRII	BLANK	TB-32	2					
INITIAL DTW SCREENEI													
MILKIAL	[20. [		<u> </u>				Diddei	<u>-</u>					
TIME													
14:40													
14:45	16.80	0.2	18.45	0.095	508	4.12	16.9	212.3					
24:50	16.80	0.2	18.23	0.099	5.08	3.95	15.8	Z06.8	1.63 w/oat R./205 WK				
14:55	16.80	0,2	18.22	0.095	5.07	3.99	8.85	2086	/				
	6.80	0.2	18.22	0.099	5.07	3.93	3.69		1.75 w/out C				
(5:05	1680	0,2	18.85	0.086	5.05	3.91	5.21	204.6	214 / 10/ 20 /				
15:10	1680	0.2	18.36	0084	5.02	3.96	6.06	206.5	0.40 w/out R/ 0.86 w/R				
<u>(5:\\5</u>	16,60	0.2	1838	0098	5.06	3.94	5.88	1970	/				
15.20	1600	0.6	18.44	0.048	5.10	3.72	5.35	1901	000 100 10				
15.05	168)	<u>0. Z</u>	1850	0.099	9.15	3.92	4.46	182.2	0.86 of out P/1.19 w/R				
		<u> </u>											
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			Newson of the latest of the la	, T									
ANALYSES	ANALYSES: TCE according to EPA Method 8260  NOTES: SIGNATURE												

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	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	PROJECT CTS of Asheviile, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE UG/18											
WELL/SAM	PLE NUMB	er Mu	U-7A	ACTIV	ITY TIME	Start 13 <i>()(</i>	) En	13:50	TIME 13.50			
QC SAMPLE	S COLLECT	TED M	S/MSD	ASSO	CIATED TRIE	BLANK	TB-32	2				
INITIAL DTW	DTW /8.40 ft (toc) Variable-speed submersible  SCREENED 2.0717 DEPTH OF 0.000											
INTERVAL	66.	5~11. Ji (1	ogs) INTAKI	= <u>~69,</u>		<u> </u>	Bladder		. 4			
PURGE DATA												
PURGE SPECIFIC DTW RATE TEMP CONDUCTIVITY DO TURBIDITY ORP TIME (ft) (L/min) (C°) (mS/cm) pH (mg/L) (NTU) (mV) COMMENTS												
13:15	1831	OZ	17.79	0.377	6.90	3.13	9.31	217.9	0.05 w/oct R,			
B:20	18.37	0.2	17.22	0.169	6.67	0.84	617	2210	0.00 work R.			
13:25	18.40	0.2	17.41	0.155	6.91	0.74	4.78	203.3				
13:30	1840	0.2	12.39	0.153	7.04	0,74	4.99	193.1				
13:35	18.40	0.2	17.37	0.149	716	0.62	5.84	1	0.29 Wort R.			
13:40	1840	_	17.32	0.142		0.60	3,22		O.C. W/oath.			
13.45	1228	0.2	17.28	0.140	7.34	0.58	2.89	164.9	216 11 6			
(3:50	18.40	0.2	17.18	0.140	7.37	0.54	2.36	158.7	0.16 w/oat R/0.32 W/R			
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		<u></u>										
ANALYSES	: TCE ad	ccording to E	EPA Method 826	0			SIGNATURE	[man	MAM			

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT													
WELL/SAM	PLE NUMB	ER/	nw-19	ACTIV	TY TIME	Start 13:	40 Enc	14:30	TIME 14:30				
QC SAMPLES COLLECTED NA ASSOCIATED TRIP BLANK 13-32													
WATER LEVEL / PUMP DATA  INITIAL DTW													
INTERVAL	70.	9 2 ft (1	ogs) INTAKE	<u> </u>		·	Bladder						
	PURGE DATA												
TIME													
13.50	13:50 2029 O.Z 1815 0.102 6.81 9.84 157 327 4.61 Worth												
13:55	2027	0.2	17.21	0.084	6.10	3.99	21.3	67.6	4.70 W/out R				
141.cc	· 20,2°		17.72	0.075	6-05	3.95	9.28	86.7	0-74 w/out R				
14:05	2021	0.2	4.22	0.070	5-91	9.07	6.38	1074					
14.10	20.19	0.2	17.26	0.067	5.77	8.84	4.97	1222	092 w/od l				
14.15	20.18	0,2	12.30	0.066	5.65	740,93	4.59	131.9	0.76 w/oot C				
4:20	20.18	0.2	12.34	0.066	5.60	798.08	4.21	141.3					
14.75	20.18	0.2	12.30	0.066	5.59	741.28	3.81	147.5	0.49w/g/R/14.31w/R				
									1.59 cm/Raffor5in				
ANALYSES	ANALYSES: TCE according to EPA Method 8260 NOTES: SIGNATURE: And M. Make												

	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	CTS of	Asheville, I	nc. Superfund Si	te	] JOB NI	JMBER 6	252-16-2012		DATE 11/2/18			
WELL / SAM	IPLE NUMBI	ER/	1W-19f	ACTIVI	ITY TIME	Start 12		13:30	7 TIME 13.30			
QC SAMPLE	S COLLECT	TED F	0-35	ASSO	CIATED TRII	BLANK	TB-3	2				
INITIAL DTW SCREENEI												
INTERVAL GO-65 ft (bgs) INTAKE 62.5 ft (toc) Bladder  PURGE DATA												
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS			
12:40	22.45	0.2	1752	0.237	7.11	3.64	1.52	-65.6	0.93wfout Ro			
12:45	22.89		17.49	0.235	7.06	256	2.55	-67.5				
12:50	23.51		17.39	0.233	7.04	2.46	2.43	-68.1				
12.13	23.69		17.32	0.227	2.01	2.17	1.26	-668	0.35/w/out l.			
13:00	23.93		12.05	0.196	663	1.79	2.01	-41	/			
13.05	24.65		16.99	0.190	6.55	1.83	1.85	-10.3				
1310	24.08		16.96	0.186	6.46	1.88	1.43	-2.6	0.43 w/oot R.			
3:15	24.10		16.95	0.178	6.48	2.18	1.51	-3.3	,			
13:30	24.10		16.95	0.177	6.47	2.31	1.21	-Z.S	, ,			
33:25	2410	<u> </u>	16.93	0.177	6.49	245	1.36	-1.8	O. Ww/out &/000 w/R			
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	-	·			-							
ANALYSES	: TCE ac	scording to E	EPA Method 826	0			SIGNATURE	: /Kul	L. M. M			

FIELD DATA RECORD - GROUNDWATER SAMPLING													
PROJECT	CTS of	Asheville, I	nc. Superfund Si	te	JOB N	UMBER 62	252-16-2012		DATE 11/7/18				
WELL / SAM	PLE NUMB	ER N	nw.20	ACTIVI	TY TIME	Start 14.	35 Enc	15:3	O TIME 15:30				
QC SAMPLE	QC SAMPLES COLLECTED MA ASSOCIATED TRIP BLANK 78.32												
INITIAL DTW	SCREENED INTERVAL USS ft (bgs) DTW IT-85 ft (toc) Variable-speed submersible Variable-speed submersible Bladder												
PURGE DATA													
TIME	PURGE												
1435	17.85	0.2	19.46	0.045	5.97	628.92	2.36	156.2	1.09wfort C				
1440	1785	0.2	19.68	0.081	602	68.98	2.38	157.5					
14.45	1785	02	19.72	0.081	6.01-	14-30°	× 2.33		O.B W/out R				
24:50	12.85	0.2	19.58	0.077	5.95	62.07	2.05	1646					
14.55	17.85	0.2	19.49	0.078	5.93	628:37	1.85	166.3					
15:00	17.85	0.2	19.36	0.078	5.92	634.11	1.59	168.7					
15.08	17.85	02	19.26	0.079	5.89	639.10	1.93	170.6	0.00 wforth				
15:10	17.85	0,2	19.20	0.07.8	5.88	64291	1.53	1727	,				
15:75	17.85	0.2	19.21	0.079	5.89	640.95	1.40	172.1					
	17.85	QZ	19.23	0.079	5.89	641.05	1.22	172.3					
1525	17.85	0,2	19.25	0.079	5.89	640.89	1.10	171.9	O. Grafoul R				
					i								
									1				
ANALYSES	: TCE ac	cording to E	EPA Method 826	0			SIGNATURE	////					

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	FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	CTS of	Asheville, la	nc. Superfund Si	te	JOB N	UMBER 6	252-16-2012		DATE 11/8/18				
WELL / SAM	PLE NUMB	ER /	NW-20	ACTIVI	TY TIME	Start 09	7:15 En	d 11.00	O TIME 11.00				
QC SAMPLE	S COLLEC	TED ,	NA	ASSO	CIATED TRII	BLANK	TB-3	2	`				
WATER LEV INITIAL DTW SCREENEI INTERVAL	17	2 – –	(toc) FINAL DTW DEPTH				<b>Ý TYPE</b> Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  ~ Z gal.				
PURGE DATA													
TIME													
0935	1800 1756	0.2	6.15	0.101	7.08	170	8,59 7,65	72.4 62.4					
09:45		0.2	16.41	0.108	7.13	111	6.98	56.8					
09.50		0.2	16.38	0.109	7.15	1.11	7.15	55.0	Battery to peripump died /Rehodeto car				
	17.82	0.4	16.57	0.112	7.16	1.03	8.18	553	Gotter Detad 2 1015				
10:20	18.2c	0.2	16.54	0.113	7.16	1.00	7.05	49.2	2.67 w/out P/slow flow				
10:25	18.20	0.2	16.67	0.111	7.11	0.89	659	50.5					
0.30	18.12	O, Z	1668	0.110	7.09	0.91	6.44	528	1.81 W/OLAR				
10.35	18:15	0.2	16.76	0.111	7.08	0.82	5.35	627					
10:40	18.11	02	1660	0.110	7.04	0.69	5.19	146.5	193 Worth				
10:45	18.08	0.2	16.62	0.110	7.03	0.70	4.88	280.7					
0:50	B.05	0.2	16.62	0.109	7.01	0.68	4.59	331.7					
10.55	BOX	0.2	16.56	0.109	7.00	0.68	4.37	349.0	2,34 West R/3,20 W/R				
									·				
		: 											
ANALYSES NOTES:													

	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB N	JMBER 6:	252-16-2012		DATE 11/7/18			
WELL / SAM	PLE NUMB	ER	4W-21	ACTIVI	TY TIME	Start 08	70 En	09:30	TIME 09:20			
QC SAMPLE	S COLLEC	TED/	VA	ASSOC	CIATED TRIE	BLANK	T13-3	2				
WATER LEV INITIAL DTW	DTW /8.63 ft (toc) DTW /8.62 ft (toc) Variable-speed submersible											
SCREENED 40-45 ft (bgs) DEPTH OF INTAKE W42.5 ft (toc) Bladder												
					PURGE	DATA						
PURGE   SPECIFIC   DO TURBIDITY   ORP												
08:35	18.82	0.2	15.45	0.043	5.86	6.22	2.37	470.4	0.00 w/out R			
08.40	18.82	0.2	15.50	0.040	5.41	5.65	2.21	461.6				
08:45	18.82	0.2	15.64	0.038	5.34	5.72	2.07	458.0	0.01 w/out R			
0850	18.82	0.2	15.8Z	0.036	5.11	5.76	1.85	459.6				
C8:55	18.82	0.2	15.85	0.035	5.08	5.75	1.63	4525				
3900	18.82	0.2	15.87	0.036	5.06	5.76	1.59	449.3				
09.05	18.82	0.3	15.89	0.035	5.04	5.73	1.51	446.9	0.01 w/ontp.			
09:10	18:82	O.Z	15.85		498	5.75	0.88	438.9				
09:0	18.82	0.2	15.84	0.035	4.94	5.79	0.44	433.5	0.00 cylout R			
								5005				
								<u> </u>	1			
ANALYSES	TCE ac	cording to E	EPA Method 826	0			SIGNATURE	///	h/1/1//			

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FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 11/6/18											
WELL / SAM	IPLE NUMBI	er M	W.21A	ACTIV	ITY TIME	Start /	6,'00 End	16:55	TIME /	6.55		
QC SAMPLES COLLECTED NA ASSOCIATED TRIP BLANK TB-32												
WATER LEVEL / PUMP DATA  INITIAL												
SCREENE	60.	-55 ft (1	bgs) INTAK		.S ft (toc)		Bladder					
					PURGE	DATA						
PURGE DATA												
16:15	19.00	0.2	17.49	0.152	5.86	4.34	154	5714	12.17 w/oat R/	purple tin		
16,20	19.01	0.2	17.36	0,146	5.95	1.10	828	6223	purples 1	fint		
16:05	28.73	0.2	1736	0.144	6.01	0.86	56.8	632.8	, ,			
16,30	18,90	0.2	17.37	0.144	6.07	0.80	57.0	636.1		<b></b>		
	19.35	0.2	7.20	0136	6.03	0.15	25.9	P 00 00	8.45 Woot R			
16:40	11.62	02	17.03	0133	5.01	0.73	220	659.3		1		
16:45	1001	02	17.07	1.13Z	5.11	0.70	775	1001.5				
16.50	18:74	0.2	17.05	0 272	7	0.68	23,5	1011	9. Stwood Rf	X/ 1.77 W/R		
K. 55	18.90	0.2	16.99	0.133	5.95	065	25.)	681.1	1. Mujocet K-j	1.77 49 1		
			;									
					-							
					·							
ANALYSES	S: TCE ac	cording to E	EPA Method 826	0			SIGNATURÉ	///	111			

FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT	PROJECT CTS of Asheville, Inc. Superfund Site JOB NUMBER 6252-16-2012 DATE 11/7/18											
WELL/SAM	PLE NUMB	ER	1W-ZZ	ACTIV	TY TIME	Start 09	LU En	10.130	7) TIME 10:30			
QC SAMPLE	S COLLEC	TED	NΑ	ASSOC	CIATED TRII	BLANK	TB-32	2				
WATER LEVEL / PUMP DATA  INITIAL DTW  SCREENED INTERVAL  DEPTH OF INTAKE  PUMP TYPE  AMOUNT PURGED  Peristaltic  Variable-speed submersible  S2.5 ft (toc)  Bladder												
PURGE DATA												
TIME												
0940	0.000 0.000 0.000 0.000 0.000 0.000											
0945	1993	0.15	17.22	2.544	11.71	2.08	26.9	189.5				
0950	19.95	0.15	17.32	2.523	11.73	1.39	19.1	165.5	202 Worth			
0955	1998	0.15	17.40	2.417	11.73	1.14	17.5	1977				
1000	20.02	0.15	17.35	2.073	11.64	0.95	7.31	138.4	0.92 w/out R			
1005	20.04	0.15	17.37	1.884	11.61	0.80	4.95	132.1				
1010	20.05	0.15	17.43	1.799	11.57	0.81	4.20	130.3	0.59 w fut R			
10:15	2005	0.15	17.48	1.631	11.53	0.79	4.19	128.7				
10:20	70.05	0.15	17.50	1.468	11.47	0.78	3.85	124.5				
10:25	20,05	0.25	1238	1.257	11.37	0.88	3.99	108-0	1.72 w/oat R /2.92 w/R			
10:30	BMC 11	17/18			·				/			
									·			
					-							
ANALYSES	: TCE ac	cording to E	PA Method 826	0			SIGNATURÉ:	Klas	M			

				FIELD D	ATA RECOR	₹D - GR	OUNDW	ATER SAI	MPLING	
	PROJECT	CTS of		nc. Superfund Sit		JOB NU	JMBER 6	252-16-2012	11.76	DATE 11/7/18
	WELL/SAM	PLE NUMBI	ER ///	W-22A	ACTIVI	TY TIME	Start 10.	LO End	:   . 5V	TIME _//:36
, more	QC SAMPLE	S COLLECT	TED N	A	ASSOC	CIATED TRIF	BLANK	TB-3	2	
	WATER LEV INITIAL DTW	<del></del>		final (toc) DTW	20.2	ft (toc)	PUMI	Peristaltic  Variable-speed	submersible	AMOUNT PURGED  W 2.5 gal.
	SCREENEI INTERVAL	9 65	-70ft (t	ogs) DEPTH		S ft (toc)		Bladder		
Ī						PURGE	DATA			
	TIME	D <b>TW</b> (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
	10:24	19.98	0.2	17.25	0.090	8.15	1.75	780	160.9	11.35 Wout R
	70.50	20.08	0.2	17.56	0.080-	764	0.84	24.0	1985	1,64 w/outs
	10:55	20.18	O.Z	17.56	0.084	7.34	0.7.3	16.5	210.4	
RN 1/2	10.80	20.00	0.2	17.52	0078	7.27	0.70	11.4	218.8	
	11:05	20.21	0.2	17.50	0.075	7.1.1	0.71	8.21	224.1	
	12:10	2021	0.2	17.50	0.071	6.94	0.75	3-05	225.8	074wbest R
	11:15	20.21	02	7.51	0.067	6.73	0.86	2-88	225.3	
	11.20	20.21	0.2	17.SZ		6.63	0.85	2.47	223.4	
	11.25	Corl	0.2	17.51	0.066	6.53	0.82	216	224.5	0.12 w/ped-l / 0.61 w/R
	<u> </u>					!				
		*								
							*			
							<u>-</u>			
		-								
	<u> </u>				-					
	ANALYSES NOTES:	: TCE ac	cording to E	PA Method 8260	)			SIGNATURE:	Mily	MM

	FIEL	.D INSTR	UME	NT CAL	.IBRAT	ION F	RECOR	D	
Project Name: C	CTS of Asheville, Inc.	Superfund Site					Date:	3/11/	19
Project Number:		,							M. CLARK
		<u> </u>						•	
_	Meter Calibration		andard \	<del></del>			Meter Value		Acceptance Criteria
Manufacturer:			4_		•	_	400	_su	+/- 10% of standard
Model No.:	556 MPS		7		•	pH:	6.96 10.00	_su su	+/- 10% of standard
Unit ID:	PINE 18930	pH:	10 1.413	SU (hig mS/cm		pn:_ uctivity:	4 .	_SU SU	+/- 10% of standard +/- 10% of standard
		Conductivity: ORP:	240	mV	Cond		240.0	_	+/- 10% of standard
		OKF	240			OKF	210.0	_''''	7- 10% of standard
Turbidity Mete	r Calibration			Standard V	<u>alue</u>		Meter Val	<u>ue</u>	Acceptance Criteria
Manufacturer:		_	_		NTU (low)	v)NTU			+/- 10% of standard
						_		_NTU	+/- 10% of standard
Unit ID:		NTU (high)				_		_NTU	+/- 10% of standard
			_		NTU (high)	_		_NTU	+/- 10% of standard
Photoionizatio	n Detector			·					Acceptance Criteria
Manufacturer:		Backgrou	ınd:		ppmv	Mete	er:	ppmv	within 5 ppmv of Zero
Model No.:		Span Ga	s:		ppmv	Mete	er:	ppmv	+/- 10% of standard
Unit ID:		-							
Calibration So	urces		·						
	Source		<u>Value</u>		Lot N	<u>umber</u>	<u>E</u> 2	piration Dat	<u>e</u>
pH (low)	PINE		4	_\$U	8G18		_ <u>_</u>	pt.ZC	
pH (med)	PINE		7	_su	8615			2p+.7c	
pH (high)	PINE		10	_8U	<u>861</u>	<u> 55 ·                                  </u>	<u>50.</u>	pt 20	<del></del>
Conductivity	PINE		.413	_mS/cm	8G14			c. 20	
ORP:	PING		240	_mV	333	6	<u> </u>	+. 23	<del></del>
Turbidity (low)			•	_NTU					<del></del>
Turbidity (med):				_NTU					
Turbidity (high):				_NTU					
Turbidity (high):		<u> </u>		_NTU					
PID gas:				_ppmv					<del></del>
NOTES:			<u> </u>					_	

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

FIE	LD INS	<b>TRUME</b>	NT CA	LIBRAT	ION F	RECOR	2D	
Project Name: CTS of Asheville, Inc	Superfund	Site				Date:	3/12/	19
Project Number: 6252-16-2012	•					Name:	Redus	V Clark
		01 1 1					<del></del>	
Water Quality Meter Calibration		Standard				Meter Value 4.02	_	Acceptance Criteria
Manufacturer; PMC Y81 Hanna		1: <u>4</u>		•	pH:	6.99	_su	+/- 10% of standard
Model No.: que .556-MPS <u>Ht9812</u> Unit ID: 712/19 0247 0167 994	_	1:7			pH:	0.77 NA	_su	+/- 10% of standard
OIIILID: 02920127 1927	_	1: <u>10</u> /: 1.413	SU (h BS/cr		pH:_ uctivity:	1.414	SU mS/cm	+/- 10% of standard +/- 10% of standard
		r: 240	<u> </u>	n Cono	ORP:	NA	mV	+/- 10% of standard
~	ON				OKI	70-4	_''''	17- 10 % Of Standard
Turbidity Meter Calibration			Standard	<u>Value</u>		Meter Va	<u>ue</u>	Acceptance Criteria
Manufacturer:	_			NTU (low)			NTU	+/- 10% of standard
Model No.:	<b>-</b>		<u> </u>	NTU (med)	_		NTU	+/- 10% of standard
Unit ID:	_	_		NTU (high)			NTU	+/- 10% of standard
		_		NTU (high)	_		NTU	+/- 10% of standard
Photoionization Detector						· · · · · · · · · · · · · · · · · · ·		Acceptance Criteria
Manufacturer:	Back	ground:		ppmv	Mete	ər:	ppmv	within 5 ppmv of Zero
Model No.:		Gas:	·	ppmv				+/- 10% of standard
Unit ID:	<b>-</b>							
Calibration Sources								<u>.                                    </u>
Source		<u>Value</u>		Lot N	<u>umber</u>	<u>E</u>	xpiration Dat	<u>e</u>
pH (low) PINC/AGA	RINCENIY_	4	_su	7GIC	706 <u> </u>		29/19	
pH (med) PINC/AQUA	<u> PHOGUIX                                    </u>	7	_su	8GAG	87	Ja	, zc2	<u></u>
pH (high)		10	_su			<del></del>	72.751.7	<del>2</del>
Conductivity PINE		1.413	_mS/cm	8GFE	59	_ <u>56</u>	lne 2001	3/12/19
ORP:	<del></del>	240	_mV				<del></del>	
Turbidity (low)			_NTU '	<u> </u>				····
Turbidity (med):			_NTU					<u> </u>
Turbidity (high):			_NTU					<u></u>
Turbidity (high):			_NTU					
PID gas:			_ppmv	<u> </u>	<del></del>	<del></del>		<u></u>
NOTES:								

If a meter reading is not within acceptance criteria, clean or replace probe and re-calibrate, or use a different meter if available. If project requirements necessitate use of the instrument, clearly document on all data sheets and log book entries that the parameter was not calibrated to the acceptance criteria.

			FIELD C	ATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, I	nc. Superfund Si	te	JOB N	UMBER 6	252-16-2012		DATE 3/11/19
WELL / SAN	IPLE NUMB	ER	NW-21	ACTIV	ITY TIME	Start 10	.30 En	1/./	5 TIME 1/.75
QC SAMPLE	S COLLEC	TED F	0-37	ASSO	CIATED TRII	PBLANK	TB-34		
WATER LEV INITIAL DTW SCREENE	12	.96 m	(toc) FINAL DTW	13.1			<b>P TYPE</b> Peristaltic Variable-speed	submersible	AMOUNT PURGED  ~ 1/12 gal.
INTERVAL		45 ft (1	bgs) INTAK		ft (toc)		Bladder		
					PURGE	DATA			,
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рH	DO (mg/L)	TURBIDITY _(N#U)	ORP (mV)	COMMENTS
033	13.00	0.1	15:45	1043	4.20	15.58	purple	859.8	Stopped prigns for Burn
1047	13.05	1	13.89	1217	396	18.54		904.4	astimated Earc = 151m/le Carriere CR = +++
1051	13.08		14.40	1111	4.02	1655		902-8	= +++
1056	13.10		14.41	1111	4.03	16.85		902.6	= +++
1100	1310		14.43	1109	4.04	17.01	.	903.2	= +++
1104	13.10		14.60	1106	405	17.72		904.2	: +++
1108	13.10		14.50	1108	4.04	16.87	V	904.8	- <del>- 1++</del>
1112	13:10	$\forall$	14.51	1107	403	16.55	J.	904.5	c + t+
									113-151 mal based on color chart
						i			
ANALYSES	: EPA 82	60 (TCE, cis	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)	<u> </u>		<u> </u>	
				to unprese		YOA CO	rtamas	1-1-1-1-1	

	FIELD DATA RECORD - GROUNDWATER SAMPLING											
PROJECT	CTS of	Asheville, Ir	nc. Superfund Sit	te	JOB NU	JMBER 6	252-16-2012		DATE 3/11/19			
WELL/SAM	PLE NUMBI	ER GU	1-132-4	8 ACTIVI	TY TIME	Start 13-	:40 End	14.1	O TIME 14.110			
QC SAMPLE	S COLLECT	ED	NA	ASSOC	CIATED TRIF	BLANK	713-34	1				
INITIAL DTW SCREENED												
INTERVAL			Ogs) INTAKE		PURGE		Bladder					
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY	pH	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS			
13.50		0.1	17.17	864	4.84	3.92	' '		Colorimeter=+++			
13:54	20.81		:17.11	968	4.83	4.00	1	805.6				
135%	121.12		16.76	925	9.83	3.38		819.6				
14:02	22.31		16.58	910	481	3.15		822.6				
14:06	23.40		16.31	889	4.73	293	V	G31.3	\h/			
	23.45	1 J	16.12	886	4.69	<u> </u>	1	837.2				
						,			113-151 mg/L based on color chart			
							<b>-</b>	 				
							ļ					
			<u> </u>		ļ							
	ļ <u>1</u>		ļ	1	<u></u>							
					<u> </u>							
			<u> </u>		<u> </u>							
		<u> </u>										
ANALYSES	i: EPA 82	:60 (TCE, ci	is-1,2-DCE, trans	s-1,2-DCE, and vinyl	chloride)							

	FIELD DATA RECORD - GROUNDWATER SAMPLING												
PROJECT													
WELL / SAN	MPLE NUMBI	ER 6W	-132-5	S ACTIVI	TY TIME	Start / 24/	:30 End	15:30	TIME 1/5-30				
QC SAMPLI	ES COLLECT	red/	VA	ASSOC	CIATED TRIE	BLANK	TB-30	1					
NATER LEVEL / PUMP DATA  INITIAL DTW  SCREENED INTERVAL  DEPTH OF INTERVAL  PUMP TYPE  AMOUNT PURGED  Variable-speed submersible  SS fi (toc)  Bladder													
TIME	DTW (ft)	PURGE RATE (L/mln)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS				
15:01	2361	0.1	1447	981	4.51	3.85	Purple.	871.0	Colonneter=+++				
15:05	23.81	0.1	14.29	956	4.25	369		889.4					
B:10	24.39	0.1	1489	1228	4.30	3.S6		896.2					
15:15	24.82	0.1	15.11	1292	4.28	3.59		899.7					
1.5	2459	0.1	15.00	1354	4.31	3.71.		9012					
1	24.51	01	15.22	1370	4.30	3.71		901.8					
	24.92		15.21	1390	4.31	3.74		902.3					
15:30	24.30	0.2	15.12	1403	4.30	3.82	V	902-6	151-188 mall boses on color chart				
				. 11181									
			<u></u>			<u> </u>							
ANALYSE:	S: EPA 82	:60 (TCE, ci	s-1,2-DCE, trans	:-1,2-DCE, and vinyl	chloride)	1							

			FIELD C	OATA RECO	RD - GR	OUNDW	ATER SA	MPLING	
PROJECT	CTS of	Asheville, lı	nc. Superfund Si	ite	JOB N	UMBER 6	3252-16-2012		DATE 3/11/19
WELL / SAM	IPLE NUMB	ER Ci	W-131	.59 ACTIV	ITY TIME	Start /6:3	00 En	a 17:20	TIME 17:20
QC SAMPLE	S COLLEC	TED	NA		CIATED TRI	P BLANK	113-34	;	
WATER LEV INITIAL DTW  SCREENEI INTERVAL	D 56	63 31 14.63	RAC 3 /// FINAL (toc) DTW  DEPTH bgs) INTAKE	160 10F 50	ft (toc)		P TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  W 1/2 gal.
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
16:50	15.92	0.1	17.50	3353	5.61	16.37	pork	60.8	the mets
1634	1530	0.1	17.82	3298	5.63	7.75	1 1	820.Z	
6.58	15.30	01	18.05	3213	5.66	7.31		821.4	
17.02	15.55	01	1807	3175	5.70	7.08	j.	818.8	
17.00	\$15.73	0.2	1297	3208	5.71	715		8162	
17:10	15.95	0.1	17.93	3248	5.70	701		816.4	
17:11	16.00	01	17.92	3287	5.72	7.23	11/	815.0	V
	<u> </u>								151-188 mg/L based
									on color chart
		<u> </u>							
							ļ	ļ	
					<u>.</u>				
ANALYSES	: EPA 82	260 (TCE, cis	s-1,2-DCE, trans	s-1,2-DCE, and vinyl	chloride)				

			FIELD D	ATA RECOR	RD - GR	OUNDW	ATER SAM	<b>VIPLING</b>	
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB NI	JMBER 62	252-16-2012		DATE 3/12/19
WELL / SAM	IPLE NUMBI	er Gu	1-121-	45 ACTIVI	TY TIME	Start 2/;	45 End	12:1	C TIME 12:10
QC SAMPLE	S COLLECT	TED	NA	Assoç	JATED TRIF	BLANK	T13-34		
WATER LEV INTIAL DTW	17.	O. #	(toc) FINAL DTW		43 ft (toc)		TYPE Peristaltic Variable-speed	submersible	AMOUNT PURGED  1/2 gal.
SCREENEI INTERVAL	42-	-47 _{tt (t}	DEPTH bgs) INTAKI		ft (toc)		Bladder		
	· ,				PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/m/ln)	TEMP (C%)	SPECIFIC CONDUCTIVITY (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
11:50	13.96	0.2	15.7	73999	4.13	DNM	Dark	DNM	Colonneter = +++
11:55	1		14.5		4.12		10.70		
12:00			//5.5		3.89				
12:05		1-	15.1		3,94				<u> </u>
12:10	14.23	V	15.2	W	3.90	V		V	Sample took 6.7
		-							pinches of asorbit
					<u></u>				acid to neutralize
									188-376 mill
									according to color
									-
					<u> </u>				
		<u> </u>			<u> </u>				
		<u> </u>	<u> </u>				!		
ANALYSES	i: EPA 82	?60 (TCE, cis	s-1,2-DCE, trans	s-1,2-DCE, and vinyl	chloride)				

			FIELD D	ATA RECO	RD - GR	OUNDW	ATER SAM	/IPLING	
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB NU		252-16-2012		DATE 3/12/19
WELL / SAM	PLE NUMBE	ER GV	N-1224	46 ACTIVI	TY TIME	Start /4:	O End	14:46	TIME 140
QC SAMPLE	S COLLECT	ED	NA	ASSO	HATED TRIP	BLANK	TB-34	1	
WATER LEV INITIAL DTW	EL/PUMPI	17	final. (toc) DTW	14.5	/ ft (toc)	PUMI	P TYPE Peristaltic Variable-speed	submersible	AMOUNT PURGED  1 /2 gal.
SCREENEI INTERVAL	43	- 48 ft (1	DEPTH ogs) INTAK		ft (toc)		Bladder		
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY (mS/cm)	pН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
14:18	14.19	0.1	18.1	> 3999	3.84	DNM	Dark profe	DMM	
14:23	14.33		17.8		3.28	1	110		
14:27	14.38		17.5	(	3.75				
7431	14.41	+	17.6 17.4		3.69				188.376 nall
14:39	14.46 14.51		17.3	D	<b>3.</b> 67			4	188.376 mg/c K-perma-garate according to Clart
17/	1 1 2 1	4	17.3	V	7.07			, KI	3000
									300
						T ₂			
						•		<u> </u>	
					:				
ANALYSES	EPA 82	160 (TCE, ci	is-1,2-DCE, trans	:-1,2-DCE, and viny	chloride)	iol ta	ne utra	liza b	-porningenato

			FIELD D	ATA RECOF	RD - GR	OUNDW	ATER SAM	/IPLING	
PROJECT	CTS of	Asheville, Ir	nc. Superfund Si	te	JOB NU	JMBER 6	252-16-2012		DATE 3/12/19
WELL / SAM	IPLE NUMB	er M	W-211	ACTIVI	TY TIME	Start 16	:0 <i>0</i> _{End}	16:40	тіме 16:40
QC SAMPLE	S COLLEC	red	NA	ASSOC	IATED TRIF	BLANK	TB-34		
WATER LEV INITIAL DTW SCREENEI INTERVAL	13	00	FINAL DTW DEPTH		(/		P TYPE Peristaltic Variable-speed Bladder	submersible	AMOUNT PURGED  with the purchase of the purcha
					PURGE	DATA			
TIME	DTW (ft)	PURGE RATE (L/min)	TEMP (C°)	SPECIFIC CONDUCTIVITY MS (mS/cm)	рН	DO (mg/L)	TURBIDITY (NTU)	ORP (mV)	COMMENTS
16:15	13.15	0.1	17.0	223	4.74	DNM	Clear	DNM	Colorinater = 0.5
16:19	13.23	0.1	16.8	185	5.z3		light purple		light purple tint
16:23	13.25	0.1	17.0	220	5.68				Colormeter = 0.1
16:27	13.27	0.1	16.9	189	5.65				=0.6
	13.25	0.1	16.3	119	6.25				= 1.0
	13.27 13.26	0.1	16.1 16.3	118 115	6.21			1	= 0,5
16.39	17.65	Ui,	46.7		6.27	$\lor$	4	V	-0.2
				-					
ANALYSES	6: EPA 82	260 (TCE, ci:	s-1,2-DCE, trans	-1,2-DCE, and vinyl	chloride)				

CTS of Asheville, Inc. Superfund Site ISCO Treatability Study Evaluation Report Wood Project 6252-16-2012 May 3, 2019

# APPENDIX B MONITORING AND EMPLACEMENT WELL CONSTRUCTION RECORDS

# **EPW CASING CONSTRUCTION DETAIL**

CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

EPW-1

**EPW ID** 

**Date of Installation:** 1/10/18

**Drilling Method:** 8" diameter sonic

**Contractor:** Geologic Exploration

**Driller:** Andrew Gloege (NC #4314)

**Depth to Water:** N/A

**Northing:** not surveyed

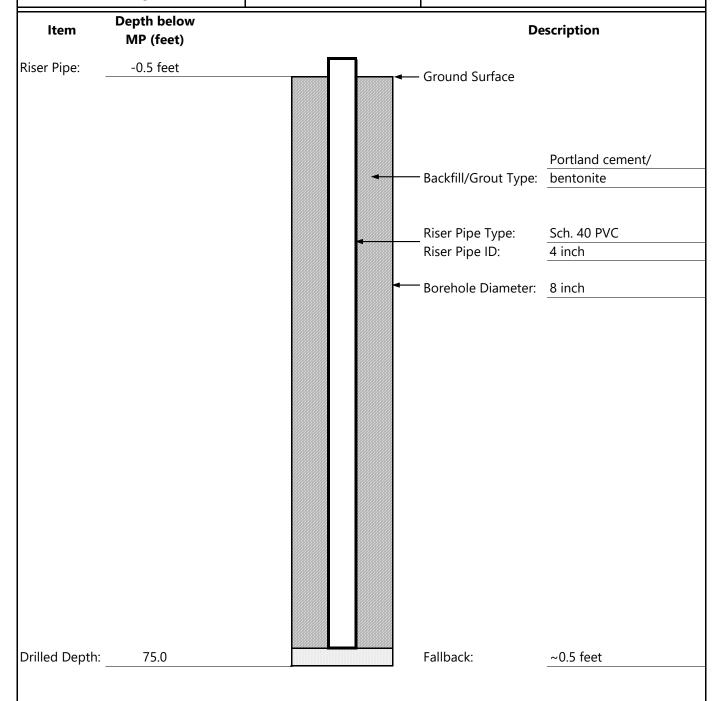
Easting: not surveyed

Completed By: Susan Avritt, PE, LG

Measuring Point (MP)

**Type:** ground surface

**Elevation:** approx. 2,142 feet msl



Notes: Drill rig: Geoprobe 8150 LS

Centralizers installed at 10, 25, 40, 55, and 70 feet below ground surface.

# **EPW CASING CONSTRUCTION DETAIL**

CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

EPW ID

EPW-2

**Date of Installation:** 1/11/18

**Drilling Method:** 8" diameter sonic

**Contractor:** Geologic Exploration

**Driller:** Andrew Gloege (NC #4314)

**Depth to Water:** N/A

Northing: not surveyed

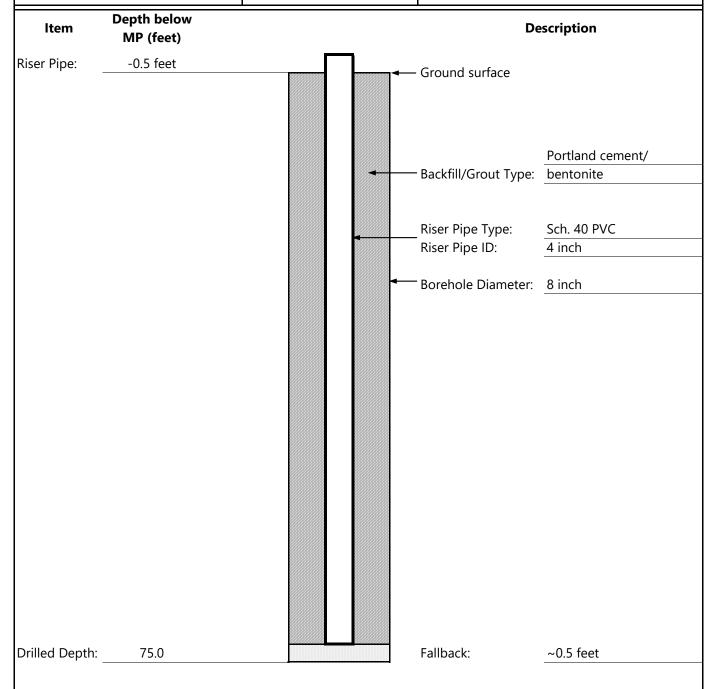
Easting: not surveyed

Completed By: Susan Avritt, PE, LG

**Measuring Point** 

**Type:** ground surface

Elevation: approx. 2,143 feet msl



Notes: Drill rig: Geoprobe 8150 LS

Centralizers installed at 15, 30, 42, 55, and 70 feet below ground surface.

# **EPW CASING CONSTRUCTION DETAIL**

CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

EPW ID

EPW-3

**Date of Installation:** 1/11/18

**Drilling Method:** 8" diameter sonic

**Contractor:** Geologic Exploration

**Driller:** Andrew Gloege (NC #4314)

**Depth to Water:** N/A

Northing: not surveyed

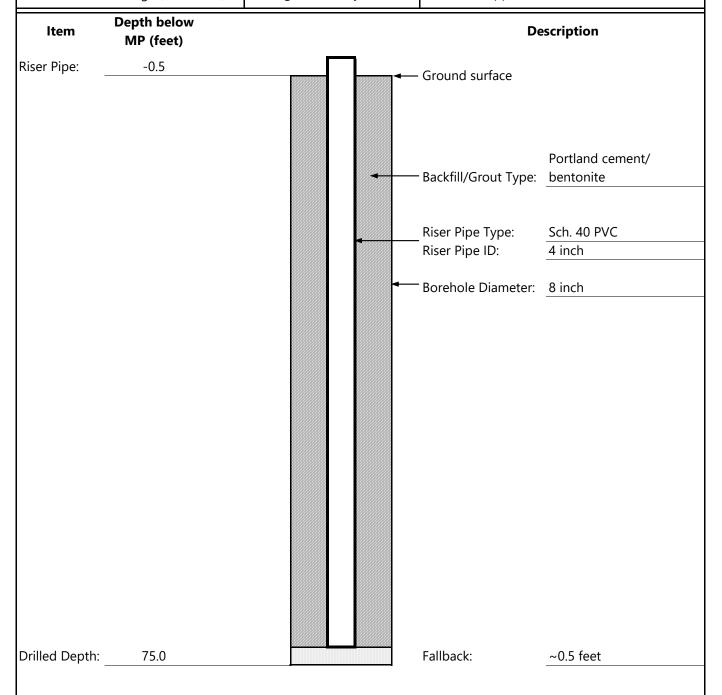
Easting: not surveyed

Completed By: Susan Avritt, PE, LG

**Measuring Point** 

**Type:** ground surface

Elevation: approx. 2,143 feet msl



Notes: Drill rig: Geoprobe 8150 LS

Centralizers installed at 10, 25, 40, 55, and 70 feet below ground surface.

CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

MW-19

**WELL ID** 

**Date of Installation:** 11/30/17

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

Depth to Water:

21.72 feet bgs (12/1/17)

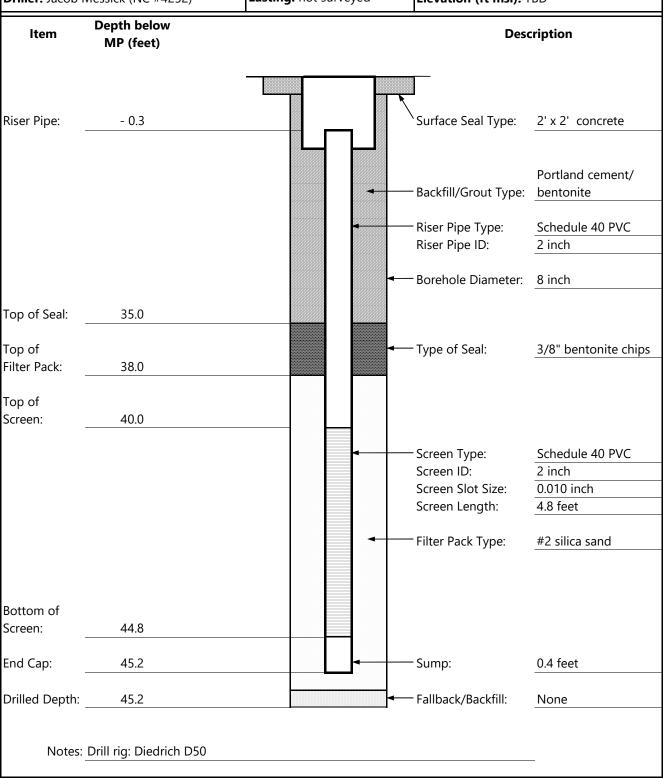
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

WELL ID

MW-19A

**Date of Installation:** 11/30/17

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

Depth to Water:

21.05 feet bgs (12/1/17)

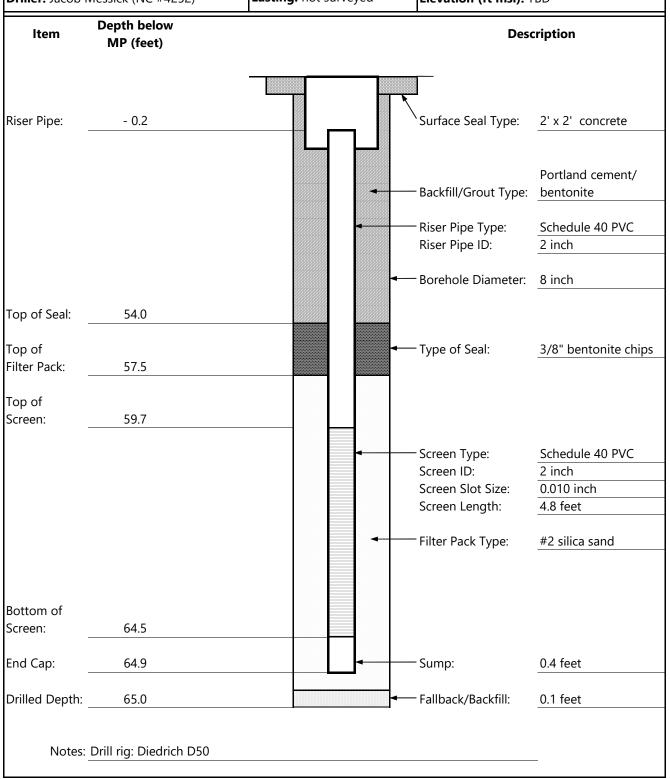
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

MW-20

**WELL ID** 

**Date of Installation: 12/5/17** 

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

**Depth to Water:** 

19.35 feet bgs (12/6/17)

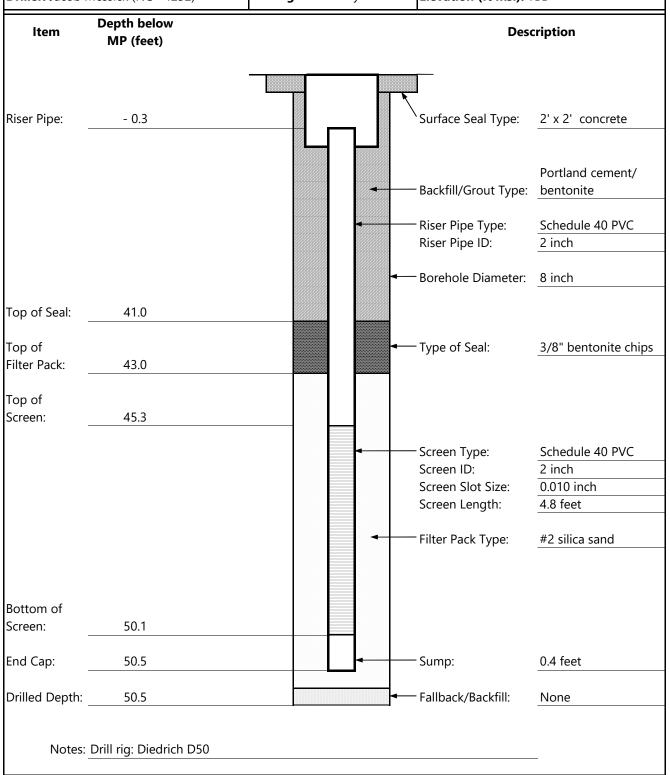
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

MW-20A

**WELL ID** 

**Date of Installation: 12/6/17** 

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

**Depth to Water:** 

20.43 feet bgs (12/6/17)

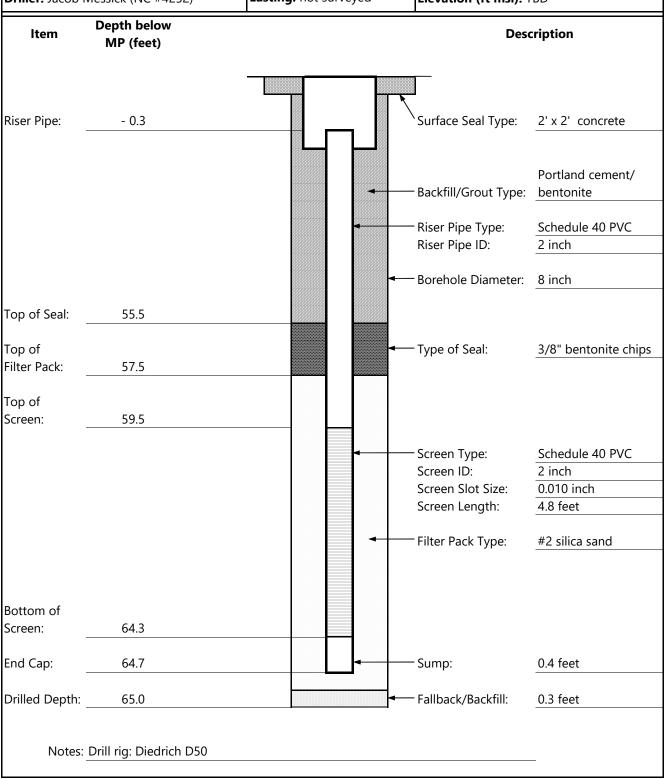
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

MW-21

**WELL ID** 

Date of Installation: 12/4/17

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

**Depth to Water:** 

20.73 feet bgs (12/28/17**)** 

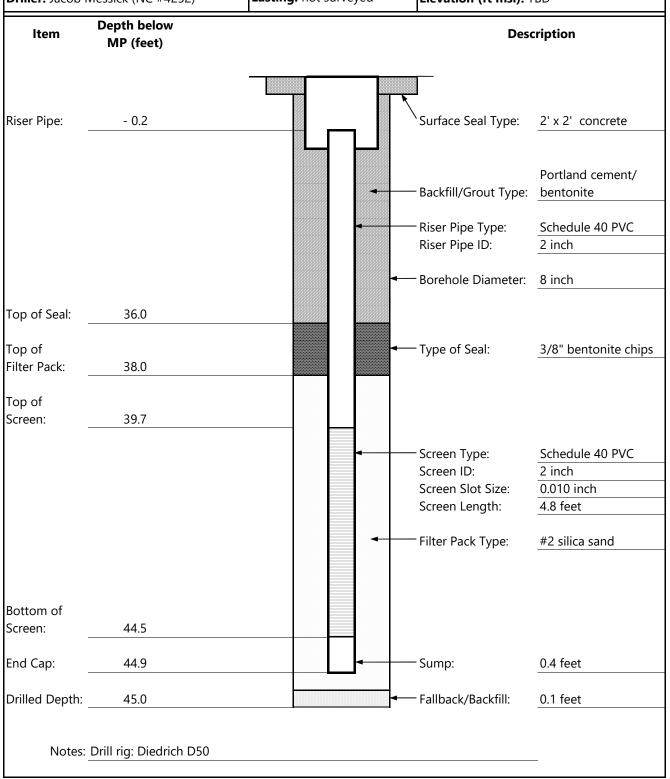
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

WELL ID MW-21A

**Date of Installation: 12/5/17** 

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

Depth to Water:

20.20 feet bgs (12/28/17)

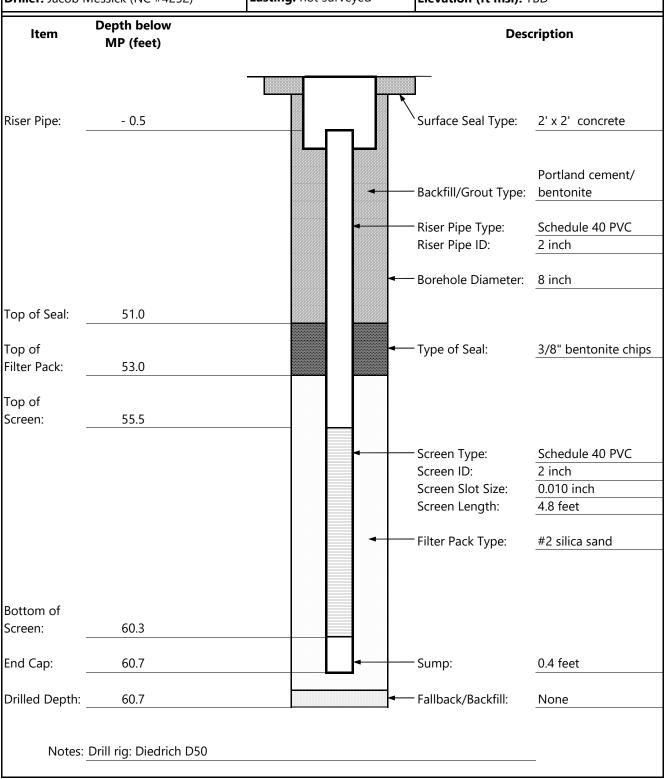
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

MW-22

**WELL ID** 

Date of Installation: 12/4/17

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

Depth to Water:

21.07 feet bgs (12/5/17)

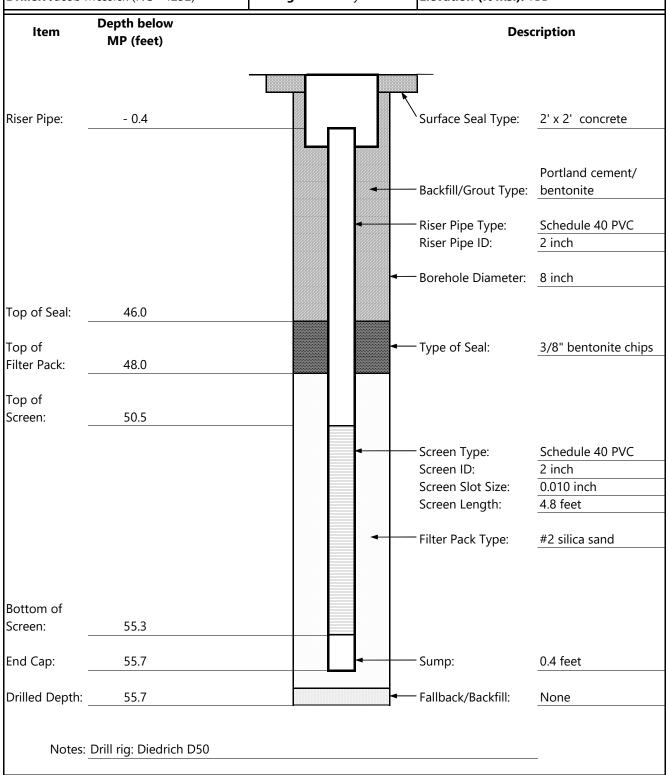
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



CTS of Asheville, Inc. Superfund Site Wood Project 6252-16-2012.06

**WELL ID MW-22A** 

**Date of Installation: 12/1/17** 

Drilling Method: 4.25" ID auger

**Contractor:** Geologic Exploration

Driller: Jacob Messick (NC #4252)

**Depth to Water:** 

21.61 feet bgs (12/5/17)

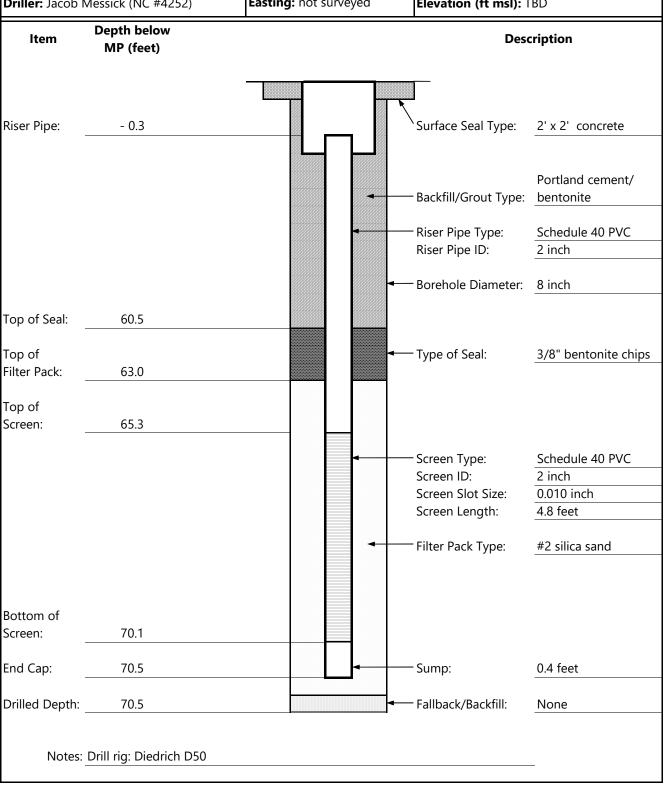
Northing: not surveyed

Easting: not surveyed

Completed By: Rodney Clark, LG

Measuring Point (MP)

**Type:** ground surface



WELL CONSTRUCTION R		For Inte	rnal (	Jse ONLY	-						
This form can be used for single or multiple well	S										
1. Well Contractor Information:		14 W	ATE	R ZONES							
JACOB MESSICK		FROM		TO		DESCRIPT	ION				
Well Contractor Name			ft.		ft.						
A - 4252			ft.		ft.						
NC Well Contractor Certification Number		15. OI FROM	JTER	CASING	(for	multi-cased v		OR LIN		licable)   MATE	RIAL
GEOLOGIC EXPLORATION	N, INC		ft.		ft.		in.				
Company Name		16. IN FROM	NER	CASING	OR T	UBING (geo		al closed		MATE	PLIAL
2. Well Construction Permit #:		0.0	ft.	40.0	ft.	2.0	in.		H 40	MAIL	PVC
List all applicable well construction permits (i.e.	County, State, Variance, etc.)	0.0	ft.	10.0	ft.		in.		11 10		
3. Well Use (check well use):		17. SC	REE					1.74			
Water Supply Well:		40.0	ft.	то 45.0 ^f		2.0 in.		I SIZE	SCH		MATERIAL PVC
□Agricultural	□Municipal/Public	40.0	ft.	-10.0	t.	2.U in.	, (	010	301	140	FVC
Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)	18. GF			<u>"   </u>						
□Industrial/Commercial	□Residential Water Supply (shared)	FROM		ТО		MATERIAL		EMP	LACEMEN	т метн	OD & AMOUNT
□Irrigation Non-Water Supply Well:		0.0	ft.	35.0	ft.	PORTLAND BEN	TONITE	5	SLURRY	<u>Y</u>	
☑Monitoring	□Recovery		ft.		ft.						
Injection Well:		1	ft.		ft.						
□ Aquifer Recharge	☐Groundwater Remediation	19. SA FROM	ND/G	TO	PACE	(if applicab			EMPLAC	EMENT	METHOD
☐ Aquifer Storage and Recovery	□Salinity Barrier	38.0	ft.	45.0	ft.		-40				CA SAND
□ Aquifer Test	□Stormwater Drainage		ft.		ft.						
□ Experimental Technology	□Subsidence Control		ILLI		(attac	h additional					
☐Geothermal (Closed Loop) ☐Geothermal (Heating/Cooling Return)	☐Tracer ☐Other (explain under #21 Remarks)	FROM 0.0	ft.	35.0	ft.	DESCRIPT					grain size, etc.)
		J	ft.		ft.				N SILTY		I
4. Date Well(s) Completed: 12/05/17	Well ID#MW-18	35.0	ft.	45.0	ft.			3KUV	VN/TAN	SILI	
5a. Well Location:			ft.		ft.						
CTS FACILITY			ft.		ft.						
Facility/Owner Name	Facility ID# (if applicable)		ft.		ft.						
235 MILLS GAP ROAD AS	SHEVILLE 28803		ft.		ft.						
Physical Address, City, and Zip		21. RE	MAR	KS		<u> </u>					
BUNCOMBE				BENTO	NIT	E SEAL F	RON	И 35.0	TO 38	.0 FE	ΞT
County	Parcel Identification No. (PIN)										
5b. Latitude and Longitude in degrees/m (if well field, one lat/long is sufficient)	inutes/seconds or decimal degrees:	22. Cer	tifica	ation:	,	mo		r.		-	
35° 29' 36.69" N 8	32° 30' 34.46" w		1	100	)	07.0		7		12/	08/17
( I- ( ) Alexandra CD		Signatur	e of C	ertified W	ell Co	ontractor				Date	
6. Is (are) the well(s):   ☐Permanent or	□Temporary										ed in accordance idards and that a
7. Is this a repair to an existing well:  If this is a repair, fill out known well construction	□Yes or ☑No	copy of t	his re	cord has t	een p	rovided to the	well o	wner.			
repair under #21 remarks section or on the back						ional well d					
8. Number of wells constructed:1						this page to may also att					details or well
For multiple injection or non-water supply wells	ONLY with the same construction, you can					•			pages		
submit one form.	45.0			L INST							
9. Total well depth below land surface: _ For multiple wells list all depths if different (exan	nple- 3@200' and 2@100')			to the fo			orm v	vithin 3	30 days c	of comp	oletion of well
10. Static water level below top of casing: If water level is above casing, use "+"	:(ft.)		Ι			ater Quality Service Cen					
11. Borehole diameter: 8.0	(in.)	24b. <u>F</u> c	or In	jection \	Vells	: In additio	n to s	ending	the form	to the	address in 24a
ΔΠ	GER	above,	also	submit a	сор	y of this fo					oletion of well
(i.e. auger, rotary, cable, direct push, etc.)			to the fo		0						
FOR WATER SUPPLY WELLS ONLY	:	Di ]	visio			uality, Und Service Cen					
13a. Yield (gpm) N	lethod of test:	24c. Fo	r Wa	es) abov	ply &	Injection V	Vells:	: In ad	dition to s	sending	the form to
13b. Disinfection type:	Amount:	the address(es) above, also submit one copy of this form within 30 days completion of well construction to the county health department of the county									
		where o	onstr	ucted.							

This form can be used for single or multiple wells	For Internal Use ONLY								
1. Well Contractor Information:									
JACOB MESSICK	14. WATER ZONES FROM TO DESCRIPTION								
Well Contractor Name	ft. ft.								
A - 4252	ft. ft.								
NC Well Contractor Certification Number	15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)								
GEOLOGIC EXPLORATION, INC	FROM TO DIAMETER THICKNESS MATERIAL ft. ft. in.								
Company Name	16. INNER CASING OR TUBING (geothermal closed-loop)								
2. Well Construction Permit #:	FROM TO DIAMETER THICKNESS MATERIAL								
List all applicable well construction permits (i.e. County, State, Variance, etc.)	- 0.0 ft. 60.0 ft. 2.0 in. SCH 40 PVC								
3. Well Use (check well use):	17. SCREEN								
Water Supply Well:	FROM TO DIAMETER SLOT SIZE THICKNESS MATERIAL								
□ Agricultural □ Municipal/Public	60.0 ft. 65.0 ft. 2.0 in010 SCH 40 PVC								
□Geothermal (Heating/Cooling Supply) □Residential Water Supply (single									
□Industrial/Commercial □Residential Water Supply (shared	)   18. GROUT   FROM TO   MATERIAL   EMPLACEMENT METHOD & AMOU								
□Irrigation Non-Water Supply Well:	0.0 ft. 54.0 ft. PORTLAND BENTONITE SLURRY								
☑Monitoring □Recovery	ft. ft.								
Injection Well:	ft. ft.								
☐ Aquifer Recharge ☐ Groundwater Remediation	19. SAND/GRAVEL PACK (if applicable) FROM TO MATERIAL EMPLACEMENT METHOD								
☐ Aquifer Storage and Recovery ☐ Salinity Barrier	57.0 ft. 65.0 ft. 20-40 FINE SILICA SAND								
□Aquifer Test □Stormwater Drainage	ft. ft.								
□Experimental Technology □Subsidence Control	20. DRILLING LOG (attach additional sheets if necessary)								
□ Geothermal (Closed Loop) □ Tracer □ Geothermal (Heating/Cooling Return) □ Other (explain under #21 Remark	s)   FROM   TO   DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)   O.0   ft.   35.0   ft.   RED/TAN SILTY CLAY								
	3) 0.0 COLO TREDITATORA								
4. Date Well(s) Completed: 12/05/17 Well ID# MW-19A	35.0 ft. 65.0 ft. BROWN/TAN SILT								
5a. Well Location:	ft. ft.								
CTS FACILITY	ft, ft,								
Facility/Owner Name Facility ID# (if applicable)	ft. ft.								
235 MILLS GAP ROAD ASHEVILLE 28803	ft. ft.								
Physical Address, City, and Zip	21. REMARKS								
BUNCOMBE	BENTONITE SEAL FROM 54.0 TO 57.0 FEET								
County Parcel Identification No. (PIN)									
5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees: (if well field, one lat/long is sufficient)	22. Certification:								
35° 29' 36.69" 82° 30' 34.46" ,	low massey 12/08/17								
( I_/)	Signature of Certified Well Contractor Date								
6. Is (are) the well(s): ☑Permanent or ☐Temporary	By signing this form, I hereby certify that the well(s) was (were) constructed in accorde with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and the								
7. Is this a repair to an existing well: □Yes or ☑No  If this is a repair, fill out known well construction information and explain the nature of the	copy of this record has been provided to the well owner.								
repair under #21 remarks section or on the back of this form.	23. Site diagram or additional well details: You may use the back of this page to provide additional well site details or very many uses the back of this page.								
8. Number of wells constructed:  For multiple injection or non-water supply wells ONLY with the same construction, you can	construction details. You may also attach additional pages if necessary.								
submit one form.	SUBMITTAL INSTUCTIONS								
9. Total well depth below land surface: 65.0  For multiple wells list all depths if different (example- 3@200' and 2@100')	t.) 24a. For All Wells: Submit this form within 30 days of completion of v construction to the following:								
10. Static water level below top of casing:	Division of Water Quality, Information Processing Unit, 1617 Mail Service Center, Raleigh, NC 27699-1617								
11. Borehole diameter: 8.0 (in.)	24b. For Injection Wells: In addition to sending the form to the address in above, also submit a copy of this form within 30 days of completion of v								
12. Well construction method: AUGER (i.e. auger, rotary, cable, direct push, etc.)	construction to the following								
FOR WATER SUPPLY WELLS ONLY:	Division of Water Quality, Underground Injection Control Program, 1636 Mail Service Center, Raleigh, NC 27699-1636								
13a. Yield (gpm) Method of test:	24c. For Water Supply & Injection Wells: In addition to sending the form to the address(es) above, also submit one copy of this form within 30 days								
13b. Disinfection type: Amount:	the address(es) above, also submit one copy of this form within 30 days of completion of well construction to the county health department of the county								

where constructed.

This form can be used for single or multiple wells	CORD	For Internal Use ONLY									
I. Well Contractor Information:											
JACOB MESSICK			ATER	ZONES	-						
Weil Contractor Name		FROM	ft.	T0	ft.	DESCRIPT	ION				
A - 4252			ft.		ft.						
NC Well Contractor Certification Number		15. OL		CASING		multi-cased s	vells) C	R LINI	ER (if app	licable)	
	INIC	FROM		ТО	ft.	DIAMETE		THICK		MATE	RIAL
GEOLOGIC EXPLORATION	, INC	16 100	ft.	CASING		UBING (geo		al alana	I Inom\		
Company Name		FROM	YER	TO	JK I	DIAMETEI	R	THICK		MATE	RIAL
2. Well Construction Permit #:  List all applicable well construction permits (i.e. C	County State Variance etc.)	0.0	ft.	45.0	ft.	2.0	in.	SC	H 40		PVC
3. Well Use (check well use):	sand, mane, randines, etc.)		ft.		ft.		in.				
Water Supply Well:		17. SC FROM	REE	TO	1	DIAMETER	SLOT	SIZE	THICK	NESS	MATERIAL
□ Agricultural	□Municipal/Public	45.0	ft.	50.0 ft.		2.0 in.	.0	10	SCH	140	PVC
Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)		ft.	ft.		in.					
□Industrial/Commercial	□Residential Water Supply (shared)	18. GR FROM	OUT	то		MATERIAL		EMD	ACEMEN	TAIETH	OD & AMOUNT
□Irrigation		0.0	ft.	40.0	ft.	PORTLAND BEN			LURRY		OD & AMOUNT
Non-Water Supply Well:			ft.	40.0	ft.					<u> </u>	
☑Monitoring Injection Well:	Recovery		ft.		ft.						
□ Aquifer Recharge	□Groundwater Remediation	19. SA	ND/G	RAVEL P	ACK	(if applicab	ole)	<u> </u>			
☐Aquifer Storage and Recovery	□Salinity Barrier	FROM	64	то	50	MATERIAI					METHOD
□ Aquifer Test	☐Stormwater Drainage	43.0	ft.	50.0	ft.	20	-40		FINE	SILIC	CA SAND
□Experimental Technology	□Subsidence Control	20 DB	ft.	NC LOC		h additional	ahaata	15			
□Geothermal (Closed Loop)	□Tracer	FROM	ILL	TO	attat					ck type, g	grain size, etc.)
☐Geothermal (Heating/Cooling Return)	□Other (explain under #21 Remarks)	0.0	ft.	35.0	ft.		RE	D/TAI	V SILTY	/ CLA	Y
4. Date Well(s) Completed: 12/07/17	Well ID# MW-20	35.0	ft.	50.0	ft.		Е	BROW	/N/TAN	SILT	
5a. Well Location:			ft.		ft.						
CTS FACILITY			ft.		ft.						
Facility/Owner Name	Facility ID# (if applicable)		ft.		ft.						
235 MILLS GAP ROAD AS			ft.		ft.						
Physical Address, City, and Zip	TIEVIELE 20003		ft.		ft.						
BUNCOMBE		21. RE			NUT	E SEAL F	-DOI	4400	TO 42	٥٢٥٥	т
County	Parcel Identification No. (PIN)			BENIO	1411	E SEAL F	- KOIV	// 40.0	10 43.	.U FEE	- 1
5b. Latitude and Longitude in degrees/min		22 Cor	4:60	ation:							
(if well field, one lat/long is sufficient)		22. CCI	HHE	Per	r. L.	on	(00	stor.	1		
35° 29' 36.69" N 82	2° 30' 34.46"w			700	<i>0</i> U					12/	08/17
6. Is (are) the well(s): ☑Permanent or	□Temporary	_		ertified We						Date	
o. 13 (are) the wengs, Erelmanent or	L'imporary										d in accordance dards and that a
7. Is this a repair to an existing well:  If this is a repair, fill out known well construction i	IYes or 🛮 No	copy of t	his re	cord has be	een pi	rovided to the	well o	wner.			
repair under #21 remarks section or on the back of		23. Site	diag	gram or a	ddit	ional well c	letails	:			1
8. Number of wells constructed:1						this page to may also att					details or well ary.
For multiple injection or non-water supply wells O	NLY with the same construction, you can			L INST		•					•
submit one form.	50.0							54 ES - 2	0 1	c	1.4' 6 11
9. Total well depth below land surface:	(11.)			to the fol			orm w	/ithin 3	o days c	or comp	oletion of well
10. Static water level below top of casing:	20.0 (ft.)		D			iter Qualit					
If water level is above casing, use "\"  8.0		<u> </u>	_			Service Cen		-			
11. Borehole diameter: 8.0	_ (in.)										address in 24a pletion of well
12. Well construction method:AUG	BER			to the fol.				J		. 501116	
(i.e. auger, rotary, cable, direct push, etc.)		Div	visio			uality, Und					
FOR WATER SUPPLY WELLS ONLY:				1636 M	ail S	iervice Cen	ter, R	aleigh,	NC 2769	99-1636	i
13a. Yield (gpm) M	ethod of test:										the form to
13b. Disinfection type:	Amount:										of the county

13b. Disinfection type: _

where constructed.

Amount:

WELL CONSTRUCTION RI This form can be used for single or multiple wells		For Internal U	Jse ONLY						
1. Well Contractor Information:									
JACOB MESSICK		14. WATER	R ZONES TO	DESCRIPT	TION				
Well Contractor Name		ft.	ft		1011				
A - 4252		ft.	ft						
NC Well Contractor Certification Number			CASING (fo	r multi-cased					
GEOLOGIC EXPLORATION	LINC	FROM ft.	TO	DIAMETE	R in.	THICK	NESS	MATE	RIAL
	1, 1110			TUBING (geo		1 closed	-loop)		
Company Name		FROM	TO	DIAMETE	R	THICK		MATE	RIAL
2. Well Construction Permit #:	County, State, Variance, etc.)	0.0 ft.	60.0 ft	2.0	in.	SCH	140		PVC
3. Well Use (check well use):		17. SCREE	N						
Water Supply Well:		60.0 ft.	65.0 ft.	2.0 in.		SIZE	SCH		PVC
□Agricultural	□Municipal/Public	ft.	65.0 ft.	in.	.0	10	3011	40	FVC
Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)	18. GROUT		****					
□Industrial/Commercial	□Residential Water Supply (shared)	FROM	TO	MATERIA	L	EMPL	ACEMENT	г метн	OD & AMOUNT
□lrrigation Non-Water Supply Well:		0.0 ft.	55.0 ft.	PORTLAND BEN	ITONITE	S	LURRY	′	
✓ Monitoring	□Recovery	ft.	ft.						
Injection Well:	Entecovery	ft.	ft.						
□Aquifer Recharge	☐Groundwater Remediation			K (if applical					
☐ Aquifer Storage and Recovery	□Salinity Barrier	FROM	65.0 ft.	MATERIA					METHOD
□Aquifer Test	□Stormwater Drainage	00.0	00.0	20	)-40		FINE	SILIC	CA SAND
□Experimental Technology	□Subsidence Control	ft.	ft.			10			
□Geothermal (Closed Loop)	□Tracer	FROM	NG LOG (att	ach additional DESCRIPT				k type, p	grain size, etc.)
□Geothermal (Heating/Cooling Return)	□Other (explain under #21 Remarks)	0.0 ft.	35.0 ft.		RE	D/TAN	SILTY	CLA	Υ
4. Date Well(s) Completed: 12/07/17	Well ID# MW-20A	35.0 ft.	65.0 ft.		В	ROW	N/TAN	SILT	
5a. Well Location:									
CTS FACILITY		ft.	ft.						
Facility/Owner Name	Facility ID# (if applicable)	ft.	ft.						
235 MILLS GAP ROAD AS		ft.	ft.						
	SHEVILLE 20003	ft.	ft.						
Physical Address, City, and Zip BUNCOMBE		21. REMAR		TE SEAL F	FROM	1 55.0	TO 58.	0 FEE	=T
County	Parcel Identification No. (PIN)								
5b. Latitude and Longitude in degrees/mi (if well field, one lat/long is sufficient)	nutes/seconds or decimal degrees:	22. Certifica	ation:						
	2° 30' 34.46" w	-	low	mo	2360	14		12/	08/17
		Signature of C	ertified Well (	Contractor				Date	
6. Is (are) the well(s): ☑Permanent or	•	with 15A NCA	C 02C .0100	or 15A NCAC	02C . 02	00 Well			ed in accordance edards and that a
7. Is this a repair to an existing well:  If this is a repair, fill out known well construction repair under #21 remarks section or on the back of		23. Site diag	gram or add	itional well o	letails:				
8. Number of wells constructed: 1	AND WAR	You may us construction							details or well ary.
For multiple injection or non-water supply wells O submit one form.	INLY With the same construction, you can	SUBMITTA	L INSTUC	TIONS					
9. Total well depth below land surface:	65.0 (ft.)	24a. For A			orm w	ithin 30	days o	f comp	oletion of well
10. Static water level below top of easing:	(ft.)		Division of V	/ater Quality Service Cen					
If water level is above casing, use "+"  11 Rozabala diameter: 8.0		24b Fe- I-							
11. Borehole diameter: O.U  12. Well construction method: AUC	_ (in.) GER		submit a co	py of this fo					address in 24a detion of well
(i e auger, rotary, cable, direct push, etc.)		Division	n of Water (	Quality, Und	ergran	ind Inia	ection C	ntrol	Program
FOR WATER SUPPLY WELLS ONLY:		21713101		Service Cen					

13a. Yield (gpm) _

13b. Disinfection type: _

__ Method of test:

Amount:

where constructed

24c. For Water Supply & Injection Wells: In addition to sending the form to the address(es) above, also submit one copy of this form within 30 days of completion of well construction to the county health department of the county

This form can be used for single or multiple wells		For Internal Use ONLY									
Well Contractor Information:	,										
JACOB MESSICK		14. W	ATEI	R ZONES							
Well Contractor Name		FROM	ft.	ТО	ft.	DESCRIPT	ION				
A - 4252			ft.		ft.						
NC Well Contractor Certification Number		15, 01		CASING		multi-cased v	vells) (	OR LINI	ER (if ann	licable)	
GEOLOGIC EXPLORATION	1 110	FROM		ТО		DIAMETE	R	THICK	NESS	MATE	RIAL
	V, INC	16 10	ft.	CASING	ft.	UBING (geo	in.	-1 -1	Line-V		
Company Name		FROM		TO		DIAMETE	₹	THICK		MATE	RIAL
2. Well Construction Permit #:	County, State, Variance, etc.)	0.0	0.0 ft. 40.0 ft. 2.0 in. SCH 40 ft. in.						H 40		PVC
3. Well Use (check well use):		17. SC	REE	N N							
Water Supply Well:		FROM		TO f	_	DIAMETER in.		r SIZE	THICK		MATERIAL
□Agricultural	□Municipal/Public	40.0	ft.	45.0 fr	$\rightarrow$	2.0 in.	).	010	SCH	140	PVC
☐Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)	18. GI				111.					
□ Industrial/Commercial	□Residential Water Supply (shared)	FROM		TO		MATERIAI		EMPI	ACEMEN	т метн	OD & AMOUNT
□lrrigation  Non-Water Supply Well:		0.0	ft.	35.0	ft.	PORTLAND BEN	TONITE	S	LURRY		
☑Monitoring	□Recovery		ft.		ft.						
Injection Well:			ft.		ft.						
□Aquifer Recharge	☐Groundwater Remediation	19. SA FROM	ND/G	TO TO	PACE	(if applicab			EMPLAC	EMENT	METHOD
☐ Aquifer Storage and Recovery	□Salinity Barrier	38.0	ft.	45.0	ft.		-40				CA SAND
□ Aquifer Test	☐Stormwater Drainage ☐Subsidence Control		ft.		ft.						
□Experimental Technology □Geothermal (Closed Loop)	□Tracer		ILLI		(attac	h additional					
☐Geothermal (Heating/Cooling Return)	□Other (explain under #21 Remarks)	FROM 0.0	ft.	то 35.0	ft.	DESCRIPT			ness, soil/ro V SILTY		grain size, etc.)
		35.0	ft.	45.0	ft,				N/TAN		
4. Date Well(s) Completed: 12/05/17	_Well ID#	33.0	ft.	43.0	ft.			3KOVV	IN/ I AIN	SILI	<del></del>
5a. Well Location:			ft.		ft.						
CTS FACILITY		-	ft.		ft.						
Facility/Owner Name	Facility ID# (if applicable)		ft.		ft.						
235 MILLS GAP ROAD AS	SHEVILLE 28803		ft.		ft.						
Physical Address, City, and Zip		21. RE		KS							
BUNCOMBE					NIT	E SEAL F	RON	1 35.0	TO 38.	0 FEE	ΕT
County	Parcel Identification No (PIN)										
5b. Latitude and Longitude in degrees/mi (if well field, one lat/long is sufficient)	nutes/seconds or decimal degrees:	22. Cer	tifica	tion:	201						
35° 29' 36.69" 8	2° 30′ 34.46″ w		-	local	(	amo.	2360	14		12/	08/17
	W	Signatur	e of C	ertified W	ell Co	ntractor	-			Date	
6. Is (are) the well(s): ☑Permanent or	□Temporary										ed in accordance
7. Is this a repair to an existing well: [If this is a repair, fill out known well construction is	Yes or No	copy of t	his rec	ord has b	een pr	ovided to the	well or	wner.			
repair under #21 remarks section or on the back of						onal well d			di i	41	1 . 7
8. Number of wells constructed:1						inis page to nay also att					details or well ary.
For multiple injection or non-water supply wells C submit one form.		SUBM	ITTA	L INST	UCT	IONS					
9. Total well depth below land surface: For multiple wells list all depths if different (example)	45.0 (ft.)			I Wells: to the fol			em w	ithin 3	0 days o	f comp	letion of well
10. Static water level below top of easing:  If water level is above easing, use "+"		_	ivision o	f Wa	ter Quality ervice Cen						
11. Borehole diameter: 8.0	_ (in.)	24b. For Injection Wells: In addition to sending the form to the address in 24									
ΔΠΟ	= · ·	above,	also :	submit a	copy	y of this fo	rm w	ithin 30	days o	f comp	letion of well
12. Well construction method: (i.e auger, rotary, cable, direct push, etc.)	construction to the following:  Division of Water Quality, Underground Injection Control Program,										
FOR WATER SUPPLY WELLS ONLY:	Div	vision			ality, Unde ervice Cen						
13a. Yield (gpm) M	ethod of test:	24c. <u>Fo</u>	r Wa	ter Supp	ly &	Injection \	Vells:	_In add	ition to s	ending	the form to
13b. Disinfection type:	Amount:	complet	ion o	of well co	e, als onstr	o submit o uction to th	ne cou	py of t inty hea	his form alth depa	withir rtment	of the county
	where constructed										

WELL CONSTRUCTION RECORD This form can be used for single or multiple wells		For Inter	nal L	se ONLY:							
1. Well Contractor Information:											
JACOB MESSICK			TER	ZONES							
Well Contractor Name		FROM	ft.	TO	ft.	DESCRIPT	ION				
A - 4252			ft.		ft.						<u> </u>
		15 OU		CASING		aulti-cased 1	valle\ (	D I INE	D (if ann	licobla)	
NC Well Contractor Certification Number		FROM		TO		DIAMETE		THICK		MATE	RIAL
GEOLOGIC EXPLORATION, INC			ft.		fi.		in.				
Company Name		16. INN FROM	ER (	TO TO	RT	UBING (geo	therm	al closed-	loop)	MATE	RIAL
2. Well Construction Permit #:	·.)	0.0	ft.	55.0	ft.	2.0	in.	SCF			PVC
3. Well Use (check well use):		17. SCR									
Water Supply Well:		FROM		TO	$\top$	LAMETER		SIZE	THICK		MATERIAL
□Agricultural □Municipal/Public		55.0 f	-	60.0 ft.	1	2.0 in.	.0	)10	SCH	40	PVC
□Geothermal (Heating/Cooling Supply) □Residential Water Su	ipply (single)		t.	ft.	_	in.					
□Industrial/Commercial □Residential Water Su	ipply (shared)	18. GRO	OUT	то		MATERIAI	L	EMPL	ACEMEN'	Г МЕТН	OD & AMOUNT
Olrrigation		0.0	ft.	50.0	ft.	PORTLAND BEN	TONITE	S	URRY	/	
Non-Water Supply Well:			ft.		ft.						
☑Monitoring □Recovery  Injection Well:			ft.		ft.						<del></del>
□Aquifer Recharge □Groundwater Remed	iation	19. SAN	D/G	RAVEL PA	ACK	(if applicab	le)				
□ Aquifer Storage and Recovery □ Salinity Barrier		FROM		TO TO		MATERIAI					METHOD
□ Aquifer Test □ Stormwater Drainage		00.0	ft.	-00.0	ft.	20	-40		FINE	SILIC	CA SAND
□Experimental Technology □Subsidence Control		I L	ft.		ft.						
□Geothermal (Closed Loop) □Tracer		FROM	LLI	NG LOG (a	ttacl	additional DESCRIPT				rk type, p	grain size, etc.)
□Geothermal (Heating/Cooling Return) □Other (explain under	#21 Remarks)	0.0	ft.	35.0	ft.				SILTY		
4. Date Well(s) Completed: 12/05/17 Well ID# MW-2	1A	00.0	ft.	00.0	ft.		E	ROW	N/TAN	SILT	
5a. Well Location:					ft.						
CTS FACILITY			ft.		ft.						
Facility/Owner Name Facility ID# (if appl	iashla\		ft.	:	ft.						
235 MILLS GAP ROAD ASHEVILLE 2880	-		ft.	1	ſt.						
	03		ft.		ft.						
Physical Address, City, and Zip BUNCOMBE		21. REM			JITE	SEAL F	ROM	1.50.0	TO 53	n EEF	= T
County Parcel Identification	No (PIN)			JEN TOI	ALLE	JUNE	IVOIV	1 30.0	10 33.	U I LL	_ !
5b. Latitude and Longitude in degrees/minutes/seconds or decim (if well field, one lat/long is sufficient)	. ,	22. Cert	ifica	tion:		Δα.					
35° 29' 36.69" 82° 30' 34.46"	77/			-100	6	om	ددو	404		12/	08/17
N	W	Signature	of C	rtified Wel	l Cor	itractor				Date	
6. Is (are) the well(s): ☑Permanent or □Temporary		By signing	z this	form. I he	rebv	certify that	the wei	l(s) was	(were) co		ed in accordance
7 Is this a repair to an existing well. DVan an ZIM-		with 15A l	VCA	202C .010	0 or	ISA NCAC (	02C .02	00 Well (			dards and that a
<ol> <li>Is this a repair to an existing well:          □Yes or          □No     </li> <li>If this is a repair, fill out known well construction information and explain the</li> </ol>	nature of the	copy of in	s rec	ora nas nee	n pro	ovided to the	well of	rner.			
repair under #21 remarks section or on the back of this form.						onal well d			ional we	all cita	details or well
8. Number of wells constructed:						nay also att					
For multiple injection or non-water supply wells ONLY with the same constru- submit one form.	ection, you can	SUBMIT	ГΤА	L INSTU	CTI	ONS					
60.0								55.55 20	.1	c	. t . d
9. Lotal well depth below land surface:  For multiple wells list all depths if different (example- 3@200' and 2@100')	(ft.)			to the follo			orm w	1tnin 30	days of	r comp	oletion of well
10. Static water level below top of casing:	(ft.)		D			ter Quality rvice Cen					
11. Borehole diameter: 8.0 (in.)		24b. <u>For</u>	<u>Ini</u>	ection W	ells:	In additio	n to s	ending t	he form	to the	address in 24a
ALIGER		above, a	so s	ubmit a	copy	of this fo					letion of well
12. Well construction method:		construct	ion 1	o the follo	win	g					
		Divi	sion			ality, Undo					
FOR WATER SUPPLY WELLS ONLY:						rvice Cen					
13a. Yield (gpm) Method of test:		the addre	ess(e	s) above,	also	submit o	ne co	py of th	is form	withir	the form to
13b. Disinfection type: Amount:		completion	on o	t well co	nstru	iction to th	ie cou	nty hea	th depar	rtment	of the county

13b. Disinfection type: _

where constructed.

WELL CONSTRUCTION R		For Int	ernal (	Jse ONLY	1:						
This form can be used for single or multiple well	S										
1. Well Contractor Information:		14 33	ATE	R ZONES							
JACOB MESSICK		FROM	[	TO		DESCRIPT	TION				
Well Contractor Name			ft.		ft.						
A - 4252		44 0	ft.		ft.						
NC Well Contractor Certification Number		FROM	UIER	TO	(for	multi-cased o	R [	THICK	ER (if app NESS		ERIAL
GEOLOGIC EXPLORATION	N, INC		ft.		ft.		in.				
Company Name		16. IN	NER	CASING TO	OR T	UBING (get		al closed THICK		MATE	RIAL
2. Well Construction Permit #:  List all applicable well construction permits (i.e.	County State Variouses ata 1	0.0	ft.	50.0	ft.	2.0	in.	SCI	140		PVC
3. Well Use (check well use):	Commy, Glanc, Furnance, etc.)		ft.		ft.		in.				
Water Supply Well:		17. SC FROM		TO		DIAMETER	SLOT	SIZE	THICK	VECC	MATERIAL
□Agricultural	□Municipal/Public	50.0	-	55.0 ft		2.0 in.		10	SCH		PVC
Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)		ft.	fi		in.					
□Industrial/Commercial	□Residential Water Supply (shared)	18. GF FROM	ROUT	ТО		Lavarenia		Leann	A CIPIA CIPA		000000000000000000000000000000000000000
□Irrigation		0.0	ft.	45.0	ft.	MATERIA:		T T	LURRY		OD & AMOUNT
Non-Water Supply Well:  ☑Monitoring	T.P. community		ft.	70.0	ft.				2011111		
Injection Well:	□Recovery		ft.		ft.						
□Aquifer Recharge	☐Groundwater Remediation	19. SA	ND/G		ACL	l (if applicab		1			
☐Aquifer Storage and Recovery	□Salinity Barrier	48.0	ft.	TO EE O	ft.	MATERIAL					METHOD
□Aquifer Test	□Stormwater Drainage	40.0	ft.	55.0	ft.	20	-40		FINE	SILIC	CA SAND
□Experimental Technology	□Subsidence Control	20, DR		NG LOG		h additional	sheets	if neces:	arv)	-	
Geothermal (Closed Loop)	□Tracer	FROM		то		DESCRIPT	ION (col	or, hards	ess, soil/ro		grain size, etc.)
Geothermal (Heating/Cooling Return)	Other (explain under #21 Remarks)	0.0	ft.	35.0	ft.				SILTY		Y
4. Date Well(s) Completed: 12/05/17	_Well ID#MW-22	35.0	ft.	55.0	ft.		B	ROW	N/TAN	SILT	
5a. Well Location:			ft.		ft.						
CTS FACILITY			ft.		ſt.						
Facility/Owner Name	Facility ID# (if applicable)		ft.		ft.						
235 MILLS GAP ROAD AS	SHEVILLE 28803		ft.		ft.						
Physical Address, City, and Zip BUNCOMBE		21. RE	MAR	KS							
County	Parcel Identification No. (PIN)		[	BENTO	NIT	E SEAL F	ROM	45.0	TO 48.	0 FEE	T
5b. Latitude and Longitude in degrees/mi	, ,										
(if well field, one lat/long is sufficient)	nutes/seconds or decimal degrees:	22. Cer	tifica	tions	,	04.	•				
35° 29' 36.69" N 82	2° 30' 34.46"			100	6	ano	336	04		12/0	08/17
	***	Signature	of C	rtified We	II Co	ntractor				Date	
6. Is (are) the well(s): ☑Permanent or	□Temporary										d in accordance
7. Is this a repair to an existing well:	lYes or ☑No					15A NCAC 0 ovided to the			Constructi	on Stan	dards and that a
If this is a repair, fill out known well construction is repair under #21 remarks section or on the back of	information and explain the nature of the Cthis form	23. Site	diag	ram or a	dditi	onal well d	etails:				
8. Number of wells constructed:	•	You ma	y use	the back	c of t	his page to	provid	de addi	tional we	ll site	details or well
For multiple injection or non-water supply wells O	NLY with the same construction, you can					nay also atta	ien add	ııtıonai	pages 11	necessa	ary
submit one form.	55.0			L INSTU							
9. Total well depth below land surface:	(11.)			Wells: to the foll			rm wi	thin 30	days of	comp	letion of well
	20.0	CONSTI					Y 6		D		
10. Static water level below top of easing: If water level is above easing, use "+"	(ft.)		ע	1617 M	ail S	ter Quality ervice Cent	, intor er, Ra	matior leigh, f	NC 27699	sing Ur 9-1617	111,
11. Borehole diameter: 8.0	_ (in.)	24b. <u>Fo</u>	r Inj	ection W	'ells:	In additio	n to se	nding t	he form	to the a	address in 24a
12. Well construction method: AUG	BER	above, a	also s	ubmit a	copy	of this fo	rm wi	thin 30	days of	comp	letion of well
(i.e. auger, rotary, cable, direct push, etc.)	-			o the foll							_
FOR WATER SUPPLY WELLS ONLY:		Div	151011	or Wate	r Qu nil So	ality, Unde ervice Cent	rgrou er, Ra	na Inje leigh, ľ	ction Co NC 27699	ntrol F 9-1636	rogram,
13a. Yield (gpm) Mo	ethod of test:					Injection V					
		the addi	ess(e	s) above.	, also	submit o	ne cop	y of th	is form	within	30 days of of the county
13b. Disinfection type:	Amount:	where co					- cour	ny ma	ни чера	anem	or me county

WELL CONSTRUCTION R This form can be used for single or multiple well		For Intern	al L	se ONLY							
1. Well Contractor Information:											
JACOB MESSICK			rer	ZONES							
Well Contractor Name		FROM	ft.	то	ft.	DESCRIPT	ION				
A - 4252			ft.		ft.						
NC Well Contractor Certification Number		15. OUT	ER	CASING (1	for	nulti-cased v	vells) (	OR LINE	R (if app	licable)	
GEOLOGIC EXPLORATION	N INC	FROM	ft.	то	ft.	DIAMETE		THICK		MATE	
Company Name	4, 1140	1				UBING (geo		al closed	-loon)	<u> </u>	
		FROM		TO		DIAMETE	₹	THICK	NESS	MATE	RIAL
2. Well Construction Permit #: List all applicable well construction permits (i.e.	County, State, Variance, etc.)	0.0	ft. ft.	03.0	ft. ft.	2.0	in. in.	SCH	1 40		PVC
3. Well Use (check well use):		17. SCR									
Water Supply Well:		65.0 ft	$\overline{}$	70.0 ft.	1	LAMETER in.		SIZE	SCH		PVC
□Agricultural	□Municipal/Public	65.U	-	70.0 ···	-	2.0 in.	U	010	301	140	PVC
Geothermal (Heating/Cooling Supply)	□Residential Water Supply (single)	18. GRO									
□Industrial/Commercial	□Residential Water Supply (shared)	FROM		то		MATERIAI		EMPL	ACEMEN	ТМЕТН	IOD & AMOUNT
□lrrigation Non-Water Supply Well:		0.0	Γt.	60.0	ft.	PORTLAND BEN	TONITE	S	LURRY		
☑Monitoring	□Recovery		ft.	f	Ft.						
Injection Well:		I L	Γt.		ft.						
□ Aquifer Recharge	☐Groundwater Remediation	19. SANI FROM	D/G	RAVEL PA TO	Ck	(if applicab			EMPLAC	EMENT	METHOD
☐ Aquifer Storage and Recovery	□Salinity Barrier		īt.		ſŧ.		<del>.</del> -40				CA SAND
□Aquifer Test	☐Stormwater Drainage	1	ft.		īt.				7 17 12	. 012.1	5, 1 0, 1115
DExperimental Technology	□Subsidence Control	20. DRII	LI	NG LOG (a	ttac	h additional	sheets	if necess	ary)		
Geothermal (Closed Loop)	□Tracer	FROM		TO S	i.	DESCRIPT		•			grain size, etc.)
Geothermal (Heating/Cooling Return)	Other (explain under #21 Remarks)	٠.٠-	t.		it.				ISILTY		Y
4. Date Well(s) Completed: 12/05/17	_Well ID#MW-22A	33.0	t.	70.0	ì.			SROW	N/TAN	SILI	
5a. Well Location:		ı	t.	f	ì.						
CTS FACILITY		f	ì.	f	ì.						
Facility/Owner Name	Facility ID# (if applicable)	f	it.	ſ	t.						
235 MILLS GAP ROAD AS	SHEVILLE 28803	f	r.	ſ	1.						
Physical Address, City, and Zip	-	21. REM	AR	KS							
BUNCOMBE			E	BENTON	IJΤI	E SEAL F	RON	1 60.0	TO 63.	0 FEE	ĒΤ
County	Parcel Identification No. (PIN)										
5b. Latitude and Longitude in degrees/mi	inutes/seconds or decimal degrees:	22. Certi	fica	tiom:			æ	_			
(if well field, one lat/long is sufficient)  35° 29' 36.69" 8	2° 20' 24 46"			Brech		ma	2360	14		401	00/47
N	2° 30′ 34.46″w	0.	Z								08/17
6. Is (are) the well(s): ☑Permanent or	□Temporary			ertified Well				(84.)		Date	4.
											ed in accordance idards and that a
If this is a repair, fill out known well construction						ovided to the					
repair under #21 remarks section or on the back of	of this form.					onal well d			tional w	ell site	details or well
8. Number of wells constructed:						nay also att					
For multiple injection or non-water supply wells ( submit one form	ONLY with the same construction, you can	SUBMIT	TA	L INSTU	СТ	IONS					
9. Total well depth below land surface:	70.0 (ft.)			Wells:			orm w	ithin 30	) days o	f comp	oletion of well
10. Static water level below top of casing:	(ft.)	00115114011		ivision of '	Wa	ter Quality					
If water level is above casing, use "+"						ervice Cen					
11. Borehole diameter: 8.0	_ (in.)										address in 24a
12. Well construction method: AUC (i.e. auger, rotary, cable, direct push, etc.)	GER			to the follo			niii W	mm 30	uays 0	ı comp	oletion of well
		Divis	ion			ality, Unde					
FOR WATER SUPPLY WELLS ONLY:		24. 5	131.7								
	lethod of test:	the addre	ss(e	s) above,	als	o submit o	пе со	py of tl	nis form	within	the form to a 30 days of of the county
13b. Disinfection type:	Amount:	20111PIGITO	0			action to ti	u	, 1100	···· acha		2. Inc county

13b. Disinfection type:

where constructed

Amount:

CTS of Asheville, Inc. Superfund Site ISCO Treatability Study Evaluation Report Wood Project 6252-16-2012 May 3, 2019

# APPENDIX C GROUNDWATER ANALYTICAL REPORTS





January 10, 2018

Susan Avritt Amec Foster Wheeler 1308 Patton Avenue Asheville, NC 28806

RE: Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

### Dear Susan Avritt:

Enclosed are the analytical results for sample(s) received by the laboratory on December 29, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell taylor.ezell@pacelabs.com (704)875-9092 Project Manager

Enclosures





Pace Analytical www.pacelabs.com

9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

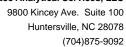
### **CERTIFICATIONS**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

**Charlotte Certification IDs** 

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 Louisiana/NELAP Certification # LA170028 North Carolina Drinking Water Certification #: 37706 North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12 South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221





### **SAMPLE SUMMARY**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92368500001	MW-7A	Water	12/27/17 16:45	12/29/17 12:40
92368500002	MW-7	Water	12/28/17 10:00	12/29/17 12:40
92368500003	MW-19	Water	12/28/17 10:50	12/29/17 12:40
92368500004	MW-19A	Water	12/28/17 12:00	12/29/17 12:40
92368500005	MW-22	Water	12/28/17 13:50	12/29/17 12:40
92368500006	MW-22A	Water	12/28/17 14:45	12/29/17 12:40
92368500007	MW-21A	Water	12/28/17 15:45	12/29/17 12:40
92368500008	MW-21	Water	12/28/17 16:18	12/29/17 12:40
92368500009	MW-20A	Water	12/29/17 10:03	12/29/17 12:40
92368500010	MW-20	Water	12/29/17 11:12	12/29/17 12:40
92368500011	FD-13	Water	12/27/17 00:00	12/29/17 12:40
92368500012	TB-11	Water	12/27/17 00:00	12/29/17 12:40



### **SAMPLE ANALYTE COUNT**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92368500001	MW-7A	EPA 8260	GAW	7	PASI-C
92368500002	MW-7	EPA 8260	GAW	7	PASI-C
92368500003	MW-19	EPA 8260	GAW	7	PASI-C
92368500004	MW-19A	EPA 8260	GAW	7	PASI-C
92368500005	MW-22	EPA 8260	GAW	7	PASI-C
92368500006	MW-22A	EPA 8260	GAW	7	PASI-C
92368500007	MW-21A	EPA 8260	GAW	7	PASI-C
92368500008	MW-21	EPA 8260	GAW	7	PASI-C
92368500009	MW-20A	EPA 8260	GAW	7	PASI-C
92368500010	MW-20	EPA 8260	GAW	7	PASI-C
92368500011	FD-13	EPA 8260	GAW	7	PASI-C
92368500012	TB-11	EPA 8260	GAW	7	PASI-C

9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092



### **SUMMARY OF DETECTION**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2368500001	MW-7A					
EPA 8260	Trichloroethene	25000	ug/L	250	01/04/18 12:10	
2368500002	MW-7					
EPA 8260	Trichloroethene	55.9	ug/L	1.0	01/04/18 11:18	
2368500003	MW-19					
EPA 8260	Trichloroethene	2770	ug/L	40.0	01/04/18 12:27	
2368500004	MW-19A					
EPA 8260	Trichloroethene	15800	ug/L	125	01/04/18 12:44	
2368500005	MW-22					
EPA 8260	Trichloroethene	28800	ug/L	250	01/04/18 13:19	
2368500006	MW-22A					
EPA 8260	Trichloroethene	13200	ug/L	100	01/04/18 13:37	
2368500007	MW-21A					
EPA 8260	Trichloroethene	19300	ug/L	125	01/04/18 14:11	M1
2368500008	MW-21					
EPA 8260	Trichloroethene	33100	ug/L	200	01/04/18 14:45	
2368500009	MW-20A					
EPA 8260	Trichloroethene	18800	ug/L	100	01/04/18 15:20	
2368500010	MW-20					
EPA 8260	Trichloroethene	36600	ug/L	400	01/04/18 16:12	
2368500011	FD-13					
EPA 8260	Trichloroethene	16700	ug/L	125	01/04/18 16:29	





### PROJECT NARRATIVE

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Method: **EPA 8260** 

Description: 8260 MSV Low Level

Client: Amec Foster Wheeler, Asheville

Date: January 10, 2018

### **General Information:**

12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 393112

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92368500007

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2180043)
  - Trichloroethene
- MSD (Lab ID: 2180044)
  - Vinyl chloride

### **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-7A	Lab ID:	92368500001	Collecte	d: 12/27/17	7 16:45	Received: 12	/29/17 12:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	ND	ug/L	250	47.5	250		01/04/18 12:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		01/04/18 12:10	156-60-5	
Trichloroethene	25000	ug/L	250	118	250		01/04/18 12:10	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		01/04/18 12:10	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	99	%	70-130		250		01/04/18 12:10	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		250		01/04/18 12:10	17060-07-0	
Toluene-d8 (S)	107	%	70-130		250		01/04/18 12:10	2037-26-5	



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Date: 01/10/2018 10:58 AM

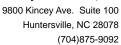
Sample: MW-7	Lab ID:	92368500002	Collecte	Collected: 12/28/17 10:00			2/29/17 12:40 Ma	Matrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Low Level	Analytical	Method: EPA 8	260							
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		01/04/18 11:18	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		01/04/18 11:18	156-60-5		
Trichloroethene	55.9	ug/L	1.0	0.47	1		01/04/18 11:18	79-01-6		
Vinyl chloride	ND	ug/L	1.0	0.62	1		01/04/18 11:18	75-01-4		
Surrogates		•								
4-Bromofluorobenzene (S)	99	%	70-130		1		01/04/18 11:18	460-00-4		
1,2-Dichloroethane-d4 (S)	93	%	70-130		1		01/04/18 11:18	17060-07-0		
Toluene-d8 (S)	109	%	70-130		1		01/04/18 11:18	2037-26-5		



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-19	Lab ID:	92368500003	Collecte	d: 12/28/17	10:50	Received: 12	/29/17 12:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	40.0	7.6	40		01/04/18 12:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	40.0	19.6	40		01/04/18 12:27	156-60-5	
Trichloroethene	2770	ug/L	40.0	18.8	40		01/04/18 12:27	79-01-6	
Vinyl chloride	ND	ug/L	40.0	24.8	40		01/04/18 12:27	75-01-4	
Surrogates		-							
4-Bromofluorobenzene (S)	101	%	70-130		40		01/04/18 12:27	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130		40		01/04/18 12:27	17060-07-0	
Toluene-d8 (S)	110	%	70-130		40		01/04/18 12:27	2037-26-5	





Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-19A	Lab ID:	92368500004	Collecte	d: 12/28/17	7 12:00	Received: 12	2/29/17 12:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	125	23.8	125		01/04/18 12:44	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	125	61.2	125		01/04/18 12:44	156-60-5	
Trichloroethene	15800	ug/L	125	58.8	125		01/04/18 12:44	79-01-6	
Vinyl chloride	ND	ug/L	125	77.5	125		01/04/18 12:44	75-01-4	
Surrogates		Ū							
4-Bromofluorobenzene (S)	101	%	70-130		125		01/04/18 12:44	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		125		01/04/18 12:44	17060-07-0	
Toluene-d8 (S)	110	%	70-130		125		01/04/18 12:44	2037-26-5	



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-22	Lab ID:	92368500005	Collecte	d: 12/28/17	7 13:50	Received: 12	/29/17 12:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	250	47.5	250		01/04/18 13:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		01/04/18 13:19	156-60-5	
Trichloroethene	28800	ug/L	250	118	250		01/04/18 13:19	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		01/04/18 13:19	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	98	%	70-130		250		01/04/18 13:19	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		250		01/04/18 13:19	17060-07-0	
Toluene-d8 (S)	108	%	70-130		250		01/04/18 13:19	2037-26-5	



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

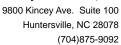
Sample: MW-22A	Lab ID:	92368500006	Collecte	d: 12/28/1	7 14:45	Received: 12	2/29/17 12:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		01/04/18 13:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		01/04/18 13:37	156-60-5	
Trichloroethene	13200	ug/L	100	47.0	100		01/04/18 13:37	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		01/04/18 13:37	75-01-4	
Surrogates		-							
4-Bromofluorobenzene (S)	101	%	70-130		100		01/04/18 13:37	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		100		01/04/18 13:37	17060-07-0	
Toluene-d8 (S)	108	%	70-130		100		01/04/18 13:37	2037-26-5	



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-21A	Lab ID:	92368500007	Collected	d: 12/28/17	7 15:45	Received: 12			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	125	23.8	125		01/04/18 14:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	125	61.2	125		01/04/18 14:11	156-60-5	
Trichloroethene	19300	ug/L	125	58.8	125		01/04/18 14:11	79-01-6	M1
Vinyl chloride	ND	ug/L	125	77.5	125		01/04/18 14:11	75-01-4	M1
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		125		01/04/18 14:11	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		125		01/04/18 14:11	17060-07-0	
Toluene-d8 (S)	106	%	70-130		125		01/04/18 14:11	2037-26-5	

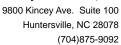




Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-21	Lab ID:	92368500008	Collecte	d: 12/28/17	7 16:18	Received: 12	atrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	200	38.0	200		01/04/18 14:45	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		01/04/18 14:45	156-60-5	
Trichloroethene	33100	ug/L	200	94.0	200		01/04/18 14:45	79-01-6	
Vinyl chloride	ND	ug/L	200	124	200		01/04/18 14:45	75-01-4	
Surrogates		Ü							
4-Bromofluorobenzene (S)	98	%	70-130		200		01/04/18 14:45	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		200		01/04/18 14:45	17060-07-0	
Toluene-d8 (S)	110	%	70-130		200		01/04/18 14:45	2037-26-5	

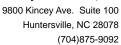




Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-20A	Lab ID:	92368500009	Collecte	d: 12/29/17	7 10:03	Received: 12/29/17 12:40 Matrix: Water						
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual			
8260 MSV Low Level	Analytical	Method: EPA 8	3260									
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		01/04/18 15:20	156-59-2				
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		01/04/18 15:20	156-60-5				
Trichloroethene	18800	ug/L	100	47.0	100		01/04/18 15:20	79-01-6				
Vinyl chloride	ND	ug/L	100	62.0	100		01/04/18 15:20	75-01-4				
Surrogates		•										
4-Bromofluorobenzene (S)	101	%	70-130		100		01/04/18 15:20	460-00-4				
1,2-Dichloroethane-d4 (S)	96	%	70-130		100		01/04/18 15:20	17060-07-0				
Toluene-d8 (S)	109	%	70-130		100		01/04/18 15:20	2037-26-5				





Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: MW-20	Lab ID:	92368500010	Collecte	d: 12/29/17	7 11:12	Received: 12/29/17 12:40 Matrix: Water						
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual			
8260 MSV Low Level	Analytical	Method: EPA 8	260									
cis-1,2-Dichloroethene	ND	ug/L	400	76.0	400		01/04/18 16:12	156-59-2				
trans-1,2-Dichloroethene	ND	ug/L	400	196	400		01/04/18 16:12	156-60-5				
Trichloroethene	36600	ug/L	400	188	400		01/04/18 16:12	79-01-6				
Vinyl chloride	ND	ug/L	400	248	400		01/04/18 16:12	75-01-4				
Surrogates		•										
4-Bromofluorobenzene (S)	99	%	70-130		400		01/04/18 16:12	460-00-4				
1,2-Dichloroethane-d4 (S)	94	%	70-130		400		01/04/18 16:12	17060-07-0				
Toluene-d8 (S)	112	%	70-130		400		01/04/18 16:12	2037-26-5				



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: FD-13	Lab ID:	92368500011	Collecte	d: 12/27/17	7 00:00	Received: 12			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	ND	ug/L	125	23.8	125		01/04/18 16:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	125	61.2	125		01/04/18 16:29	156-60-5	
Trichloroethene	16700	ug/L	125	58.8	125		01/04/18 16:29	79-01-6	
Vinyl chloride	ND	ug/L	125	77.5	125		01/04/18 16:29	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	100	%	70-130		125		01/04/18 16:29	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130		125		01/04/18 16:29	17060-07-0	
Toluene-d8 (S)	111	%	70-130		125		01/04/18 16:29	2037-26-5	



Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Sample: TB-11	Lab ID:	92368500012	Collecte	d: 12/27/17	00:00	Received: 12	2/29/17 12:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		01/04/18 10:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		01/04/18 10:26	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		01/04/18 10:26	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		01/04/18 10:26	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	99	%	70-130		1		01/04/18 10:26	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-130		1		01/04/18 10:26	17060-07-0	
Toluene-d8 (S)	111	%	70-130		1		01/04/18 10:26	2037-26-5	

(704)875-9092



### **QUALITY CONTROL DATA**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Date: 01/10/2018 10:58 AM

QC Batch: 393112 Analysis Method: EPA 8260

QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92368500001, 92368500002, 92368500003, 92368500004, 92368500005, 92368500006, 92368500007,

92368500008, 92368500009, 92368500010, 92368500011, 92368500012

METHOD BLANK: 2180041 Matrix: Water

Associated Lab Samples: 92368500001, 92368500002, 92368500003, 92368500004, 92368500005, 92368500006, 92368500007,

92368500008, 92368500009, 92368500010, 92368500011, 92368500012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND -	1.0	0.19	01/04/18 10:09	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	01/04/18 10:09	
Trichloroethene	ug/L	ND	1.0	0.47	01/04/18 10:09	
Vinyl chloride	ug/L	ND	1.0	0.62	01/04/18 10:09	
1,2-Dichloroethane-d4 (S)	%	93	70-130		01/04/18 10:09	
4-Bromofluorobenzene (S)	%	94	70-130		01/04/18 10:09	
Toluene-d8 (S)	%	108	70-130		01/04/18 10:09	

LABORATORY CONTROL SAMPLE:	2180042					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	53.5	107	70-131	
trans-1,2-Dichloroethene	ug/L	50	52.7	105	70-130	
Trichloroethene	ug/L	50	54.7	109	70-130	
Vinyl chloride	ug/L	50	55.6	111	50-150	
1,2-Dichloroethane-d4 (S)	%			97	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			96	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	CATE: 218004	43		2180044							
			MS	MSD								
		92368500007	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	 ND	5000	5000	5810	6180	116	124	70-130	6	30	
trans-1,2-Dichloroethene	ug/L	ND	5000	5000	5870	6270	117	125	70-130	6	30	
Trichloroethene	ug/L	19300	5000	5000	27100	25700	158	129	69-151	5	30	M1
Vinyl chloride	ug/L	ND	5000	5000	6480	7030	130	141	70-130	8	30	M1
1,2-Dichloroethane-d4 (S)	%						98	102	70-130			
4-Bromofluorobenzene (S)	%						99	98	70-130			
Toluene-d8 (S)	%						100	103	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(704)875-9092



### **QUALIFIERS**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

### **ANALYTE QUALIFIERS**

Date: 01/10/2018 10:58 AM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: ISCO Pilot Study 6252-16-2012-Revised Report

Pace Project No.: 92368500

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92368500001	MW-7A	EPA 8260	393112		
92368500002	MW-7	EPA 8260	393112		
92368500003	MW-19	EPA 8260	393112		
92368500004	MW-19A	EPA 8260	393112		
92368500005	MW-22	EPA 8260	393112		
92368500006	MW-22A	EPA 8260	393112		
92368500007	MW-21A	EPA 8260	393112		
92368500008	MW-21	EPA 8260	393112		
92368500009	MW-20A	EPA 8260	393112		
92368500010	MW-20	EPA 8260	393112		
92368500011	FD-13	EPA 8260	393112		
92368500012	TB-11	EPA 8260	393112		

# Pace Analytical*

# Document Name:

## Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.03

Document Revised: July 25, 2017

Page 1 of 2
Issuing Authority:
Pace Quality Office

Laboratory receiving samples:  Asheville Eden Gr	eenwood 🗍 💢 I	Huntersville 🗌	Raleigh	Mechanicsville
Ashevine Lucii U	eenwood []		· · · · · —	
Courier:  Courier:  Commercial  Client Name:  Fed Ex  UPS	USPS	Project # WU#	::92368      <b>             </b>	<b>500</b>
Custody Seal Present? Yes No Seals In	atact?	No Date/Ini	tials Person Examining	ontents:
Packing Material: Bubble Wrap Bubb Thermometer: Supplies Cooler Temp Corrected (°C):		Other  Blue None  Temp shed Samples has begun	Biological Tissue F Yes No  Id be above freezing to out of temp criteria. Sam	AH/A
USDA Regulated Soil ( ☐ N/A, water sample)  Did samples originate in a quarantine zone within the United  ☐ Yes ☐ No	l States: CA, NY, or SC (check	maps)? Did samples or including Hawa	ginate from a foreign sou iii and Puerto Rico)? Ye Comments/Discrepar	es No
			Commence of the	
Chain of Custody Present?	Ves □No □N/A	1.		
Samples Arrived within Hold Time?	Yes No N/A		V	
Short Hold Time Analysis (<72 hr.)?	Yes No N/A			
Rush Turn Around Time Requested?	☐Yes ☐No ☐N/A	4.		
Sufficient Volume?	TYes □No □N/A	5.		
Correct Containers Used? -Pace Containers Used?	Ves No N/A	t t		
Containers Intact?	- Eves □No □N/A	, 7,		
Dissolved analysis: Samples Field Filtered?	□Yes □No □N/A			
Sample Labels Match COC?	√DYes □No □N/A	9.		
-Includes Date/Time/ID/Analysis Matrix:	1			·
Headspace in VOA Vials (>5-6mm)?	□Yes □NO □N/A	10.		
Trip Blank Present?	□Xes □No □N/A			
Trip Blank Custody Seals Present?	Yes ONO ON/A	<u> </u>		
CLIENT NOTIFICATION/RESOLUTION			Field Data	Required? Yes No
Person Contacted:		Date/Time:		
Comments/Sample Discrepancy:				
Project Manager SCURF Review:		Date	2:	
Project Manager SRF Review:		Date	<b>:</b>	

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)



# Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.03 Document Revised: July 25, 2017 Page 2 of 2

Issuing Authority: Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Project # UO#: 92368500

PM: PTE

Due Date: 01/08/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (CI-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	<b>BP4S-</b> 125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CI-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (CI-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCI (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp. (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1																3											
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12				-												2											

		pH Ad	ljustment Log for Pres	erved Samples		
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot#
· · · · · · · · · · · · · · · · · · ·			:			
				:		
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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.

-13 mo	-13 mg	WICH TO THE TOTAL	13 W M M M M M M M M M M M M M M M M M M	# 13 # # # # # # # # # # # # # # # # # #	Section A  Required Client Information:  Company: Annex Faster Wheeler, Asheville  Address: 1308 Patton Avenue  Required Project 10: Gasy  Phones 2.5. 6130 Fax: Project Name:  Required Duch Tax  AMM - 174  AMM - 224  AMM -	Section B Required Project Info Report To: Coopy To: Coopy To: District Peroject Name: Go Project #: 625 Projec	1 Information: 1 Inf	1	Section C Attention of the Page of the Pag	Pres Huos Huos Pres Huos P	HOSN Solect Let VOC by 8260		The BLANK	AS Low (I.A. NC 7850)  Trip BLANK  Requestion and passed (R.N.)		Page : 1,75	Residual Chlorine (Y/V)  Residual Chlorine (Y/V)  Residual Chlorine (Y/V)		
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May 09, 2018

Susan Avritt Amec Foster Wheeler 1308 Patton Avenue Asheville, NC 28806

RE: Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

### Dear Susan Avritt:

Enclosed are the analytical results for sample(s) received by the laboratory on May 03, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell taylor.ezell@pacelabs.com (704)875-9092 Project Manager

Enclosures





Pace Analytical www.pacelabs.com

9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **CERTIFICATIONS**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

**Charlotte Certification IDs** 

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 Louisiana/NELAP Certification # LA170028 North Carolina Drinking Water Certification #: 37706 North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12 South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221



### **SAMPLE SUMMARY**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92383412001	MW-19A	Water	05/03/18 10:40	05/03/18 15:19
92383412002	MW-7	Water	05/03/18 12:00	05/03/18 15:19
92383412003	MW-19	Water	05/03/18 09:35	05/03/18 15:19
92383412004	MW-20	Water	05/02/18 16:10	05/03/18 15:19
92383412005	MW-20A	Water	05/02/18 15:20	05/03/18 15:19
92383412006	MW-22A	Water	05/02/18 14:20	05/03/18 15:19
92383412007	MW-22	Water	05/02/18 13:22	05/03/18 15:19
92383412008	MW-21A	Water	05/02/18 12:15	05/03/18 15:19
92383412009	MW-21	Water	05/02/18 11:30	05/03/18 15:19
92383412010	MW-7A	Water	05/03/18 14:28	05/03/18 15:19
92383412011	FD-21	Water	05/02/18 00:00	05/03/18 15:19
92383412012	TB-18	Water	05/02/18 00:00	05/03/18 15:19



### **SAMPLE ANALYTE COUNT**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92383412001	MW-19A	EPA 8260	GAW	7	PASI-C
92383412002	MW-7	EPA 8260	GAW	7	PASI-C
92383412003	MW-19	EPA 8260	GAW	7	PASI-C
92383412004	MW-20	EPA 8260	GAW	7	PASI-C
92383412005	MW-20A	EPA 8260	GAW	7	PASI-C
92383412006	MW-22A	EPA 8260	GAW	7	PASI-C
92383412007	MW-22	EPA 8260	GAW	7	PASI-C
92383412008	MW-21A	EPA 8260	GAW	7	PASI-C
92383412009	MW-21	EPA 8260	GAW	7	PASI-C
92383412010	MW-7A	EPA 8260	GAW	7	PASI-C
92383412011	FD-21	EPA 8260	GAW	7	PASI-C
92383412012	TB-18	EPA 8260	GAW	7	PASI-C

(704)875-9092

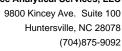


### **SUMMARY OF DETECTION**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92383412001	MW-19A					
EPA 8260	cis-1,2-Dichloroethene	2610	ug/L		05/08/18 20:07	
EPA 8260	Trichloroethene	10600	ug/L	100	05/08/18 20:07	
92383412002	MW-7					
EPA 8260	Trichloroethene	1250	ug/L	12.5	05/08/18 20:24	
92383412003	MW-19					
EPA 8260	Trichloroethene	3730	ug/L	50.0	05/08/18 20:41	
2383412004	MW-20					
EPA 8260	Trichloroethene	29300	ug/L	250	05/08/18 20:58	M1
2383412005	MW-20A					
EPA 8260	Trichloroethene	13300	ug/L	100	05/08/18 21:15	
2383412006	MW-22A					
EPA 8260	cis-1,2-Dichloroethene	550	ug/L	100	05/08/18 21:32	
EPA 8260	Trichloroethene	13900	ug/L	100	05/08/18 21:32	
2383412007	MW-22					
EPA 8260	Trichloroethene	21500	ug/L	250	05/08/18 21:49	
2383412008	MW-21A					
EPA 8260	Trichloroethene	15800	ug/L	100	05/08/18 22:06	
2383412009	MW-21					
EPA 8260	cis-1,2-Dichloroethene	530	ug/L		05/08/18 22:22	
EPA 8260	Trichloroethene	28800	ug/L	250	05/08/18 22:22	
2383412010	MW-7A					
EPA 8260	Trichloroethene	20300	ug/L	200	05/08/18 22:39	
2383412011	FD-21					
EPA 8260	cis-1,2-Dichloroethene	515	ug/L	100	05/08/18 22:56	
EPA 8260	Trichloroethene	12300	ug/L	100	05/08/18 22:56	





### **PROJECT NARRATIVE**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Method: EPA 8260

Description: 8260 MSV Low Level

Client: Amec Foster Wheeler, Asheville

Date: May 09, 2018

### **General Information:**

12 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 409840

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92383412004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2273735)
  - Trichloroethene
- MSD (Lab ID: 2273736)
  - Trichloroethene

### **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

Sample: MW-19A	Lab ID:	92383412001	Collecte	d: 05/03/18	3 10:40	Received: 05	5/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	2610	ug/L	100	19.0	100		05/08/18 20:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		05/08/18 20:07	156-60-5	
Trichloroethene	10600	ug/L	100	47.0	100		05/08/18 20:07	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		05/08/18 20:07	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	105	%	70-130		100		05/08/18 20:07	460-00-4	
1,2-Dichloroethane-d4 (S)	81	%	70-130		100		05/08/18 20:07	17060-07-0	
Toluene-d8 (S)	120	%	70-130		100		05/08/18 20:07	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

Sample: MW-7	Lab ID:	92383412002	Collecte	d: 05/03/1	8 12:00	Received: 05	5/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	ND	ug/L	12.5	2.4	12.5		05/08/18 20:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	12.5	6.1	12.5		05/08/18 20:24	156-60-5	
Trichloroethene	1250	ug/L	12.5	5.9	12.5		05/08/18 20:24	79-01-6	
Vinyl chloride	ND	ug/L	12.5	7.8	12.5		05/08/18 20:24	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	104	%	70-130		12.5		05/08/18 20:24	460-00-4	
1,2-Dichloroethane-d4 (S)	77	%	70-130		12.5		05/08/18 20:24	17060-07-0	
Toluene-d8 (S)	121	%	70-130		12.5		05/08/18 20:24	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

Sample: MW-19	Lab ID:	92383412003	Collecte	d: 05/03/18	3 09:35	Received: 05	5/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	ND	ug/L	50.0	9.5	50		05/08/18 20:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	50.0	24.5	50		05/08/18 20:41	156-60-5	
Trichloroethene	3730	ug/L	50.0	23.5	50		05/08/18 20:41	79-01-6	
Vinyl chloride	ND	ug/L	50.0	31.0	50		05/08/18 20:41	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	104	%	70-130		50		05/08/18 20:41	460-00-4	
1,2-Dichloroethane-d4 (S)	83	%	70-130		50		05/08/18 20:41	17060-07-0	
Toluene-d8 (S)	118	%	70-130		50		05/08/18 20:41	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: MW-20	Lab ID:	92383412004	Collected	: 05/02/18	3 16:10	Received: 05	/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	250	47.5	250		05/08/18 20:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		05/08/18 20:58	156-60-5	
Trichloroethene	29300	ug/L	250	118	250		05/08/18 20:58	79-01-6	M1
Vinyl chloride	ND	ug/L	250	155	250		05/08/18 20:58	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	100	%	70-130		250		05/08/18 20:58	460-00-4	
1,2-Dichloroethane-d4 (S)	77	%	70-130		250		05/08/18 20:58	17060-07-0	
Toluene-d8 (S)	122	%	70-130		250		05/08/18 20:58	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: MW-20A	Lab ID:	92383412005	Collecte	d: 05/02/18	3 15:20	Received: 05	5/03/18 15:19 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		05/08/18 21:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		05/08/18 21:15	156-60-5	
Trichloroethene	13300	ug/L	100	47.0	100		05/08/18 21:15	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		05/08/18 21:15	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	104	%	70-130		100		05/08/18 21:15	460-00-4	
1,2-Dichloroethane-d4 (S)	80	%	70-130		100		05/08/18 21:15	17060-07-0	
Toluene-d8 (S)	121	%	70-130		100		05/08/18 21:15	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: MW-22A	Lab ID:	92383412006	Collecte	d: 05/02/18	3 14:20	Received: 05	5/03/18 15:19 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	550	ug/L	100	19.0	100		05/08/18 21:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		05/08/18 21:32	156-60-5	
Trichloroethene	13900	ug/L	100	47.0	100		05/08/18 21:32	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		05/08/18 21:32	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	100	%	70-130		100		05/08/18 21:32	460-00-4	
1,2-Dichloroethane-d4 (S)	78	%	70-130		100		05/08/18 21:32	17060-07-0	
Toluene-d8 (S)	121	%	70-130		100		05/08/18 21:32	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

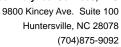
Sample: MW-22	Lab ID:	92383412007	Collecte	d: 05/02/18	3 13:22	Received: 05	5/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	250	47.5	250		05/08/18 21:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		05/08/18 21:49	156-60-5	
Trichloroethene	21500	ug/L	250	118	250		05/08/18 21:49	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		05/08/18 21:49	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	104	%	70-130		250		05/08/18 21:49	460-00-4	
1,2-Dichloroethane-d4 (S)	75	%	70-130		250		05/08/18 21:49	17060-07-0	
Toluene-d8 (S)	122	%	70-130		250		05/08/18 21:49	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: MW-21A	Lab ID:	92383412008	Collecte	d: 05/02/18	3 12:15	Received: 05	5/03/18 15:19 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		05/08/18 22:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		05/08/18 22:06	156-60-5	
Trichloroethene	15800	ug/L	100	47.0	100		05/08/18 22:06	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		05/08/18 22:06	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		100		05/08/18 22:06	460-00-4	
1,2-Dichloroethane-d4 (S)	79	%	70-130		100		05/08/18 22:06	17060-07-0	
Toluene-d8 (S)	122	%	70-130		100		05/08/18 22:06	2037-26-5	





Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: MW-21	Lab ID:	92383412009	Collected	d: 05/02/18	3 11:30	Received: 05	5/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	530	ug/L	250	47.5	250		05/08/18 22:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		05/08/18 22:22	156-60-5	
Trichloroethene	28800	ug/L	250	118	250		05/08/18 22:22	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		05/08/18 22:22	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		250		05/08/18 22:22	460-00-4	
1,2-Dichloroethane-d4 (S)	73	%	70-130		250		05/08/18 22:22	17060-07-0	
Toluene-d8 (S)	128	%	70-130		250		05/08/18 22:22	2037-26-5	

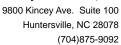


Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

Sample: MW-7A	Lab ID:	92383412010	Collecte	d: 05/03/18	3 14:28	Received: 05	/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	ND	ug/L	200	38.0	200		05/08/18 22:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		05/08/18 22:39	156-60-5	
Trichloroethene	20300	ug/L	200	94.0	200		05/08/18 22:39	79-01-6	
Vinyl chloride	ND	ug/L	200	124	200		05/08/18 22:39	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		200		05/08/18 22:39	460-00-4	
1,2-Dichloroethane-d4 (S)	77	%	70-130		200		05/08/18 22:39	17060-07-0	
Toluene-d8 (S)	123	%	70-130		200		05/08/18 22:39	2037-26-5	





Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

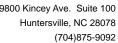
Sample: FD-21	Lab ID:	92383412011	Collecte	d: 05/02/18	3 00:00	Received: 05	/03/18 15:19 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260						
cis-1,2-Dichloroethene	515	ug/L	100	19.0	100		05/08/18 22:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		05/08/18 22:56	156-60-5	
Trichloroethene	12300	ug/L	100	47.0	100		05/08/18 22:56	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		05/08/18 22:56	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		100		05/08/18 22:56	460-00-4	
1,2-Dichloroethane-d4 (S)	79	%	70-130		100		05/08/18 22:56	17060-07-0	
Toluene-d8 (S)	121	%	70-130		100		05/08/18 22:56	2037-26-5	



Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Sample: TB-18	Lab ID:	92383412012	Collecte	d: 05/02/18	00:00	Received: 05	5/03/18 15:19 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL .	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		05/07/18 19:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		05/07/18 19:32	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		05/07/18 19:32	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		05/07/18 19:32	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	95	%	70-130		1		05/07/18 19:32	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-130		1		05/07/18 19:32	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		05/07/18 19:32	2037-26-5	





#### **QUALITY CONTROL DATA**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

QC Batch: 409667 Analysis Method: EPA 8260

QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92383412012

METHOD BLANK: 2272725 Matrix: Water

Associated Lab Samples: 92383412012

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	05/07/18 18:11	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	05/07/18 18:11	
Trichloroethene	ug/L	ND	1.0	0.47	05/07/18 18:11	
Vinyl chloride	ug/L	ND	1.0	0.62	05/07/18 18:11	
1,2-Dichloroethane-d4 (S)	%	94	70-130		05/07/18 18:11	
4-Bromofluorobenzene (S)	%	94	70-130		05/07/18 18:11	
Toluene-d8 (S)	%	102	70-130		05/07/18 18:11	

LABORATORY CONTROL SAMPLE:	2272726					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	49.4	99	74-124	
trans-1,2-Dichloroethene	ug/L	50	49.1	98	71-127	
Trichloroethene	ug/L	50	52.7	105	78-122	
Vinyl chloride	ug/L	50	48.9	98	50-150	
1,2-Dichloroethane-d4 (S)	%			91	70-130	
4-Bromofluorobenzene (S)	%			96	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 22727	27		2272728							
			MS	MSD								
	9	2383119001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.7	22.5	108	113	70-130	4	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.4	23.2	107	116	70-130	8	30	
Trichloroethene	ug/L	ND	20	20	23.1	25.2	116	126	69-151	9	30	
Vinyl chloride	ug/L	ND	20	20	21.0	22.8	105	114	70-130	8	30	
1,2-Dichloroethane-d4 (S)	%						92	95	70-130			
4-Bromofluorobenzene (S)	%						96	97	70-130			
Toluene-d8 (S)	%						100	103	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(704)875-9092



#### **QUALITY CONTROL DATA**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Date: 05/09/2018 02:37 PM

QC Batch: 409840 Analysis Method: EPA 8260

QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92383412001, 92383412002, 92383412003, 92383412004, 92383412005, 92383412006, 92383412007,

92383412008, 92383412009, 92383412010, 92383412011

METHOD BLANK: 2273733 Matrix: Water

Associated Lab Samples: 92383412001, 92383412002, 92383412003, 92383412004, 92383412005, 92383412006, 92383412007,

 $92383412008,\,92383412009,\,92383412010,\,92383412011$ 

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
				IVIDL	Allalyzeu	
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	05/08/18 18:08	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	05/08/18 18:08	
Trichloroethene	ug/L	ND	1.0	0.47	05/08/18 18:08	
Vinyl chloride	ug/L	ND	1.0	0.62	05/08/18 18:08	
1,2-Dichloroethane-d4 (S)	%	77	70-130		05/08/18 18:08	
4-Bromofluorobenzene (S)	%	104	70-130		05/08/18 18:08	
Toluene-d8 (S)	%	118	70-130		05/08/18 18:08	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	49.2	98	74-124	
trans-1,2-Dichloroethene	ug/L	50	51.4	103	71-127	
Trichloroethene	ug/L	50	55.6	111	78-122	
Vinyl chloride	ug/L	50	45.5	91	50-150	
1,2-Dichloroethane-d4 (S)	%			106	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			91	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	CATE: 22737	35		2273736							
		92383412004	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	5000	5000	5300	5380	106	108	70-130	2	30	
trans-1,2-Dichloroethene	ug/L	ND	5000	5000	5110	5570	102	111	70-130	9	30	
Trichloroethene	ug/L	29300	5000	5000	39900	40100	212	215	69-151	0	30	M1
Vinyl chloride	ug/L	ND	5000	5000	5430	5520	109	110	70-130	2	30	
1,2-Dichloroethane-d4 (S)	%						95	100	70-130			
4-Bromofluorobenzene (S)	%						100	101	70-130			
Toluene-d8 (S)	%						102	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(704)875-9092



**QUALIFIERS** 

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

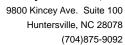
#### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

#### **ANALYTE QUALIFIERS**

Date: 05/09/2018 02:37 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.





# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: CTS of Asheville 6252-16-2012

Pace Project No.: 92383412

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
92383412001	MW-19A	EPA 8260	409840		
92383412002	MW-7	EPA 8260	409840		
92383412003	MW-19	EPA 8260	409840		
92383412004	MW-20	EPA 8260	409840		
92383412005	MW-20A	EPA 8260	409840		
92383412006	MW-22A	EPA 8260	409840		
92383412007	MW-22	EPA 8260	409840		
92383412008	MW-21A	EPA 8260	409840		
92383412009	MW-21	EPA 8260	409840		
92383412010	MW-7A	EPA 8260	409840		
92383412011	FD-21	EPA 8260	409840		
92383412012	TB-18	EPA 8260	409667		

# Pace Analytical*

# Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

lssuing Authority: Pace Carolinas Quality Office

aboratory receiving samples: Asheville	Greenwood 🗌 Hui	ntersville Raleigh Mechanicsville
Sample Condition Upon Receipt  Client Name:	14	Projec W0#: 92383412
ourier: Fed Ex UPS Pace	□USPS □em □Other:	92383412
stody Seal Present? Yes Ano Seal	s Intact? Yes No	Date/Initials Person Examining Contents: (COTS 3
ermometer: 7051	r: Add/Subtract (°C)	ther  Biological Tissue Frozen?  Yes No N/A  None  Temp should be above freezing to 6°C  Samples out of temp criteria. Samples on ice, cooling process
DA Regulated Soil(	ited States: CA, NY, or SC (check ma	including Hawaii and Puerto Rico)? Tres Tino
		Comments/Discrepancy:
Chain of Custody Present?	□xes □No □N/A	1.
Samples Arrived within Hold Time?	□Ves □No □N/A	2.
Short Hold Time Analysis (<72 hr.)?	Yes No N/A	3.
Rush Turn Around Time Requested?	□Yes □NO □N/A	4.
Sufficient Volume?	Dyes No NA	5.
Correct Containers Used? -Pace Containers Used?	No NA	6.
Containers Intact?	ØYes □No □N/A	7.
Dissolved analysis: Samples Field Filtered?	□Yes □No □N/A	8.
Sample Labels Match COC?	□Yes □NO □N/A	samples say FD-20/chain
-Includes Date/Time/ID/Analysis Matrix:	//_	10
Headspace in VOA Vials (>5-6mm)? Trip Blank Present?	Yes No N/A  Yes No N/A	10.
E STATE OF THE STA	□Yes □No □N/A	
Trip Blank Custody Seals Present?  COMMENTS/SAMPLE DISCREPANCY	<u> </u>	Field Data Required? ☐Yes ☐No
		Lot ID of split containers:
CLIENT NOTIFICATION/RESOLUTION		
Person contacted:	Date/	Time:
Project Manager SCURF Review:	E	Date:
Project Manager SRF Review:	仓	Date: /7



# Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

> Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project #

WO#: 92383412

PM: PTE

Due Date: 05/10/18

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	<b>BP4S-</b> 125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CI-)	<b>AG1H-1</b> liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	<b>AG1S-1</b> liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCI (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1				1	1	1	1			1		1	1	1	3								1	1			
2					1	1	1				1		1	/	/	3								/				
3	1				1	1	1	1			/		/	/	/	3								/				
4					1	1	1				/		/	/	/	9								1				
5	1				1	1	1	/		= 1	/		/		/	3								1			=	Ē
6					/	/	/	/			/		/			3								1				
7					/	/	1	1					-			3								1	1			
8					/	/	/	1					-			- 6 /4					120		-					
9	1				/	/	/	1			1	1	1			3									1			
10	1				/	/	/	1					1			3									1	-		
11	1				/	1	1	1			1	- 1	1	1	1	3								1	1			
12					1	1	/								1	3								1				
	1				1	1	1	1			1		1		1	2								1	1			

		pH Ac	ljustment Log for Pres	erved Samples		
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.



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

DATE Signed: Signed: Signed: Signed: Date Signed: Date Signed: Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed: Date Signed:	7	1	116	12	12	1	Rocher	1 30 1	W E E	OF SAMPLE	SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER:	SAME							
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MS/3/18 1488		Amac	文	1	No.	X	1	8EM	-	2/3		M	1,1	1				ort List of VOCs	n List
DATE TIME	DAT	NOI	ACCEPTED BY I AFFILIATION	EPTED B	ACCE	•		TIME		DATE	NOITA	RELINDHISHED BY / AFFILIATION	BHS	RELINO			ADDITIONAL COMMENTS	Data Package	el 2 Da
		(	· ·		- 3	1	2		N	Ree	Prep		a	Cor Co		100	18-		12
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		11	-			<		54	V.	S 0935	5/3/18	-	9	Cup		2	MW-1		ω
			5			<		3		s 1200	5/3/18		0	FU		M	20-	-	2
		1000	/			\		3		1000	states		0	1		14	MW-19		-
		Trip BLANK	Analyses Test 4 VOCs by 8260	Methanol Other	NaOH Na2S2O3	HCI	H2SO4 HNO3	# OF CONTAINERS Unpreserved	SAMPLE TEMP AT COLLEC	END	DATE	START TIME	SAMPLETYPE (G=GRAB		Vater VWV	A second	SAMPLE ID One Character per box. (A-Z, 0-91, -) Sample Ids must be unique	S C	ITEM#
			Y/N	1"	atives	Preservatives	<b>-</b>		TION		COLLECTED	C	C=COMP,	odes to let		MATRIX Drinking Water			
Requested Analysis Filtered (Y/N)	ted Analysis	Reques			П		П	11	] ]					1)	ł				-1
		.com,	zell@pacelabs.com,	taylor.ezel		Pace Profile #: 3900-3	Pace Profile #:	ace P		19	5-2012	5252-16	67	П	Project #:		te:	Requested Due Date:	eques
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																		2	ction





August 15, 2018

Susan Avritt Wood E&S 1308 Patton Avenue Asheville, NC 28806

RE: Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

### Dear Susan Avritt:

Enclosed are the analytical results for sample(s) received by the laboratory on August 08, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell taylor.ezell@pacelabs.com (704)875-9092 Project Manager

Enclosures





9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092



#### **CERTIFICATIONS**

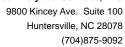
Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

**Charlotte Certification IDs** 

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 Louisiana/NELAP Certification # LA170028 North Carolina Drinking Water Certification #: 37706 North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221





# **SAMPLE SUMMARY**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92395073001	TB-20	Water	08/07/18 00:00	08/08/18 16:55
92395073002	FD-24	Water	08/07/18 00:00	08/08/18 16:55
92395073003	MW-21A	Water	08/07/18 13:05	08/08/18 16:55
92395073004	MW-21	Water	08/07/18 14:05	08/08/18 16:55
92395073005	MW-20A	Water	08/08/18 09:20	08/08/18 16:55
92395073006	MW-20	Water	08/08/18 10:10	08/08/18 16:55
92395073007	MW-19A	Water	08/08/18 11:15	08/08/18 16:55
92395073008	MW-7A	Water	08/08/18 14:15	08/08/18 16:55
92395073009	MW-19	Water	08/08/18 12:10	08/08/18 16:55
92395073010	MW-22A	Water	08/07/18 15:45	08/08/18 16:55
92395073011	MW-22	Water	08/07/18 16:30	08/08/18 16:55
92395073012	MW-7	Water	08/08/18 15:15	08/08/18 16:55



# **SAMPLE ANALYTE COUNT**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92395073001	TB-20	EPA 8260B	CAH	7	PASI-C
92395073002	FD-24	EPA 8260B	GAW	7	PASI-C
92395073003	MW-21A	EPA 8260B	GAW	7	PASI-C
92395073004	MW-21	EPA 8260B	CAH	7	PASI-C
92395073005	MW-20A	EPA 8260B	CAH	7	PASI-C
92395073006	MW-20	EPA 8260B	CAH	7	PASI-C
92395073007	MW-19A	EPA 8260B	CAH	7	PASI-C
92395073008	MW-7A	EPA 8260B	CAH	7	PASI-C
92395073009	MW-19	EPA 8260B	CAH	7	PASI-C
92395073010	MW-22A	EPA 8260B	GAW	7	PASI-C
92395073011	MW-22	EPA 8260B	CAH	7	PASI-C
92395073012	MW-7	EPA 8260B	GAW	7	PASI-C

(704)875-9092

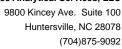


# **SUMMARY OF DETECTION**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Lab Sample ID	Client Sample ID			5		
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92395073002	FD-24					
EPA 8260B	Trichloroethene	652	ug/L	5.0	08/14/18 19:06	
92395073003	MW-21A					
EPA 8260B	Trichloroethene	424	ug/L	2.5	08/15/18 11:28	
92395073004	MW-21					
EPA 8260B	cis-1,2-Dichloroethene	452	ug/L		08/11/18 09:34	
EPA 8260B	Trichloroethene	33900	ug/L	250	08/11/18 09:34	
92395073005	MW-20A					
EPA 8260B	Trichloroethene	17500	ug/L	100	08/11/18 06:52	
92395073006	MW-20					
EPA 8260B	Trichloroethene	33900	ug/L	250	08/11/18 09:17	
92395073007	MW-19A					
EPA 8260B	cis-1,2-Dichloroethene	3300	ug/L	100	08/11/18 07:08	
EPA 8260B	Trichloroethene	13200	ug/L	100	08/11/18 07:08	
2395073008	MW-7A					
EPA 8260B	Trichloroethene	23500	ug/L	200	08/11/18 08:45	
2395073009	MW-19					
EPA 8260B	Trichloroethene	6380	ug/L	40.0	08/11/18 05:47	
92395073010	MW-22A					
EPA 8260B	cis-1,2-Dichloroethene	206	ug/L	100	08/14/18 19:39	
EPA 8260B	Trichloroethene	18400	ug/L	100	08/14/18 19:39	
2395073011	MW-22					
EPA 8260B	cis-1,2-Dichloroethene	325	ug/L	250		
EPA 8260B	Trichloroethene	29600	ug/L	250	08/11/18 09:01	
2395073012	MW-7					
EPA 8260B	Trichloroethene	177	ug/L	2.0	08/15/18 13:42	





#### **PROJECT NARRATIVE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Method: EPA 8260B

Description: 8260 MSV Low Level
Client: Wood E&I - Asheville
Date: August 15, 2018

#### **General Information:**

12 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

#### Surrogates

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 424918

S0: Surrogate recovery outside laboratory control limits.

- MS (Lab ID: 2350486)
  - 1,2-Dichloroethane-d4 (S)
- MSD (Lab ID: 2350487)
  - 1,2-Dichloroethane-d4 (S)

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 424918

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92395116013

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2350486)
  - trans-1,2-Dichloroethene

(704)875-9092





#### **PROJECT NARRATIVE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Method: **EPA 8260B** 

Description: 8260 MSV Low Level Wood E&I - Asheville Client: Date: August 15, 2018

QC Batch: 425030

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92394805002

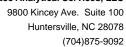
M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MSD (Lab ID: 2350503) • cis-1,2-Dichloroethene

• trans-1,2-Dichloroethene

#### **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



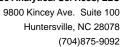


Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: TB-20	Lab ID:	92395073001	Collecte	d: 08/07/18	00:00	Received: 08	3/08/18 16:55 M	atrix: Water	•
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		08/11/18 01:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		08/11/18 01:28	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		08/11/18 01:28	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		08/11/18 01:28	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	96	%	70-130		1		08/11/18 01:28	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		1		08/11/18 01:28	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		08/11/18 01:28	2037-26-5	





Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: FD-24	Lab ID:	92395073002	Collecte	d: 08/07/18	00:00	Received: 08	/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	5.0	0.95	5		08/14/18 19:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	2.4	5		08/14/18 19:06	156-60-5	
Trichloroethene	652	ug/L	5.0	2.4	5		08/14/18 19:06	79-01-6	
Vinyl chloride	ND	ug/L	5.0	3.1	5		08/14/18 19:06	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		5		08/14/18 19:06	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-130		5		08/14/18 19:06	17060-07-0	
Toluene-d8 (S)	106	%	70-130		5		08/14/18 19:06	2037-26-5	

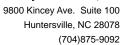


Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-21A	Lab ID:	92395073003	Collecte	d: 08/07/18	3 13:05	Received: 08	/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	2.5	0.48	2.5		08/15/18 11:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	2.5	1.2	2.5		08/15/18 11:28	156-60-5	
Trichloroethene	424	ug/L	2.5	1.2	2.5		08/15/18 11:28	79-01-6	
Vinyl chloride	ND	ug/L	2.5	1.6	2.5		08/15/18 11:28	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		2.5		08/15/18 11:28	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	70-130		2.5		08/15/18 11:28	17060-07-0	
Toluene-d8 (S)	110	%	70-130		2.5		08/15/18 11:28	2037-26-5	



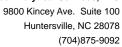


Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-21	Lab ID:	92395073004	Collecte	d: 08/07/18	3 14:05	Received: 08	/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	452	ug/L	250	47.5	250		08/11/18 09:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		08/11/18 09:34	156-60-5	
Trichloroethene	33900	ug/L	250	118	250		08/11/18 09:34	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		08/11/18 09:34	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	97	%	70-130		250		08/11/18 09:34	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		250		08/11/18 09:34	17060-07-0	
Toluene-d8 (S)	100	%	70-130		250		08/11/18 09:34	2037-26-5	





Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-20A	Lab ID:	92395073005	Collecte	d: 08/08/18	3 09:20	Received: 08	/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		08/11/18 06:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		08/11/18 06:52	156-60-5	
Trichloroethene	17500	ug/L	100	47.0	100		08/11/18 06:52	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		08/11/18 06:52	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	99	%	70-130		100		08/11/18 06:52	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		100		08/11/18 06:52	17060-07-0	
Toluene-d8 (S)	100	%	70-130		100		08/11/18 06:52	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-20	Lab ID:	92395073006	Collecte	d: 08/08/18	3 10:10	Received: 08	/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	250	47.5	250		08/11/18 09:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		08/11/18 09:17	156-60-5	
Trichloroethene	33900	ug/L	250	118	250		08/11/18 09:17	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		08/11/18 09:17	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	96	%	70-130		250		08/11/18 09:17	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		250		08/11/18 09:17	17060-07-0	
Toluene-d8 (S)	98	%	70-130		250		08/11/18 09:17	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-19A	Lab ID:	92395073007	Collecte	d: 08/08/18	3 11:15	Received: 08/08/18 16:55 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	3300	ug/L	100	19.0	100		08/11/18 07:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		08/11/18 07:08	156-60-5	
Trichloroethene	13200	ug/L	100	47.0	100		08/11/18 07:08	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		08/11/18 07:08	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	99	%	70-130		100		08/11/18 07:08	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		100		08/11/18 07:08	17060-07-0	
Toluene-d8 (S)	97	%	70-130		100		08/11/18 07:08	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-7A	Lab ID:	92395073008	Collected: 08/08/18 14:15			Received: 08/08/18 16:55 Matrix: Wa			
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	200	38.0	200		08/11/18 08:45	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		08/11/18 08:45	156-60-5	
Trichloroethene	23500	ug/L	200	94.0	200		08/11/18 08:45	79-01-6	
Vinyl chloride	ND	ug/L	200	124	200		08/11/18 08:45	75-01-4	
Surrogates		-							
4-Bromofluorobenzene (S)	97	%	70-130		200		08/11/18 08:45	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		200		08/11/18 08:45	17060-07-0	
Toluene-d8 (S)	100	%	70-130		200		08/11/18 08:45	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-19	Lab ID:	92395073009	Occilected: 08/08/18 12:10 R		Received: 08/08/18 16:55		Matrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical I	Method: EPA 8	3260B						
cis-1,2-Dichloroethene	ND	ug/L	40.0	7.6	40		08/11/18 05:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	40.0	19.6	40		08/11/18 05:47	156-60-5	
Trichloroethene	6380	ug/L	40.0	18.8	40		08/11/18 05:47	79-01-6	
Vinyl chloride	ND	ug/L	40.0	24.8	40		08/11/18 05:47	75-01-4	
Surrogates		-							
4-Bromofluorobenzene (S)	99	%	70-130		40		08/11/18 05:47	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		40		08/11/18 05:47	17060-07-0	
Toluene-d8 (S)	99	%	70-130		40		08/11/18 05:47	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-22A	Lab ID:	92395073010	Collecte	d: 08/07/18	3 15:45	Received: 08	3/08/18 16:55 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	206	ug/L	100	19.0	100		08/14/18 19:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		08/14/18 19:39	156-60-5	
Trichloroethene	18400	ug/L	100	47.0	100		08/14/18 19:39	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		08/14/18 19:39	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	108	%	70-130		100		08/14/18 19:39	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130		100		08/14/18 19:39	17060-07-0	
Toluene-d8 (S)	108	%	70-130		100		08/14/18 19:39	2037-26-5	

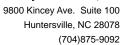


Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-22	Lab ID:	92395073011	Collecte	d: 08/07/18	3 16:30	Received: 08/08/18 16:55 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	3260B						
cis-1,2-Dichloroethene	325	ug/L	250	47.5	250		08/11/18 09:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	250	122	250		08/11/18 09:01	156-60-5	
Trichloroethene	29600	ug/L	250	118	250		08/11/18 09:01	79-01-6	
Vinyl chloride	ND	ug/L	250	155	250		08/11/18 09:01	75-01-4	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		250		08/11/18 09:01	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		250		08/11/18 09:01	17060-07-0	
Toluene-d8 (S)	99	%	70-130		250		08/11/18 09:01	2037-26-5	





Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

Sample: MW-7	Lab ID:	92395073012	Collecte	d: 08/08/18	3 15:15	Received: 08	3/08/18 16:55 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	2.0	0.38	2		08/15/18 13:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	2.0	0.98	2		08/15/18 13:42	156-60-5	
Trichloroethene	177	ug/L	2.0	0.94	2		08/15/18 13:42	79-01-6	
Vinyl chloride	ND	ug/L	2.0	1.2	2		08/15/18 13:42	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		2		08/15/18 13:42	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130		2		08/15/18 13:42	17060-07-0	
Toluene-d8 (S)	111	%	70-130		2		08/15/18 13:42	2037-26-5	



### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

QC Batch: 424390 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92395073001, 92395073005, 92395073007, 92395073009

METHOD BLANK: 2347687 Matrix: Water

Associated Lab Samples: 92395073001, 92395073005, 92395073007, 92395073009

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	08/11/18 00:55	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	08/11/18 00:55	
Trichloroethene	ug/L	ND	1.0	0.47	08/11/18 00:55	
Vinyl chloride	ug/L	ND	1.0	0.62	08/11/18 00:55	
1,2-Dichloroethane-d4 (S)	%	100	70-130		08/11/18 00:55	
4-Bromofluorobenzene (S)	%	97	70-130		08/11/18 00:55	
Toluene-d8 (S)	%	101	70-130		08/11/18 00:55	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
1,2-Dichloroethene	ug/L	50	51.0	102	74-124	
ns-1,2-Dichloroethene	ug/L	50	52.2	104	71-127	
hloroethene	ug/L	50	52.6	105	78-122	
l chloride	ug/L	50	52.8	106	58-137	
Dichloroethane-d4 (S)	%			94	70-130	
omofluorobenzene (S)	%			99	70-130	
ene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2347689 2347690												
			MS	MSD								
	9	2394925009	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	2000	2000	1550	1570	77	78	70-130	1	30	
trans-1,2-Dichloroethene	ug/L	ND	2000	2000	1610	1640	80	82	70-130	2	30	
Trichloroethene	ug/L	ND	2000	2000	1570	1660	79	83	69-151	6	30	
Vinyl chloride	ug/L	ND	2000	2000	1620	1710	81	85	70-130	5	30	
1,2-Dichloroethane-d4 (S)	%						98	97	70-130			
4-Bromofluorobenzene (S)	%						99	98	70-130			
Toluene-d8 (S)	%						99	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

LABORATORY CONTROL SAMPLE: 2347704

Date: 08/15/2018 02:40 PM

Pace Project No.: 92395073

QC Batch: 424394 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92395073004, 92395073006, 92395073008, 92395073011

METHOD BLANK: 2347703 Matrix: Water

Associated Lab Samples: 92395073004, 92395073006, 92395073008, 92395073011

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	08/11/18 01:12	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	08/11/18 01:12	
Trichloroethene	ug/L	ND	1.0	0.47	08/11/18 01:12	
Vinyl chloride	ug/L	ND	1.0	0.62	08/11/18 01:12	
1,2-Dichloroethane-d4 (S)	%	96	70-130		08/11/18 01:12	
4-Bromofluorobenzene (S)	%	99	70-130		08/11/18 01:12	
Toluene-d8 (S)	%	100	70-130		08/11/18 01:12	

Parameter	Units	Spike Conc.	Result	% Rec	% Rec Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	50.7	101	74-124	
trans-1,2-Dichloroethene	ug/L	50	51.5	103	71-127	

Trichloroethene 78-122 ug/L 50 53.6 107 Vinyl chloride 50 53.3 58-137 ug/L 107 1,2-Dichloroethane-d4 (S) % 100 70-130 4-Bromofluorobenzene (S) % 96 70-130 Toluene-d8 (S) % 98 70-130

MATRIX SPIKE & MATRIX SP	ATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2348098 2348099											
			MS	MSD								
	9	2395116001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	20	20	22.4	22.4	112	112	70-130	0	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	23.0	23.3	115	116	70-130	1	30	
Trichloroethene	ug/L	ND	20	20	23.0	22.7	115	113	69-151	1	30	
Vinyl chloride	ug/L	ND	20	20	23.6	23.8	118	119	70-130	1	30	
1,2-Dichloroethane-d4 (S)	%						98	99	70-130			
4-Bromofluorobenzene (S)	%						98	99	70-130			
Toluene-d8 (S)	%						97	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

QC Batch: 424918 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92395073002, 92395073010

METHOD BLANK: 2350158 Matrix: Water

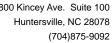
Associated Lab Samples: 92395073002, 92395073010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	08/14/18 18:16	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	08/14/18 18:16	
Trichloroethene	ug/L	ND	1.0	0.47	08/14/18 18:16	
Vinyl chloride	ug/L	ND	1.0	0.62	08/14/18 18:16	
1,2-Dichloroethane-d4 (S)	%	99	70-130		08/14/18 18:16	
4-Bromofluorobenzene (S)	%	106	70-130		08/14/18 18:16	
Toluene-d8 (S)	%	108	70-130		08/14/18 18:16	

ABORATORY CONTROL SAMPLE:	2350159	Cnilco	1.00	1.00	0/ Doo	
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
i alametei				/0 IXEC		Qualifiers
s-1,2-Dichloroethene	ug/L	50	53.8	108	74-124	
ns-1,2-Dichloroethene	ug/L	50	56.4	113	71-127	
chloroethene	ug/L	50	56.9	114	78-122	
l chloride	ug/L	50	52.4	105	58-137	
Dichloroethane-d4 (S)	%			117	70-130	
omofluorobenzene (S)	%			96	70-130	
uene-d8 (S)	%			96	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 23504		2350487								
			MS	MSD								
	9	92395116013	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	500	500	636	622	127	124	70-130	2	30	
trans-1,2-Dichloroethene	ug/L	ND	500	500	661	647	132	129	70-130	2	30	M1
Trichloroethene	ug/L	ND	500	500	648	626	130	125	69-151	4	30	
Vinyl chloride	ug/L	ND	500	500	605	609	121	122	70-130	1	30	
1,2-Dichloroethane-d4 (S)	%						106	110	70-130			S0
4-Bromofluorobenzene (S)	%						94	94	70-130			
Toluene-d8 (S)	%						101	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

QC Batch: 425030 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92395073003, 92395073012

METHOD BLANK: 2350500 Matrix: Water

Associated Lab Samples: 92395073003, 92395073012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND ND	1.0	0.19	08/15/18 10:55	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	08/15/18 10:55	
Trichloroethene	ug/L	ND	1.0	0.47	08/15/18 10:55	
Vinyl chloride	ug/L	ND	1.0	0.62	08/15/18 10:55	
1,2-Dichloroethane-d4 (S)	%	96	70-130		08/15/18 10:55	
4-Bromofluorobenzene (S)	%	108	70-130		08/15/18 10:55	
Toluene-d8 (S)	%	115	70-130		08/15/18 10:55	

ABORATORY CONTROL SAMPLE:	2350501					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	51.2	102	74-124	
ans-1,2-Dichloroethene	ug/L	50	50.9	102	71-127	
richloroethene	ug/L	50	55.9	112	78-122	
yl chloride	ug/L	50	47.8	96	58-137	
P-Dichloroethane-d4 (S)	%			97	70-130	
Bromofluorobenzene (S)	%			97	70-130	
luene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPI	IKE DUPLICA	2350503										
			MS	MSD								
	9.	2394805002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	21.1	400	400	488	558	117	134	70-130	14	30	M1
trans-1,2-Dichloroethene	ug/L	ND	400	400	473	581	118	145	70-130	21	30	M1
Trichloroethene	ug/L	58.2	400	400	553	613	124	139	69-151	10	30	
Vinyl chloride	ug/L	ND	400	400	453	515	113	129	70-130	13	30	
1,2-Dichloroethane-d4 (S)	%						108	117	70-130			
4-Bromofluorobenzene (S)	%						101	100	70-130			
Toluene-d8 (S)	%						99	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Huntersville, NC 28078 (704)875-9092

### **QUALIFIERS**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

### **ANALYTE QUALIFIERS**

Date: 08/15/2018 02:40 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

S0 Surrogate recovery outside laboratory control limits.



### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92395073

Date: 08/15/2018 02:40 PM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
2395073001	TB-20	EPA 8260B	424390		
2395073002	FD-24	EPA 8260B	424918		
2395073003	MW-21A	EPA 8260B	425030		
2395073004	MW-21	EPA 8260B	424394		
2395073005	MW-20A	EPA 8260B	424390		
2395073006	MW-20	EPA 8260B	424394		
2395073007	MW-19A	EPA 8260B	424390		
2395073008	MW-7A	EPA 8260B	424394		
2395073009	MW-19	EPA 8260B	424390		
2395073010	MW-22A	EPA 8260B	424918		
2395073011	MW-22	EPA 8260B	424394		
2395073012	MW-7	EPA 8260B	425030		

# Pace Analytical*

## Document Name:

Document Revised: February 7, 2018

Page 1 of 2
Issuing Authority:
Pace Carolinas Quality Office Sample Condition Upon Receipt(SCUR) Document No.: F-CAR-CS-033-Rev.06

ample Condition Client Name:		1	Projec	W0#:92395073
M00 g				
rier: Fed Ex UPS Commercial Pace	USPS Other:	□ cti	ent	92395073
ody Seal Present? Pes No Seals	Intact? Tes	□No		Date/Initials Person Examining Contents:
ng Material: Bubble Wrap Bub	bble Bags Nor	ne 🖸 O	ther	Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A
nometer: 13TV4V	Type of Ice:	₩et □B	ilue	□None □Tes □INO □NO
	: Add/Subtract (°C)	()		4.8
11/2	; Add/Subtract ( C)	<u> </u>	_	Temp should be above freezing to 6°C
r Temp Corrected (°C): 4.6				Samples out of temp criteria. Samples on ice, cooling proc has begun
Regulated Soil ( N/A, water sample)				1145 Degan
imples originate in a quarantine zone within the Unite	ed States: CA, NY, or S	SÇ (check maj	ps)?	Old samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No
Yes No			T	Comments/Discrepancy:
and the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of t		S made	10	
Chain of Custody Present?	Tes_ No	□N/A	1.	
Samples Arrived within Hold Time?	☐Yes ☐No	□N/A	2.	
Short Hold Time Analysis (<72 hr.)?	Yes No	□N/A	3.	
Rush Turn Around Time Requested?	□Yes ∃No	□N/A	4.	
Sufficient Volume?	. □Yes □No	□N/A	5.	
Correct Containers Used?	ØYes □No	□N/A	6.	
-Pace Containers Used?	Yes No	□N/A	-	
Containers Intact?	LYES No	□N/A	7.	
Dissolved analysis: Samples Field Flitered?	□Yes □No	□N/A	8.	
Sample Labels Match COC?	Ø es □No	□N/A	9,	
	4			
-Includes Date/Time/ID/Analysis Matrix:			-	
Headspace in VOA Vials (>5-6mm)?	☐Yes☐No	□N/A	10.	
Frip Blank Present?	. Yes UNO	□N/A	11.	
Trip Blank Custody Seals Present?	☐ Yes ☐ No	□N/A	1	
MMENTS/SAMPLE DISCREPANCY				Field Data Required? Yes N
	- 42-0			
			Lo	ot ID of split containers:
T NOTIFICATION/PECOLITION				
IT NOTIFICATION/RESOLUTION				
IT NOTIFICATION/RESOLUTION				
IT NOTIFICATION/RESOLUTION			-	
IT NOTIFICATION/RESOLUTION  son contacted:		Date/Ti		
		Date/Ti		
	<b>(15)</b>	Date/Ti		Date: \$/9



### Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

Issuing Authority:
Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Proje WO#: 92395073

PM. PTE

Due Date: 08/15/18

CLIENT: 92-AMEC A

ltem#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (CI-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP42-125 ml. Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (CI-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CI-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG15-1 liter Amber H2SO4 (pH < 2)	AG35-250 mL Amber H2SO4 (pH < 2)	AGSA(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCI (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mt. VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2504 (9.3-9.7)	AGDU-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1				1	1	1				1		1	1	1	2								1				
2	1				1	1		1			1		1	1	/	3								/	1			
3	1				/	1	1	1			1		/	/	1	3								/				
4					1	1	1	/			/		1	1	1	3								1				
5	1				1	/	/	/		,	1		1	1	/	3		- 1						1	1		7,	
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8	1				/	1	1	/			1		/	/	/	3								/	1			
9	1				/	1	/				7		1	1	7	3								/	/			
10	1			P	/	7	1	1			7		1	1	/	3								/	/			
11	1				/	1	/	1			7		/	1	7	3								/				
12	1				/	1	7	1			7		1	1	1	3				-				7	/			

		pH Ac	ljustment Log for Pres	erved Samples		
Sample ID	Type of Preservative	pH upan receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot#
						-

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.

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

	W BAST	ADDITIONAL COMMENTS SE	をとう。			ST-MM 6			17/U-70				アフーハ		一トスークの	SAMPLE ID One Character per box. (AZ, 0-91,-) # Sample ids must be unique			ed Due Date: Stande	Phone: NONE Fax:	Email: Sisan swill Company	Address: 1308 Patton Avenue	1 2	Required Client Information:
	Spot //														-	Take to the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the seco	R B des to left	2000	Project # Anna	Principle Order #:		Сору То:	Required Project Information: Report To: Susen Awritt	Section B
SOMETER NA PRINT NA SIGNATU	MINION	NOUNTER THE CHE	8/8	3/4/8	2148	878	8,8	8/8	8/8	8/2	8,6	8/4	13		. DOLL	TIME	COLLECTED	19.001	CIS of Asheville	Andrew Control Control			nformation:	
SAMPLER NAME AND SIGNATURES PRINT Name of SAMPLER: SIGNATURE of SAMPLER:	Shigh	1 P	Skin Kir			01.71 848/8	N.W. 348/8	5/:1/8/1/8/8	8/8/8/0:10	8/B/ROAZO	84/8/400	817/18/13'05	8/4/8 0.00	146 prep	-	Z Z		Pac	Pace	Pace	Add	Com	lavo	Sec
Bodypy	1655 Jan 1		2	2		2,	<u> </u>	7	9			V	/	,	H H Z	Inpreserved 12504 1NO3 ICI IaOH	Preservatives	1 1 "	A.	Pace Quote:	Address:	Company Name:	Invoice Information:	Section C
N. O.	Brand &	ACCEPTED BY JAKE HUATION	7		2	S	\$	5		2	-	<b>~</b>	V	U U	М О	lethanol ther 'Analyses Test hort List VOC by 8260	YIN®	連続が設	taylor.ezeil@pacelabs.com.					
DATE SUDJECT / 8	Be SKI	and a second														A		Requested Analysis Einered (Y/N)						
TEMP in C	18/15/2														Do	sidual Oblasta (MID)		red (Y/N)	18 18 18 18 18 18 18 18 18 18 18 18 18 1	Reg	And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s		Page:	1
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November 15, 2018

Susan Avritt Wood E&S 1308 Patton Avenue Asheville, NC 28806

RE: Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

### Dear Susan Avritt:

Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell taylor.ezell@pacelabs.com (704)875-9092 Project Manager

**Enclosures** 





9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092



### **CERTIFICATIONS**

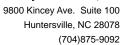
Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

**Charlotte Certification IDs** 

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 Louisiana/NELAP Certification # LA170028 North Carolina Drinking Water Certification #: 37706 North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221





### **SAMPLE SUMMARY**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92406645001	FD-35	Water	11/07/18 00:00	11/08/18 13:13
92406645002	TB-32	Water	11/07/18 00:00	11/08/18 13:13
92406645003	MW-7A	Water	11/06/18 13:50	11/08/18 13:13
92406645004	MW-7	Water	11/06/18 15:25	11/08/18 13:13
92406645005	MW-21A	Water	11/06/18 16:55	11/08/18 13:13
92406645006	MW-21	Water	11/07/18 09:20	11/08/18 13:13
92406645007	MW-22	Water	11/07/18 10:30	11/08/18 13:13
92406645008	MW-22A	Water	11/07/18 11:30	11/08/18 13:13
92406645009	MW-19A	Water	11/07/18 13:30	11/08/18 13:13
92406645010	MW-19	Water	11/07/18 14:30	11/08/18 13:13
92406645011	MW-20	Water	11/07/18 15:30	11/08/18 13:13
92406645012	MW-20A	Water	11/07/18 11:00	11/08/18 13:13



### **SAMPLE ANALYTE COUNT**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92406645001	FD-35	EPA 8260B	SAS	7	PASI-C
92406645002	TB-32	EPA 8260B	GAW	7	PASI-C
92406645003	MW-7A	EPA 8260B	GAW	7	PASI-C
92406645004	MW-7	EPA 8260B	GAW	7	PASI-C
92406645005	MW-21A	EPA 8260B	GAW	7	PASI-C
92406645006	MW-21	EPA 8260B	GAW	7	PASI-C
92406645007	MW-22	EPA 8260B	GAW	7	PASI-C
92406645008	MW-22A	EPA 8260B	GAW	7	PASI-C
92406645009	MW-19A	EPA 8260B	GAW	7	PASI-C
92406645010	MW-19	EPA 8260B	GAW	7	PASI-C
92406645011	MW-20	EPA 8260B	GAW	7	PASI-C
92406645012	MW-20A	EPA 8260B	GAW	7	PASI-C

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### **SUMMARY OF DETECTION**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2406645001	FD-35					
EPA 8260B	cis-1,2-Dichloroethene	3550	ug/L		11/13/18 19:15	
EPA 8260B	Trichloroethene	14800	ug/L	100	11/13/18 19:15	M1
92406645003	MW-7A					
EPA 8260B	cis-1,2-Dichloroethene	57.2J	ug/L		11/13/18 20:21	
EPA 8260B	Trichloroethene	28600	ug/L	200	11/13/18 20:21	M1
2406645004	MW-7					
EPA 8260B	Trichloroethene	86.5	ug/L	1.0	11/14/18 16:57	
2406645005	MW-21A					
EPA 8260B	Trichloroethene	7130	ug/L	50.0	11/14/18 20:23	
2406645006	MW-21					
EPA 8260B	Trichloroethene	12400	ug/L	100	11/14/18 21:14	
2406645007	MW-22					
EPA 8260B	Trichloroethene	24300	ug/L	200	11/14/18 21:31	
2406645008	MW-22A					
EPA 8260B	cis-1,2-Dichloroethene	73.2J	ug/L	100	11/13/18 19:47	
EPA 8260B	Trichloroethene	17300	ug/L	100	11/13/18 19:47	
2406645009	MW-19A					
EPA 8260B	cis-1,2-Dichloroethene	3090	ug/L		11/13/18 19:30	
EPA 8260B	Trichloroethene	12400	ug/L	100	11/13/18 19:30	
2406645010	MW-19					
EPA 8260B	cis-1,2-Dichloroethene	15.6J	ug/L		11/13/18 19:13	
EPA 8260B	Trichloroethene	4590	ug/L	40.0	11/13/18 19:13	
2406645011	MW-20					
EPA 8260B	Trichloroethene	22600	ug/L	200	11/14/18 21:48	
2406645012	MW-20A					
EPA 8260B	Trichloroethene	16800	ug/L	100	11/13/18 20:04	



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### **PROJECT NARRATIVE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Method: EPA 8260B

Description: 8260 MSV Low Level
Client: Wood E&I - Asheville
Date: November 15, 2018

### **General Information:**

12 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

### Surrogates

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 441803

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92406645003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2425883)
  - Trichloroethene
- MSD (Lab ID: 2425884)
  - Trichloroethene

QC Batch: 442054

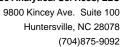
A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92406645001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 2426863)
  - Trichloroethene

### **Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.





### **PROJECT NARRATIVE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Method: EPA 8260B

Description:8260 MSV Low LevelClient:Wood E&I - AshevilleDate:November 15, 2018

### **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: FD-35	Lab ID:	92406645001	Collecte	d: 11/07/18	00:00	Received: 11	/08/18 13:13 M	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	3550	ug/L	100	19.0	100		11/13/18 19:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		11/13/18 19:15	156-60-5	
Trichloroethene	14800	ug/L	100	47.0	100		11/13/18 19:15	79-01-6	M1
Vinyl chloride	ND	ug/L	100	62.0	100		11/13/18 19:15	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	106	%	70-130		100		11/13/18 19:15	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		100		11/13/18 19:15	17060-07-0	
Toluene-d8 (S)	106	%	70-130		100		11/13/18 19:15	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

Sample: TB-32	Lab ID:	92406645002	Collecte	d: 11/07/18	00:00	Received: 11	/08/18 13:13 M	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		11/12/18 17:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		11/12/18 17:41	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		11/12/18 17:41	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		11/12/18 17:41	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		1		11/12/18 17:41	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		11/12/18 17:41	17060-07-0	
Toluene-d8 (S)	107	%	70-130		1		11/12/18 17:41	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

Sample: MW-7A	Lab ID:	92406645003	Collecte	d: 11/06/18	3 13:50	Received: 11/	/08/18 13:13 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	57.2J	ug/L	200	38.0	200		11/13/18 20:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		11/13/18 20:21	156-60-5	
Trichloroethene	28600	ug/L	200	94.0	200		11/13/18 20:21	79-01-6	M1
Vinyl chloride	ND	ug/L	200	124	200		11/13/18 20:21	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	103	%	70-130		200		11/13/18 20:21	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		200		11/13/18 20:21	17060-07-0	
Toluene-d8 (S)	103	%	70-130		200		11/13/18 20:21	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-7	Lab ID:	92406645004	Collecte	d: 11/06/18	15:25	Received: 11	/08/18 13:13 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		11/14/18 16:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		11/14/18 16:57	156-60-5	
Trichloroethene	86.5	ug/L	1.0	0.47	1		11/14/18 16:57	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.62	1		11/14/18 16:57	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	102	%	70-130		1		11/14/18 16:57	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		1		11/14/18 16:57	17060-07-0	
Toluene-d8 (S)	106	%	70-130		1		11/14/18 16:57	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-21A	Lab ID:	Lab ID: 92406645005			16:55	Received: 11/08/18 13:13 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	50.0	9.5	50		11/14/18 20:23	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	50.0	24.5	50		11/14/18 20:23	156-60-5	
Trichloroethene	7130	ug/L	50.0	23.5	50		11/14/18 20:23	79-01-6	
Vinyl chloride	ND	ug/L	50.0	31.0	50		11/14/18 20:23	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		50		11/14/18 20:23	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		50		11/14/18 20:23	17060-07-0	
Toluene-d8 (S)	105	%	70-130		50		11/14/18 20:23	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-21	Lab ID:	92406645006	Collected	d: 11/07/18	3 09:20	Received: 11/	08/18 13:13 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		11/14/18 21:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		11/14/18 21:14	156-60-5	
Trichloroethene	12400	ug/L	100	47.0	100		11/14/18 21:14	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		11/14/18 21:14	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	101	%	70-130		100		11/14/18 21:14	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		100		11/14/18 21:14	17060-07-0	
Toluene-d8 (S)	106	%	70-130		100		11/14/18 21:14	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-22	Lab ID:	Lab ID: 92406645007			3 10:30	Received: 11	atrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	200	38.0	200		11/14/18 21:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		11/14/18 21:31	156-60-5	
Trichloroethene	24300	ug/L	200	94.0	200		11/14/18 21:31	79-01-6	
Vinyl chloride	ND	ug/L	200	124	200		11/14/18 21:31	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		200		11/14/18 21:31	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		200		11/14/18 21:31	17060-07-0	
Toluene-d8 (S)	105	%	70-130		200		11/14/18 21:31	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-22A	Lab ID:	92406645008	Collecte	Collected: 11/07/18 11:30			Received: 11/08/18 13:13 Matrix: Water			
			Report							
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Low Level	Analytical	Method: EPA 8	260B							
cis-1,2-Dichloroethene	73.2J	ug/L	100	19.0	100		11/13/18 19:47	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		11/13/18 19:47	156-60-5		
Trichloroethene	17300	ug/L	100	47.0	100		11/13/18 19:47	79-01-6		
Vinyl chloride	ND	ug/L	100	62.0	100		11/13/18 19:47	75-01-4		
Surrogates		•								
4-Bromofluorobenzene (S)	101	%	70-130		100		11/13/18 19:47	460-00-4		
1,2-Dichloroethane-d4 (S)	94	%	70-130		100		11/13/18 19:47	17060-07-0		
Toluene-d8 (S)	107	%	70-130		100		11/13/18 19:47	2037-26-5		



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

Sample: MW-19A	Lab ID:	92406645009	Collecte	Collected: 11/07/18 13:30			Received: 11/08/18 13:13 Matrix: Wate		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	3090	ug/L	100	19.0	100		11/13/18 19:30	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		11/13/18 19:30	156-60-5	
Trichloroethene	12400	ug/L	100	47.0	100		11/13/18 19:30	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		11/13/18 19:30	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	104	%	70-130		100		11/13/18 19:30	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		100		11/13/18 19:30	17060-07-0	
Toluene-d8 (S)	107	%	70-130		100		11/13/18 19:30	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

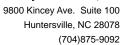
Sample: MW-19	Lab ID:	Lab ID: 92406645010			14:30	Received: 11/08/18 13:13 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	15.6J	ug/L	40.0	7.6	40		11/13/18 19:13	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	40.0	19.6	40		11/13/18 19:13	156-60-5	
Trichloroethene	4590	ug/L	40.0	18.8	40		11/13/18 19:13	79-01-6	
Vinyl chloride	ND	ug/L	40.0	24.8	40		11/13/18 19:13	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	102	%	70-130		40		11/13/18 19:13	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		40		11/13/18 19:13	17060-07-0	
Toluene-d8 (S)	106	%	70-130		40		11/13/18 19:13	2037-26-5	



Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-20	Lab ID:	Lab ID: 92406645011			Collected: 11/07/18 15:30		/08/18 13:13 Ma	latrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	200	38.0	200		11/14/18 21:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	200	98.0	200		11/14/18 21:48	156-60-5	
Trichloroethene	22600	ug/L	200	94.0	200		11/14/18 21:48	79-01-6	
Vinyl chloride	ND	ug/L	200	124	200		11/14/18 21:48	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	104	%	70-130		200		11/14/18 21:48	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		200		11/14/18 21:48	17060-07-0	
Toluene-d8 (S)	106	%	70-130		200		11/14/18 21:48	2037-26-5	

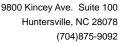




Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Sample: MW-20A	Lab ID:	Collecte	Collected: 11/07/18 11:00			Received: 11/08/18 13:13 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical	Method: EPA 8	260B						
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		11/13/18 20:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		11/13/18 20:04	156-60-5	
Trichloroethene	16800	ug/L	100	47.0	100		11/13/18 20:04	79-01-6	
Vinyl chloride	ND	ug/L	100	62.0	100		11/13/18 20:04	75-01-4	
Surrogates		· ·							
4-Bromofluorobenzene (S)	101	%	70-130		100		11/13/18 20:04	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		100		11/13/18 20:04	17060-07-0	
Toluene-d8 (S)	105	%	70-130		100		11/13/18 20:04	2037-26-5	





### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

QC Batch: 441793 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92406645002

METHOD BLANK: 2425825 Matrix: Water

Associated Lab Samples: 92406645002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND ND	1.0	0.19	11/12/18 10:49	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	11/12/18 10:49	
Trichloroethene	ug/L	ND	1.0	0.47	11/12/18 10:49	
Vinyl chloride	ug/L	ND	1.0	0.62	11/12/18 10:49	
1,2-Dichloroethane-d4 (S)	%	98	70-130		11/12/18 10:49	
4-Bromofluorobenzene (S)	%	102	70-130		11/12/18 10:49	
Toluene-d8 (S)	%	109	70-130		11/12/18 10:49	

LABORATORY CONTROL SAMPLE:	2425826					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	50.7	101	70-130	
rans-1,2-Dichloroethene	ug/L	50	53.9	108	70-130	
richloroethene	ug/L	50	51.9	104	70-130	
inyl chloride	ug/L	50	52.2	104	70-131	
2-Dichloroethane-d4 (S)	%			102	70-130	
Bromofluorobenzene (S)	%			98	70-130	
oluene-d8 (S)	%			98	70-130	

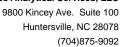
MATRIX SPIKE SAMPLE:	2426693						
		92406738002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	20	20.2	101	77-141	
trans-1,2-Dichloroethene	ug/L	ND	20	20.5	102	76-146	
Trichloroethene	ug/L	ND	20	21.0	105	77-147	
Vinyl chloride	ug/L	ND	20	19.3	96	70-156	
1,2-Dichloroethane-d4 (S)	%				91	70-130	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2426692

Date: 11/15/2018 05:10 PM

C,		92406738003	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

SAMPLE DUPLICATE: 2426692						
		92406738003	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%	95	88	8		
4-Bromofluorobenzene (S)	%	104	104	0		
Toluene-d8 (S)	%	108	111	2		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

QC Batch: 441803 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92406645003, 92406645008, 92406645009, 92406645010, 92406645012

METHOD BLANK: 2425881 Matrix: Water

Associated Lab Samples: 92406645003, 92406645008, 92406645009, 92406645010, 92406645012

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND ND	1.0	0.19	11/13/18 11:53	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	11/13/18 11:53	
Trichloroethene	ug/L	ND	1.0	0.47	11/13/18 11:53	
Vinyl chloride	ug/L	ND	1.0	0.62	11/13/18 11:53	
1,2-Dichloroethane-d4 (S)	%	98	70-130		11/13/18 11:53	
4-Bromofluorobenzene (S)	%	103	70-130		11/13/18 11:53	
Toluene-d8 (S)	%	108	70-130		11/13/18 11:53	

LABORATORY CONTROL SAMPLE:	2425882				_	
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L		49.9	100	70-130	
rans-1,2-Dichloroethene	ug/L	50	53.1	106	70-130	
richloroethene	ug/L	50	51.6	103	70-130	
nyl chloride	ug/L	50	50.7	101	70-131	
P-Dichloroethane-d4 (S)	%			96	70-130	
Bromofluorobenzene (S)	%			96	70-130	
luene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	ATE: 24258	33		2425884							
			MS	MSD								
		92406645003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	57.2J	4000	4000	4050	3950	100	97	77-141	2	30	
trans-1,2-Dichloroethene	ug/L	ND	4000	4000	4220	4130	105	103	76-146	2	30	
Trichloroethene	ug/L	28600	4000	4000	35400	36600	170	200	77-147	3	30	M1
Vinyl chloride	ug/L	ND	4000	4000	3690	3530	92	88	70-156	4	30	
1,2-Dichloroethane-d4 (S)	%						86	89	70-130			
4-Bromofluorobenzene (S)	%						98	101	70-130			
Toluene-d8 (S)	%						96	98	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



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### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

QC Batch: 442054 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92406645001

METHOD BLANK: 2426860 Matrix: Water

Associated Lab Samples: 92406645001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	11/13/18 17:02	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	11/13/18 17:02	
Trichloroethene	ug/L	ND	1.0	0.47	11/13/18 17:02	
Vinyl chloride	ug/L	ND	1.0	0.62	11/13/18 17:02	
1,2-Dichloroethane-d4 (S)	%	87	70-130		11/13/18 17:02	
4-Bromofluorobenzene (S)	%	102	70-130		11/13/18 17:02	
Toluene-d8 (S)	%	108	70-130		11/13/18 17:02	

ABORATORY CONTROL SAMPLE:	2426861	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
s-1,2-Dichloroethene	ug/L	50	49.8	100	70-130	
ans-1,2-Dichloroethene	ug/L	50	48.9	98	70-130	
chloroethene	ug/L	50	53.6	107	70-130	
yl chloride	ug/L	50	47.5	95	70-131	
Dichloroethane-d4 (S)	%			94	70-130	
romofluorobenzene (S)	%			100	70-130	
uene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 24268	62		2426863							
			MS	MSD								
	9	2406645001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	3550	2000	2000	5210	5650	83	105	77-141	8	30	
trans-1,2-Dichloroethene	ug/L	ND	2000	2000	1920	2220	96	111	76-146	14	30	
Trichloroethene	ug/L	14800	2000	2000	17500	18800	137	197	77-147	7	30	M1
Vinyl chloride	ug/L	ND	2000	2000	1630	1910	82	96	70-156	16	30	
1,2-Dichloroethane-d4 (S)	%						88	87	70-130			
4-Bromofluorobenzene (S)	%						99	100	70-130			
Toluene-d8 (S)	%						97	99	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### **QUALITY CONTROL DATA**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

QC Batch: 442323 Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92406645004, 92406645005, 92406645006, 92406645007, 92406645011

METHOD BLANK: 2427966 Matrix: Water

Associated Lab Samples: 92406645004, 92406645005, 92406645006, 92406645007, 92406645011

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	11/14/18 13:49	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	11/14/18 13:49	
Trichloroethene	ug/L	ND	1.0	0.47	11/14/18 13:49	
Vinyl chloride	ug/L	ND	1.0	0.62	11/14/18 13:49	
1,2-Dichloroethane-d4 (S)	%	93	70-130		11/14/18 13:49	
4-Bromofluorobenzene (S)	%	104	70-130		11/14/18 13:49	
Toluene-d8 (S)	%	108	70-130		11/14/18 13:49	

LABORATORY CONTROL SAMPLE:	2427967					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	49.6	99	70-130	
trans-1,2-Dichloroethene	ug/L	50	51.7	103	70-130	
Trichloroethene	ug/L	50	52.9	106	70-130	
inyl chloride	ug/L	50	43.3	87	70-131	
,2-Dichloroethane-d4 (S)	%			94	70-130	
-Bromofluorobenzene (S)	%			95	70-130	
oluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 24279	68		2427969							
			MS	MSD								
	9	2406701015	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	100	100	106	109	103	106	77-141	3	30	
trans-1,2-Dichloroethene	ug/L	ND	100	100	110	113	110	113	76-146	3	30	
Trichloroethene	ug/L	ND	100	100	113	120	113	120	77-147	6	30	
Vinyl chloride	ug/L	ND	100	100	94.6	99.6	95	100	70-156	5	30	
1,2-Dichloroethane-d4 (S)	%						97	96	70-130			
4-Bromofluorobenzene (S)	%						98	99	70-130			
Toluene-d8 (S)	%						99	100	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



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### **QUALIFIERS**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

### **ANALYTE QUALIFIERS**

Date: 11/15/2018 05:10 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



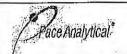
### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: CTS OF ASHEVILLE

Pace Project No.: 92406645

Date: 11/15/2018 05:10 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92406645001	FD-35	EPA 8260B	442054		
92406645002	TB-32	EPA 8260B	441793		
92406645003	MW-7A	EPA 8260B	441803		
92406645004	MW-7	EPA 8260B	442323		
92406645005	MW-21A	EPA 8260B	442323		
92406645006	MW-21	EPA 8260B	442323		
92406645007	MW-22	EPA 8260B	442323		
92406645008	MW-22A	EPA 8260B	441803		
92406645009	MW-19A	EPA 8260B	441803		
92406645010	MW-19	EPA 8260B	441803		
92406645011	MW-20	EPA 8260B	442323		
92406645012	MW-20A	EPA 8260B	441803		



### Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018

Page 1 of 2 Issuing Authority; Pace Carolinas Quallty Office

aboratory receiving samples: Asheville Eden	Greenwood	# <u> </u>	Ĥŧ	ıntersv	ille 🗌	Rale	eigh 🗌	Mechanicsville
Sample Condition Client Name: Upon Receipt	es Duses		140	Project	# MO	# : S	240	06645
Courier: Fed Ex UF Commercial Pace	Other		120	ient	9240	 5645		
stody Seal Present? Pres No S	eals Intact?	⊠Yes	□No		Date/li	ıltlals Perso	n Examining	Contents: TO 11/8/
cking Material; Bubble Wrap	Bubble Bags	□Non	e 🗆 c	Other		Blol	ogical Tissu	e Frozen?
ermometer:	Type of I	ce: 🖸	Wet □	Blue	None	∐Yes	□No [	<b>₫</b> \/A
- 0	ctor: Add/Subtra	ct (°C)	0					
DA Regulated Soil ( N/A, water sample)			C (check ma		has begun	s out of tem	p criterla, Sa	5°C mples on Ice, cooling proces ource (internationally,
Yes No	Omted States, CA,	141, 01 3	o forecer in		ncluding Haw	ail and Puer	to Rico)?	Yes No
						Comme	nts/Discrep	ancy:
Chain of Custody Present?	□ res	□No	□N/A	1.				
Samples Arrived within Hold Time?	Pres	□No	□N/A	2.	- 1			
Short Hold Time Analysis (<72 hr.)?	☐Yes	<b>□</b> ₩0	□N/A	3.				
Rush Turn Around Time Requested?	□Yes	No	□N/A	4.		•		
Sufficient Volume?	⊠Yes	□No	□N/A	5.				
Correct Containers Used?	✓Yes	□No	□N/A	6.				
-Pace Containers Used?	□Ves	No	□N/A					
Containers Intact?	✓Yes	. DNo	□N/A	7.				
Dissolved analysis: 5amples Field Filtered?	□Yes	□No	☐Ñ/A	8.			****	
Sample Labels Match COC?	☑Yes:	□No	□N/A	9.				
-Includes Date/Time/ID/Analysis Matrix:	W1							
Headspace In VOA Vlals (>5-6mm)?	□Yes	No	□N/A	10.			- Ya	
Trip Blank Present?	☑Yes	□No	□N/A	11.				
Trip Blank Custody Seals Present?	ØYes	□No	□N/A			greler.	Floid Data	Required? Yes No
COMMENTS/SAMPLE DISCREPANCY							Tield Data	redollers Circs Circ
	7			Lot	ID of split co	ontainers:		*** ***
IENT NOTIFICATION/RESOLUTION								1 2
		-1		· · · · · · · · · · · · · · · · · · ·			,a	, menu
Person contacted:			Date/T	ime: _				
Project Manager SCURF Review:	(	डि		1	<b>Date</b>		11/9	ř. 0
Project Manager SRF Review:	6	F			Date	V = + 10 ×	1/9	



#### Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oll and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # WO#: 9240664

PM: PTE

Due Date: 11/15/18

CLIENT: 92-AMEC A

ltem#	BP4U-125 mL Plastic Unpreserved (N/A) (CF)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP45-125 mL Plastic H2SO4 (pH < 2) (G-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP42-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (CI-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CI-)	AG1H-1 liter Amber HC (pH < 2)	AG3Ú-250 mL Amber Unpreserved (N/A) (Cl-)	AG15-1 liter Amber H2S04 (pH < 2)	AG35-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCI (N/A)	VG9T-40 mL VOA Na2S203 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 ml. Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AGOU-100 mt Amber Unpreserved vials (N/A)	VSGU-20 mLScintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1					1		1	1			1		1	1	1	3								1				
2					1		1				1		1	/	1	2								1	7			_
3					1			1					1	1	1	9								/	1			Ī
4					1	1	1	1			1			1	/	3								1	1			
5					/	/	1	1			1		7	7	1	3								1	1			
6					1						1		1	7	1	3								1	1			
7					/		1	1					1	1	1	3				I				1	1			
В							1	1			1		1	1	1	3								1	1			
9							V				1		7	1	1	3								1	1			
10	1					1	1	1			1		1			3								1	1			
11	1						1				1		1	1	1	3								1	1			
12	/					7		1			7		7	1	1	3								1	1			

		pH Ad	justment Log for Pres	erved Samples		
Sample ID	Typo of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot H
						Z-
	- 1000000000000000000000000000000000000	n managan ya masasan			Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Compan	***********
	5000- 30 -	- 1,000 (117.5) (h		3 Pundim A	10 0 11 - 11 - 12 - 12 - 12 - 12 - 12 -	÷ t-

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.

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

Company Name	AMPLE ID  (N-Z 0-9 1)  Strain Avenue  AMPLE ID  (N-Z 0-9 1)  Strain Must be unique  (N-Z 0-9 1)  Strain Must be unique  (N-Z 0-9 1)  AMW - Z 1  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z 2  AMW - Z	Taid Matrix Co MATRIX MATRIX MATRIX MATRIX MATRIX br>MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX MATRIX M	TS of Ash	OLLECT OF	0081	Attention: Company Address: Reference: Reference: Reference: Manager: Dece Project				REGULATORY	AGENCA	7		
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12 AUN-20A RELINQUISHED BY TAFFILATION DATE TIME ACCEPTED BY TAFFILATION DATE TIME  LONG III data package  T.C.E. cis-1,2-DCE, trans-1,2-DCE and winy chloride  T.C.E. cis-1,2-DCE, trans-1,2-DCE and winy chloride  T.C.E. cis-1,2-DCE, trans-1,2-DCE and winy chloride  T.C.E. cis-1,2-DCE, trans-1,2-DCE and winy chloride  T.C.E. cis-1,2-DCE, trans-1,2-DCE and winy chloride	MW-20		I.D.		\$ 15:30	3	2		1				56	
Level if data package  Level if data package  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride  TCE, cis-1,2-DCE, uans-1,2-DCE and wnyl chloride	ADDITIONAL COMMENTS	4		18/11		W	1						100	
TCE, cis-1,2-DCE, vans-1,2-DCE and viny chloride 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18/18 18	I day narrange	RELING	LINSHED BY !	AFFILIATION	DATE	TIME		ACCEPTED B	Y AFFILIATION	1			5	
TCE, cis-1,2-DCE, trans-1,2-DCE and wnyl chloride	rever il dela parvage	1	1	" (Ibno			1	1100	NAMARIA	2	i	Ĺ	TE CONDITION	2
	*TCE, ais-1,2-DCE, trans-1,2-DCE and vinyl chlo	oride	1	10000			0	1000	1	0	0		>	X
							1							
				PRINT Na	THE OF SAMPLER:		fren,	K. C	126		J. uj	(N/A) (6q o	Cool	sini a V)
Coole (V)				SIGNATU	SIGNATURE of SAMPLER:	1	1	1	DATE Signed	1.100 /10	дше,	) 600 (1000	Cust aled (Y)	I/A) sejdu





March 19, 2019

Susan Avritt Wood E&S 1308 Patton Avenue Asheville, NC 28806

RE: Project: CTS of Asheville

Pace Project No.: 92421040

#### Dear Susan Avritt:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

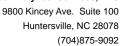
If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell taylor.ezell@pacelabs.com (704)875-9092 Project Manager

Enclosures





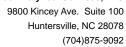


#### **CERTIFICATIONS**

Project: CTS of Asheville Pace Project No.: 92421040

#### **Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078 Louisiana/NELAP Certification # LA170028 North Carolina Drinking Water Certification #: 37706 North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12 South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221





#### **SAMPLE SUMMARY**

Project: CTS of Asheville Pace Project No.: 92421040

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92421040001	MW-21	Water	03/11/19 11:15	03/13/19 09:40
92421040002	GW-132-48	Water	03/11/19 14:10	03/13/19 09:40
92421040003	GW-132-58	Water	03/11/19 15:30	03/13/19 09:40
92421040004	GW-131-59	Water	03/11/19 17:20	03/13/19 09:40
92421040005	FD-37	Water	03/11/19 00:00	03/13/19 09:40
92421040006	GW-121-45	Water	03/12/19 12:10	03/13/19 09:40
92421040007	GW-122-46	Water	03/12/19 14:40	03/13/19 09:40
92421040008	MW-21A	Water	03/12/19 16:40	03/13/19 09:40
92421040009	TB-34	Water	03/12/19 00:00	03/13/19 09:40

7

7

7

PASI-C

PASI-C

PASI-C

PASI-C

NSCQ

NSCQ

NSCQ

SAS



92421040006

92421040007

92421040008

92421040009

#### SAMPLE ANALYTE COUNT

Project: CTS of Asheville Pace Project No.: 92421040

GW-121-45

GW-122-46

MW-21A

**TB-34** 

**Analytes** Lab ID Method Sample ID Reported **Analysts** Laboratory 92421040001 MW-21 **EPA 8260D NSCQ** 7 PASI-C 7 92421040002 EPA 8260D NSCQ GW-132-48 PASI-C EPA 8260D NSCQ 92421040003 GW-132-58 7 PASI-C EPA 8260D 92421040004 NSCQ GW-131-59 7 PASI-C 92421040005 FD-37 EPA 8260D NSCQ 7 PASI-C

EPA 8260D

EPA 8260D

EPA 8260D

EPA 8260D



#### **SUMMARY OF DETECTION**

Project: CTS of Asheville Pace Project No.: 92421040

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92421040001	MW-21					
EPA 8260D	Trichloroethene	4.1	ug/L	1.0	03/15/19 18:09	
92421040002	GW-132-48					
EPA 8260D	Trichloroethene	1610	ug/L	12.5	03/15/19 19:59	M1
92421040003	GW-132-58					
EPA 8260D	Trichloroethene	160	ug/L	1.0	03/15/19 18:27	
92421040005	FD-37					
EPA 8260D	Trichloroethene	12.7	ug/L	1.0	03/15/19 19:04	
92421040008	MW-21A					
EPA 8260D	Trichloroethene	44900	ug/L	400	03/15/19 20:17	



9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **PROJECT NARRATIVE**

Project: CTS of Asheville Pace Project No.: 92421040

Method: EPA 8260D

Description: 8260D MSV Low Level
Client: Wood E&I - Asheville
Date: March 19, 2019

#### **General Information:**

9 samples were analyzed for EPA 8260D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

#### Surrogates

All surrogates were within QC limits with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 463621

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92421040002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

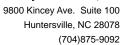
- MS (Lab ID: 2522217)
  - Trichloroethene
- MSD (Lab ID: 2522218)
  - Trichloroethene

#### **Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

#### **Additional Comments:**

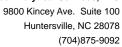
This data package has been reviewed for quality and completeness and is approved for release.





#### **ANALYTICAL RESULTS**

Sample: MW-21	Lab ID:	92421040001	Collecte	d: 03/11/19	11:15	Received: 03	3/13/19 09:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	3260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 18:09	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 18:09	156-60-5	
Trichloroethene	4.1	ug/L	1.0	0.22	1		03/15/19 18:09	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 18:09	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	102	%	70-130		1		03/15/19 18:09	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130		1		03/15/19 18:09	17060-07-0	
Toluene-d8 (S)	105	%	70-130		1		03/15/19 18:09	2037-26-5	





#### **ANALYTICAL RESULTS**

Sample: GW-132-48	Lab ID:	92421040002	Collecte	d: 03/11/19	9 14:10	Received: 03	3/13/19 09:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	12.5	3.6	12.5		03/15/19 19:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	12.5	3.2	12.5		03/15/19 19:59	156-60-5	
Trichloroethene	1610	ug/L	12.5	2.8	12.5		03/15/19 19:59	79-01-6	M1
Vinyl chloride	ND	ug/L	12.5	3.0	12.5		03/15/19 19:59	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	99	%	70-130		12.5		03/15/19 19:59	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		12.5		03/15/19 19:59	17060-07-0	
Toluene-d8 (S)	105	%	70-130		12.5		03/15/19 19:59	2037-26-5	



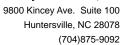
#### **ANALYTICAL RESULTS**

Sample: GW-132-58	Lab ID:	92421040003	Collecte	d: 03/11/19	15:30	Received: 03	3/13/19 09:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 18:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 18:27	156-60-5	
Trichloroethene	160	ug/L	1.0	0.22	1		03/15/19 18:27	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 18:27	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		1		03/15/19 18:27	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		1		03/15/19 18:27	17060-07-0	
Toluene-d8 (S)	106	%	70-130		1		03/15/19 18:27	2037-26-5	



#### **ANALYTICAL RESULTS**

Sample: GW-131-59	Lab ID:	92421040004	Collecte	d: 03/11/19	17:20	Received: 03	/13/19 09:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 18:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 18:46	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.22	1		03/15/19 18:46	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 18:46	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	102	%	70-130		1		03/15/19 18:46	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		03/15/19 18:46	17060-07-0	
Toluene-d8 (S)	106	%	70-130		1		03/15/19 18:46	2037-26-5	





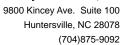
#### **ANALYTICAL RESULTS**

Sample: FD-37	Lab ID:	92421040005	Collecte	d: 03/11/19	00:00	Received: 03	3/13/19 09:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 19:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 19:04	156-60-5	
Trichloroethene	12.7	ug/L	1.0	0.22	1		03/15/19 19:04	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 19:04	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	102	%	70-130		1		03/15/19 19:04	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-130		1		03/15/19 19:04	17060-07-0	
Toluene-d8 (S)	105	%	70-130		1		03/15/19 19:04	2037-26-5	



#### **ANALYTICAL RESULTS**

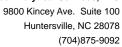
Sample: GW-121-45	Lab ID:	92421040006	Collecte	d: 03/12/19	12:10	Received: 03	/13/19 09:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 19:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 19:22	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.22	1		03/15/19 19:22	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 19:22	75-01-4	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		03/15/19 19:22	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		03/15/19 19:22	17060-07-0	
Toluene-d8 (S)	105	%	70-130		1		03/15/19 19:22	2037-26-5	





#### **ANALYTICAL RESULTS**

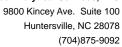
Sample: GW-122-46	Lab ID:	92421040007	Collecte	d: 03/12/19	14:40	Received: 03	/13/19 09:40 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/15/19 19:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/15/19 19:41	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.22	1		03/15/19 19:41	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/15/19 19:41	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		1		03/15/19 19:41	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		03/15/19 19:41	17060-07-0	
Toluene-d8 (S)	105	%	70-130		1		03/15/19 19:41	2037-26-5	





#### **ANALYTICAL RESULTS**

Sample: MW-21A	Lab ID:	92421040008	Collecte	d: 03/12/19	16:40	Received: 03	3/13/19 09:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	400	116	400		03/15/19 20:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	400	102	400		03/15/19 20:17	156-60-5	
Trichloroethene	44900	ug/L	400	88.0	400		03/15/19 20:17	79-01-6	
Vinyl chloride	ND	ug/L	400	96.8	400		03/15/19 20:17	75-01-4	
Surrogates		ŭ							
4-Bromofluorobenzene (S)	104	%	70-130		400		03/15/19 20:17	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		400		03/15/19 20:17	17060-07-0	
Toluene-d8 (S)	105	%	70-130		400		03/15/19 20:17	2037-26-5	





#### **ANALYTICAL RESULTS**

Sample: TB-34	Lab ID:	92421040009	Collecte	d: 03/12/19	00:00	Received: 03	3/13/19 09:40 Ma	atrix: Water	
			Report						
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical	Method: EPA 8	260D						
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.29	1		03/14/19 19:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.25	1		03/14/19 19:18	156-60-5	
Trichloroethene	ND	ug/L	1.0	0.22	1		03/14/19 19:18	79-01-6	
Vinyl chloride	ND	ug/L	1.0	0.24	1		03/14/19 19:18	75-01-4	
Surrogates		•							
4-Bromofluorobenzene (S)	101	%	70-130		1		03/14/19 19:18	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/14/19 19:18	17060-07-0	
Toluene-d8 (S)	104	%	70-130		1		03/14/19 19:18	2037-26-5	



#### **QUALITY CONTROL DATA**

Project: CTS of Asheville

Pace Project No.: 92421040

QC Batch: 463391 Analysis Method: EPA 8260D

QC Batch Method: EPA 8260D Analysis Description: 8260D MSV Low Level

Associated Lab Samples: 92421040009

METHOD BLANK: 2521278 Matrix: Water

Associated Lab Samples: 92421040009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.29	03/14/19 16:45	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.25	03/14/19 16:45	
Trichloroethene	ug/L	ND	1.0	0.22	03/14/19 16:45	
Vinyl chloride	ug/L	ND	1.0	0.24	03/14/19 16:45	
1,2-Dichloroethane-d4 (S)	%	100	70-130		03/14/19 16:45	
4-Bromofluorobenzene (S)	%	100	70-130		03/14/19 16:45	
Toluene-d8 (S)	%	106	70-130		03/14/19 16:45	

ABORATORY CONTROL SAMPLE	E: 2521279	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
s-1,2-Dichloroethene	ug/L	50	51.6	103	70-130	
ans-1,2-Dichloroethene	ug/L	50	51.2	102	70-130	
ichloroethene	ug/L	50	53.0	106	70-130	
nyl chloride	ug/L	50	57.2	114	70-131	
P-Dichloroethane-d4 (S)	%			99	70-130	
romofluorobenzene (S)	%			101	70-130	
uene-d8 (S)	%			96	70-130	

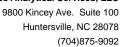
MATRIX SPIKE SAMPLE:	2521281						
_		92421097002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	20	21.2	106	70-141	
trans-1,2-Dichloroethene	ug/L	ND	20	21.6	108	70-146	
Trichloroethene	ug/L	ND	20	21.8	109	70-147	
Vinyl chloride	ug/L	ND	20	25.5	128	70-156	
1,2-Dichloroethane-d4 (S)	%				91	70-130	
4-Bromofluorobenzene (S)	%				96	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2521280

Date: 03/19/2019 03:44 PM

		92421097001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





#### **QUALITY CONTROL DATA**

Project: CTS of Asheville

Pace Project No.: 92421040

Date: 03/19/2019 03:44 PM

SAMPLE DUPLICATE: 2521280						
		92421097001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%	101	99	2		
4-Bromofluorobenzene (S)	%	98	99	1		
Toluene-d8 (S)	%	104	103	1		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

(704)875-9092



#### **QUALITY CONTROL DATA**

Project: CTS of Asheville

Pace Project No.: 92421040

Date: 03/19/2019 03:44 PM

QC Batch: 463621 Analysis Method: EPA 8260D

QC Batch Method: EPA 8260D Analysis Description: 8260D MSV Low Level

Associated Lab Samples: 92421040001, 92421040002, 92421040003, 92421040004, 92421040005, 92421040006, 92421040007,

92421040008

METHOD BLANK: 2522215 Matrix: Water

Associated Lab Samples: 92421040001, 92421040002, 92421040003, 92421040004, 92421040005, 92421040006, 92421040007,

92421040008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.29	03/15/19 14:47	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.25	03/15/19 14:47	
Trichloroethene	ug/L	ND	1.0	0.22	03/15/19 14:47	
Vinyl chloride	ug/L	ND	1.0	0.24	03/15/19 14:47	
1,2-Dichloroethane-d4 (S)	%	93	70-130		03/15/19 14:47	
4-Bromofluorobenzene (S)	%	101	70-130		03/15/19 14:47	
Toluene-d8 (S)	%	107	70-130		03/15/19 14:47	

LABORATORY CONTROL SAMPLE:	2522216					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cis-1,2-Dichloroethene	ug/L	50	54.9	110	70-130	
trans-1,2-Dichloroethene	ug/L	50	58.9	118	70-130	
Trichloroethene	ug/L	50	59.9	120	70-130	
Vinyl chloride	ug/L	50	60.5	121	70-131	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	CATE: 25222	17		2522218							
Parameter	Units	92421040002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
cis-1,2-Dichloroethene	ug/L	ND	250	250	302	297	121	119	70-141	1	30	
trans-1,2-Dichloroethene	ug/L	ND	250	250	321	318	128	127	70-146	1	30	
Trichloroethene	ug/L	1610	250	250	2070	2110	186	202	70-147	2	30	M1
Vinyl chloride	ug/L	ND	250	250	334	331	133	132	70-156	1	30	
1,2-Dichloroethane-d4 (S)	%						108	107	70-130			
4-Bromofluorobenzene (S)	%						98	100	70-130			
Toluene-d8 (S)	%						99	99	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **QUALIFIERS**

Project: CTS of Asheville Pace Project No.: 92421040

Pace Analytica

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

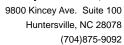
#### **LABORATORIES**

PASI-C Pace Analytical Services - Charlotte

#### **ANALYTE QUALIFIERS**

Date: 03/19/2019 03:44 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.





#### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92421040001	MW-21	EPA 8260D	463621	_	
92421040002	GW-132-48	EPA 8260D	463621		
92421040003	GW-132-58	EPA 8260D	463621		
92421040004	GW-131-59	EPA 8260D	463621		
92421040005	FD-37	EPA 8260D	463621		
92421040006	GW-121-45	EPA 8260D	463621		
92421040007	GW-122-46	EPA 8260D	463621		
92421040008	MW-21A	EPA 8260D	463621		
92421040009	TB-34	EPA 8260D	463391		

# Pace Analytical*

Project Manager SRF Review:

#### Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:  Asheville  Eden	Greenwood _	] н	untersville Raleigh Mechanicsville
Sample Condition Upon Receipt  Courier:  Commercial  Client Name:  Up D C  Ped Ex  UPS	E+I Asl		Project # # 92421040  fient # ##################################
Packing Material: Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap Bubble Wrap	Type of Ice: or: Add/Subtract (°	None □ □	Date/Initials Person Examining Contents: 313/19  Other Biological Tissue Frozen?  Yes No NoA  Blue None  Temp should be above freezing to 6°C  Samples out of temp criteria. Samples on ice, cooling process has begun
Yes No			Comments/Discrepancy:
Chain of Custody Present?	Z Yes □	No □N/A	1.
Samples Arrived within Hold Time?	,	No □N/A	2.
Short Hold Time Analysis (<72 hr.)?		No □N/A	3.
Rush Turn Around Time Requested?		No □N/A	4.
F. Var. 18.11		INo □N/A	5.
Sufficient Volume?  Correct Containers Used?  -Pace Containers Used?	⊠Yes □	No N/A	6.
Containers Intact?	✓Yes □	]No □N/A	7.
Dissolved analysis: Samples Field Filtered?		No DNA	8.
Sample Labels Match COC?  -Includes Date/Time/ID/Analysis Matrix:	ØYes Œ	]No □N/A	9.
Headspace in VOA Vials (>5-6mm)?	□yes □	No □N/A	10.
Trip Blank Present?		]No □N/A	11.
Trip Blank Custody Seals Present?  COMMENTS/SAMPLE DISCREPANCY	☑Yes [	]No □N/A	Field Data Required? ☐Yes ☑No
CLIENT NOTIFICATION/RESOLUTION			Lot ID of split containers:
CLICIAL MOTIFICATION/RESOLUTION			
Person contacted:		Date	/Time:
Project Manager SCURF Review:	R	(	Date:3/14

# Pace Analytical*

#### Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-CAR-CS-033-Rev.06 Document Revised: February 7, 2018 Page 1 of 2

> Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # 110#: 924210

DM. PTE

Due Date: 03/20/19

CLIENT: 92-AMEC A

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Ci-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)		BP4S-125 mL Plastic H2504 (pH < 2) (CI-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP42-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CI-)	AG1H-1 liter Amber HCI (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (CI-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG35-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCI (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG94-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mt. Plastic (NH2)2SO4 (9.3-9.7)	AGOU-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
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12	1				1	1	/	/	/			/		1	/	/									1	1			

pH Adjustment Log for Preserved Samples											
Sample ID	Type of Preservative	· ·pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot#					
						10.0					

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.

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document

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

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CTS of Asheville, Inc. Superfund Site ISCO Treatability Study Evaluation Report Wood Project 6252-16-2012 May 3, 2019

# APPENDIX D SOIL BORING LOGS

Project: C	TS of Asheville, Inc. Supe	rfund Site		Drilling Company: Cascade Drilling					
Location:	Asheville, North Caro			Driller:	Dan Ferrell (NC 3221)				
Project Nui	6252162012			Boring Method:	Direct-Push Technology				
Logged By	S. Avritt	Checke	R. Clark	Equipment:	Geoprobe 7822DT				
Approxima	te Ground Surface Elevat	ion (feet):	2415 ft.	Boring Date:	12/17/2018				
Depth (feet) Sample	Sample Name Recovery (%)	Lithology		Lithologic Description					
- - -	0-5 70%		Reddish Brown to Br Red, Silty SAND, Mo		ce Mica and Coarse Sand (Possible Fill)				
5—	5-10 80%		Red to Reddish Brow Structure/Foliation A	n, Fine to Medium SA pparent at 8 feet)	ND, Moist, Little/Some Silt (Relict				
10	10-15 95%		Brown, Micaceous, F	ine to Medium Sandy	SILT, Slightly Moist, Little/Some Silt				
15— - - - -	15-20 95%		Reddish Brown, Sligl	ntly Micaceous, Fine to	o Medium SAND, Moist, Little/Some Silt				
20-	20-25 100%		Brown, Micaceous, F (Weathered Rock)	ine to Medium SAND,	Moist, Foliated, Trace Coarse Sand and Grave				
25— - - - -	25-30 95%		Brown, Fine to Medio Appearance	m SAND, Moist, Little	/Some Silt, Little Mica, Mostly Massive				
30-	30-35 75%								
35—	35-40 100%		38.2'-38.7': Potassiur	n Permanganate Stair	ning				
40— - - -	40-45 50%								
45—	45-50 100%		44.2': Potassium Per	n Permanganate Stair manganate Emplacen	ning nent (0.8' Thick)				
			Geoprobe refusal at	50 teet					
Remarks:									

Project:	CTS of Ashevi	lle, Inc. Supe	erfund Site	Э	Drilling Company: Cascade Drilling				
Location		e, North Card			Driller: Dan Ferrell (NC 3221)				
Project I	Number: 62	52162012			Boring Method: Direct-Push Technology				
Logged	-	S. Avritt	Check	R. Clark	Equipment: Geoprobe 7822DT				
Approxir	mate Ground S		tion (feet)	: 2415 ft.	Boring Date: 12/17/2018				
Depth (feet)	Sample	Recovery (%)	Lithology		Lithologic Description				
- - -		0-5 75%		∖Gravel Red, Silty Clayey SAN	ND, Moist, Trace Coarse Sand (Possible Fill)				
5— - - -		5-10 85%		Red to Reddish Brow Slight Relict Structure	n, Fine to Medium SAND, Slightly Moist, Little/Some Sand, Little Mica				
10-		10-15 85%							
15—		15-20 80%		Reddish Brown to Bro	own, Micaceous, Silty Fine to Medium SAND, Moist, Little/Some Silt,				
20-		20-25 95%			to Medium SAND, Moist, Little/Some Silt, Little Mica, Massive				
25—		25-30 100%		Appearance with Son	ne Dark Mineral Weathering				
				Brown, Micaceous, Fi	ne to Medium SAND, Moist, Little/Some Silt, Slight Foliation				
30-		30-35 100%		Brown to Dark Brown	artz Vein (Coarse Sand to Gravel), Wet/ Highly Micaceous, Fine to Medium SAND, Moist, Little/Some Silt, dy Gravel (Weathered Rock from 34 to 35 feet)				
35—		35-40 90%		Brown, Micaceous, Fi with Some Dark Mine	ne to Medium SAND, Moist, Little/Some Silt, Massive Appearance ral Weathering				
40-		40-45 100%							
45 <del></del> -		45-48 100%		43.7'-47.8': Potassium 44.2': Potassium Perr	n Permanganate Staining nanganate Emplacement (0.01' Thick)				
Remark	ks:	1	P (1 -> 1.5 )	Geoprobe refusal at 4	8 feet				

Project: CTS of Asheville, Inc. Superfun	d Site	Drilling Company: Cascade Drilling
Location: Asheville, North Carolina		Driller: Dan Ferrell (NC 3221)
Project Number: 6252162012		Boring Method: Direct-Push Technology
Logged By: C S. Avritt	hecked By: R. Clark	Equipment: Geoprobe 7822DT
Approximate Ground Surface Elevation		Boring Date: 12/17/2018
Sample Name Recovery (%)	Lithology	Lithologic Description
0-5 50%	Gravel Red, Clayey Sandy SI	LT, Moist, Trace Mica
5-10 90%	Red, Silty SAND, Sligl	ntly Moist, Trace Mica
10-15 90%	Reddish Brown, Micac Massive Appearance	ceous, Fine to Medium SAND, Slightly Moist, Little/Some Silt, Mostly with Zones of Relict Structure Apparent
15-20 80%		
20-25 80%	Brown to Dark Brown, with Zones of Kaolin a	Micaceous, Fine to Medium SAND, Moist, Little/Some Silt, Layered and Quartz from 33 to 35 feet
25-30 90%		
30-35 80%		
35-40 100%	Brown, Fine to Mediur	n SAND, Slightly Moist, Little/Some Silt, Massive Appearance
40-45 90%	MA [18]	us, Fine to Medium SAND, Moist, Some Silt, Foliated  n SAND, Moist (Wet at top of Liner), Little Silt, Little Mica
45-48 100%		Layer (Quartz up to 1 inch Diameter)  Layer, Wet (Quartz up to 1 inch Diameter) 8 feet
Remarks:		

Proje	ct: C	TS of Ashev	ville, Inc. S	uperfund Site	9	Drilling Company: Cascade Drilling					
Locat	ion:	Ashevil	le, North C	Carolina		Driller: Dan Ferrell (NC 3221)					
Proje	ct Nu	mber: 62	252162012	2		Boring Method: Direct-Push Technology					
Logge	-		S. Avritt	Check	R. Clark	Equipment: Geoprobe 7822DT					
Appro	oxima	te Ground S		evation (feet)	: 2414 ft.	Boring Date: 12/17/2018					
Depth (feet)	Sample	Sample Name	Recovery (%)	Lithology		Lithologic Description					
- - -			0-5 50%		Gravel Red, Clayey Sandy	SILT, Moist, Trace Mica and Gravel (Possible Fill)					
5—			5-10 70%		Red, Silty SAND, SI	lightly Moist, Some Mica, Trace Relict Structure					
10			10-15 75%			wn, Micaceous, Fine to Medium SAND, Slightly Moist, Little/Some Silt, ee, Trace Relict Structure and Dark Mineral Weathering					
15 <del></del>			15-20 90%								
20-			20-25 90%								
25— - - -			25-30 90%		Brown, Micaceous, with Dark Mineral W	Fine to Medium SAND, Moist, Little/Some Silt, Massive Appearance /eathering					
30-			30-35 90%								
35—			35-40 90%			um Permanganate Staining ermanganate Emplacement (0.03' Thick)					
40			40-44 100%								
			-	r. +1 * 44. 14	Geoprobe refusal at	t 44 feet					
Rem	narks:										

Project: C	CTS of Asheville, Inc.	Superfund Site	е	Drilling Company: Cascade Drilling
Location:				Driller: Dan Ferrell (NC 3221)
Project No	umber: 625216201	12		Boring Method: Direct-Push Technology
Logged B	S. Avritt		R. Clark	Equipment: Geoprobe 7822DT
Approxim	ate Ground Surface E	Elevation (feet)	: 2414 ft.	Boring Date: 12/17/2018
Depth (feet) Sample	LE LE	Lithology		Lithologic Description
-	0-5 50%		∖Gravel Brown to Red, Claye	ey Sandy SILT, Moist, Trace Gravel (Possible Fill)
5	5-10 80%		Red, Silty SAND, Sli	ghtly Moist, Little Mica, Massive with Trace Dark Mineral Weathering
10	10-15 85%		Red to Reddish Brow Massive Appearance	wn, Micaceous, Fine to Medium SAND, Slightly Moist, Little/Some Silt, e
15—	15-20 100%			
20-	20-25 95%			
25—	25-30 100%		Brown, Micaceous, F Zones of Slight Folia	Fine to Medium SAND, Moist, Little/Some Silt, Mostly Massive with tion
30-	30-35 80%			m Permanganate Staining rmanganate Emplacement (0.08' Thick)
35—	35-40 80%			
40-	40-45 90%		Orangish Brown to D	Dark Brown, Fine to Medium SAND, Little/Some Silt, Moist,
45	45-48 100%		Dark Mineral Weathe	
Remarks	s:	. ,	Geoprobe refusal at	48 feet

Proje	ct: C	TS of Ashev	ille, Inc. Su	perfund Sit	e	Drilling Company:	Cascade Drilling				
Locat	tion:	Ashevill	e, North Ca			Driller: Da	an Ferrell (NC 3221)				
Proje	ct Nu	umber: 62	252162012			Boring Method: Dire	ect-Push Technology				
Logge	ed By	y:	S. Avritt	Check	ed By: R. Clark	Equipment:	Geoprobe 7822DT				
Appro	oxima	ate Ground S		ation (feet	): 2415 ft.	Boring Date:	12/17/2018				
Depth (feet)	Sample	Sample Name	Recovery (%)	Lithology		Lithologic Description					
_	1		0-5 50%		Gravel Reddish Brown, Clav	ey Sandy SILT, Moist, Trace	e Gravel (Possible Fill)				
_	Ī				Troducti Brown, clay	by Carray Cier, Molos, Track	o oravor (i oooibio i iii)				
5— - -	1		5-10 50%								
	ı					own, Silty SAND, Moist	Moist, Little/Some Silt, Some Mica,				
10—	I		10-15 90%		Massive with Dark M	neral Weathering	MOIST, LITTIE/SOME SIII, SOME MICA,				
-	İ										
_ 15—	Ī										
-	Ī		15-20 95%								
_	ı										
20—	Ī		20-25		Brown Micacoous E	ing to Modium SAND Moiet	t, Little/Some Silt, Mostly Massive				
-	Ī		95%		Appearance with Dar	κ Mineral Weathering	I, Little/30ffle 3fft, Mostly Massive				
_	Ī										
25—	Ī		25-30								
_	ı		100%								
_	Ī										
30—	Ī		30-35 70%								
_	ı		70%								
-	Ī										
35—	ı		35-40 90%								
_	Ī										
- 40—	ı										
-	ı		40-45 90%								
	ı										
45 <del></del>	Ī		45-48								
	ı		100%								
					Geoprobe refusal at	8 feet					
Ren	narks:	:									

Project: CTS of Asheville, Inc. Superfu	nd Site	Drilling Company: Cascade Drilling
Location: Asheville, North Carolin		Driller: Dan Ferrell (NC 3221)
Project Number: 6252162012		Boring Method: Direct-Push Technology
S. Avritt	Checked By: R. Clark	Equipment: Geoprobe 7822DT
Approximate Ground Surface Elevation	n (feet): 2414 ft.	Boring Date: 12/17/2018
Sample Name Recovery (%)	Lithology	Lithologic Description
0-5 50%	Asphalt/Gravel	y SILT, Moist, Trace Mica
	0.8-1.1 Asphalt	
5-10 85%	Reddish Brown to Bro	wn, Clayey Sandy SILT, Moist, Little Gravel Zones (Possible Fill)
10—	Reddish Brown to Browith Dark Mineral Wea	own, Silty Fine to Medium SAND, Slightly Mosit, Massive Appearance athering
90%	Brown, Fine to Mediur Massive Appearance	m SAND, Slightly Moist, Little/Some Silt, Little/Some Mica, Mostly with Some Slight Layering
15-20 90%		
20-25 95%		
25-30 95%		
30-35 95%		
35-40 100%	33.6'-39.0': Potassium	n Permanganate Staining
40-45		
45		
Remarks:	Geoprobe refusal at 4	5 feet

Projec	ct: C	TS of Ashevi	lle, Inc. S	Superfund Site	e	Drilling Company: Cascade Drilling				
Locati		Asheville	∍, North	Carolina		Driller: Dan Ferrell (NC 3221)				
			5216201			Boring Method: Direct-Push Technology				
Logge		ŀ	R. Clark	Check	S. Avritt	Equipment: Geoprobe 7822DT				
Appro	xima	ite Ground S		levation (feet)	: 2413 ft.	Boring Date: 12/18/2018				
Depth (feet)	Sample	Sample Name	Recovery (%)	Lithology		Lithologic Description				
- - -			0-5 30%		Asphalt Grayish Brown, Silty S Red, Fine Sandy SILT	SAND, Some Gravel , Moist, Trace Gravel, Possible Fill				
5			5-10 80%							
- 10 - -			10-15 80%		Light Yellowish Brown Trace Black Mineral V	i, Silty Fine to Medium SAND, Moist, Trace Mica, Mostly Massive wit Veathering				
- 15— - -			15-20 90%							
20			20-25 100%							
25— - - -			25-30 100%							
30-			30-35 100%		29.2'-30.8': Potassium	Permanganate Staining				
35— - - -			35-40 100%							
40-			40-45 70%		40 Cl 42 Ali Datassium	. Dayman yang da Chainin y				
					42.0 -43.4 . FUIdSSIUII	Permanganate Staining				
45—					Geoprobe refusal at 4	5 feet				
Rem	arks:									

Project: C	CTS of Asheville, Inc.	Superfund Site	е	Cascade Drilling
Location:	Asheville, North	Carolina		Driller: Dan Ferrell (NC 3221)
Project Nu	umber: 62521620	12		Boring Method: Direct-Push Technology
Logged By	y: R. Clark	Check	ed By: S. Avritt	Equipment: Geoprobe 7822DT
Approxima	ate Ground Surface I	Elevation (feet)	): 2414 ft.	Boring Date: 12/18/2018
Depth (feet) Sample	Sample Name Recovery (%)	Lithology		Lithologic Description
- - - -	0-5 65%		∖Asphalt Red, Fine Sandy SILī	Γ, Some Gravel/Quartz, Possible Fill
5	5-10 85%		Reddish Brown to Lig	ht Brown, Silty Fine to Medium SAND, Moist, Massive
10-	10-15 95%		Light Reddish Brown,	Silty Fine to Medium SAND, Moist, Massive
15—	15-20 85%		Light Yellowish Browr	n to Light Reddish Brown, Silty Fine to Medium SAND, Moist, Massive
20-	20-25 100%			
25—	25-30 100%			
30-	30-35 80%		28.6'-28.7': Potassiun	n Permanganate Staining
35—	35-40 100%		33.9'-34.4': Potassium	n Permanganate Staining
40	40-45 85%			n Permanganate Staining
45—	45-50 85%		44.2'-46.4': Potassium	n Permanganate Staining n Permanganate Staining
50-	50-55 35%		Light Yellowish Browr	n, Silty Fine to Medium SAND, Moist, Trace Dark Mineral Weathering
55			Geoprobe refusal at 5	5 feet
Remarks:	:			

Project: CTS of Asheville, Inc. Superfund Site						Drilling Company:	Cascade Drilling
Location: Asheville, North Carolina						Driller:	Dan Ferrell (NC 3221)
Project Number: 6252162012						Boring Method:	Direct-Push Technology
Logged By: Checked By: R. Clark					d By: S. Avritt	Equipment:	Geoprobe 7822DT
Approximate Ground Surface Elevation (feet): 2414 ft.						Boring Date:	12/18/2018
Depth (feet)	Sample	Sample Name	Recovery (%)	Lithology		Lithologi	ic Description
_			0-5 25%		Asphalt Red, Fine Sandy SII	T, Some Gravel, Poss	sible Fill
_	ı				ved, i lile Salidy Sil	11, Some Graver, 1 Oss	SIDIC I III
5— - -			5-10 80%	6 F	Red to Reddish Brow	งก, Silty Fine to Mediu	ım SAND, Moist, Massive, Trace Structure
10-			10-15 90%				
15—			15-20 75%	L	ight Yellowish Brov	vn, Silty Fine to Mediui	m SAND, Moist, Massive, Trace Structure
20— - - -			20-25 60%				
25 <del></del> - - -			25-30 100%				
30-			30-35 100%				
35— - - -			35-40 60%				
40			40-45 100%				
45— - - - -			45-50 90%				
Geoprobe refusal at 50 feet							
Remarks:							

Project:	CTS of Ashev	ille, Inc. S	Superfund Site		Drilling Company:	Cascade Drilling
Location	1: Ashevill	e, North			Driller:	Dan Ferrell (NC 3221)
Project N	62	5216201			Boring Method:	Direct-Push Technology
Logged I	•	R. Clark	Checke	S. Avritt	Equipment:	Geoprobe 7822DT
Approxin	mate Ground S		evation (feet):	2414 ft.	Boring Date:	12/18/2018
Depth (feet) Sample	Sample	Recovery (%)	Lithology		Litholo	ogic Description
_ _ _		0-5 60%	(10)	Asphalt Red, Silty Fine SAN 1.5-1.8 Quartz Sear	D, Some Gravel, Po	ssible Fill
5 <del></del> - -		5-10 80%		Red, Fine Sandy SI	LT, Moist, Some Gra	avel, Possible Fill Massive, Trace Structure
10-		10-15 85%				
15—		15-20 85%				
20-		20-25 100%		Light Yellowish Brov Trace Structure, Tra	vn to Light Redalsh i .ce Dark Mineral We	Brown, Silty Fine to Medium SAND, Moist, Massive athering
25 <del></del>  		25-30 90%				
30-		30-35 80%				
35—		35-40 90%				
40-		40-45 90%		39.8'-44.6': Potassiu	ım Permanganate Si	taining
45		45-50 100%		45.8'-46.3': Potassiu 45.9'-46.1' Kaolin Ri	ım Permanganate Si ch Zone	taining
50-		50-55 85%		52.0'-52.3' Quartz/K	aolin Zone	
55-		55-60 100%		54.4'-62.5': Potassiu	ım Permanganate Si	taining
60-		60-62 100%		Geoprobe refusal at	62 5 feet	
				Coopione lelusal al	02.0 IGGI	
Remark	ks:					

Proje	ct: C	TS of Ashevi	ille, Inc. Sup	erfund Site	Э	Drilling Company: Cascade Drilling
Locat	ion:	Asheville	e, North Car	olina		Driller: Dan Ferrell (NC 3221)
			52162012			Boring Method: Direct-Push Technology
Logge	_		S. Avritt	Check	R. Clark	Equipment: Geoprobe 7822DT
Appro	oxima	ite Ground S		ation (feet)	: 2415 ft.	Boring Date: 12/19/2018
Depth (feet)	Sample	Sample Name	Recovery (%)	Lithology		Lithologic Description
-			0-5 50%		∖Gravel Reddish Brown to Br	rown, Clayey Sandy SILT, Moist (Possible Fill)
5-			5-10 70%		Red, Sandy SILT, M	oist, Trace Mica, Slightly Moist, Massive Appearance
10-			10-15 80%		Reddish Brown, Mica	aceous, Silty SAND, Slightly Moist, Foliated
15-			15-20 80%		Reddish Brown to Br Massive Appearance	rown, Fine to Medium SAND, Slightly Moist to Moist, Trace Mica, e with Dark Mineral Weathering
20-			20-25 85%			
25— - - -			25-30 100%			
30-			30-35 90%		Brown, Micaceous, F Slight Layering, Dark	Fine to Medium SAND, Moist, Mostly Massive Appearance with Some Mineral Weathering
35—			35-40 80%			
40-			40-45 90%		39.3'-39.8': Potassiu 40.0'-52.8': Potassiu	m Permanganate Staining m Permanganate Staining
45			45-50 100%		43.7': Potassium Per	manganate Emplacement (0.13' Thick)
50-			50-55 75%			
55— - - -			55-60 10%		55.0'-60.0': No Reco Permanganate	very from 55 to 59 feet but Liner is Stained with Potassium
60					Geoprobe refusal at	60 feet
Rem	arks:					

Project: C	CTS of Asheville,	Inc. Superfu	und Site	е	Drilling Company:	Cascade Drilling
Location:	Asheville, N	North Carolin			Driller:	Dan Ferrell (NC 3221)
Project Nu	umber: 62521	162012			Boring Method:	Direct-Push Technology
Logged By	y: S. <i>i</i>	Avritt	Check	ed By: R. Clark	Equipment:	Geoprobe 7822DT
Approxima	ate Ground Surfa		n (feet)	): 2415 ft.	Boring Date:	12/19/2018
Depth (feet) Sample	Sample Name	(%)	Lithology		Lithologic [	Description
- - -		0-5 60%	700		own, Clayey Sandy SILT oist, Trace to Some Mica	T, Moist, Trace Gravel (Possible Fill)
5		i-10 i5%		Reddish Brown, Mica	iceous, Silty SAND, Slig	htly Moist, Layered to Foliated
10		0-15 		Reddish Brown, Fine Massive Apperance v	to Medium SAND, Sligh with Dark Mineral Weath	ntly Moist, Little/Some Silt, Little/Some Mica, nering
15 <del></del> - - -		5-20 95%		Brown Micacoous E	ing to Madium SAND N	Moist, Little/Some Silt, Massive Appearance
20-		0-25 00%		with Dark Mineral We	eathering, Some Slight L	ayering
25-		5-30				
30		0-35 15%				
35—		5-40 10%				
40		0-45 00%		42.01.46.01. Detection	n Darmanaanata Stainir	
45— - - - -		5-50 00%		45.5 *40.0 . F 0ta55tut	n Permanganate Stainir	ig
50		0-55 95%				
55—	55	5-60 60%				
60—		1	- 11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Geoprobe refusal at 6	60 feet	
Remarks:	:					

Asheville, North Carol			
Project: CTS of Ashev	/ille, Inc. Superfund	d Site	Drilling Company: Cascade Drilling
	le, North Carolina		Driller: Dan Ferrell (NC 3221)
	252162012		Boring Method: Direct-Push Technology
Logged By:	S. Avritt	hecked By: R. Clark	Equipment: Geoprobe 7822DT
Approximate Ground S	Surface Elevation (	(feet): 2415 ft.	Boring Date: 12/19/2018
Depth (feet) Sample Sample Name	Recovery (%)	Lithology	Lithologic Description
	0-5 60%	Asphalt/Gravel Reddish Brown to Bro	own, Clayey Sandy SILT, Moist, Trace Gravel (Possible Fill)
5—	5-10 95%		sist, Trace Mica, Quartz Rich Zone at 7.3 to 7.5 feet
10-	10-15 95%	Brown to Reddish Bro	own, Micaceous, Fine to Medium SAND, Slightly Moist, Little/Some with Dark Mineral Weathering (Moist at 20 feet)
15-	15-20 95%		
20-	20-25 100%		
25—	25-30 100%		
30	30-35 95%		
35—	35-40 90%		
40	40-45 50%		
45	45-50 90%		
50	50-55 35%		
55—	55-60 80%	57.8'-60.0': Potassium	n Permanganate Staining (to the bottom of the liner)
60		58.3': Potassium Perm Geoprobe refusal at 6	manganate Emplacement (0.04' Thick)
Remarks:		,	

Project: C	TS of Asheville, Inc. Sup	perfund Site	Drilling Company: Cascade Drilling
Location:	Asheville, North Car		Driller: Dan Ferrell (NC 3221)
Project Nu	mber: 6252162012		Boring Method: Direct-Push Technology
Logged By		Checked By: R. Clark	Equipment: Geoprobe 7822DT
Approxima	te Ground Surface Eleva		Boring Date: 12/19/2018
Depth (feet) Sample	Sample Name Recovery (%)	Lithology	Lithologic Description
_	0-5 60%	Asphalt/Gravel Reddish Brown to	Brown, Clayey Sandy SILT, Moist, Trace Gravel (Possible Fill)
5—	5-10 90%	Red, Sandy SILT,	
10	10-15 80%		Brown, Micaceous, Silty SAND, Slightly Moist, Foliated Brown, Fine to Medium SAND, Slightly Moist, Little/Some Silt, Massive Weathering
15—	15-20 80%	Reddish Brown to	Brown, Micaceous, Silty SAND, Slightly Moist, Foliated
20-	20-25 75%	Reddish Brown to with Dark Mineral \	Brown, Fine to Medium SAND, Slightly Moist, Little/Some Silt, Massive Weathering (Moist at 20 feet)
25-	25-30 75%		
30-	30-35 80%		
35—	35-40 80%	34.0'-35.0': Potass	ium Permanganate Staining
40-	40-45 80%	39.2'-43.3': Potass	sium Permanganate Staining
45—	45-50 80%		
50	50-55 80%		
55—	55-59 90%	50 01 50 01 50	itima Dannan ann an Chainin a tha tha battara at the least
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## APPENDIX E WASTE MANIFESTS

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# APPENDIX F PHOTOGRAPHS FROM THE POTASSIUM PERMANGANATE DISTRIBUTION EVALUATION



<b>Photograph No. 1:</b> View of soil core from SB-132 showing permanganate staining (soil depth is from upper right to lower left).	<b>Location:</b> 235 Mills Gap Road
Photographer: Susan Avritt (Wood)	Date: December 12, 2018



<b>Photograph No. 2:</b> View of granular permanganate emplacement at 44.2 feet below ground surface (bgs) in soil boring SB-121.	<b>Location:</b> 235 Mills Gap Road
Photographer: Susan Avritt (Wood)	Date: December 17, 2018



<b>Photograph No. 3:</b> View of light permanganate staining from 38.25 to 40 feet bgs in soil boring SB-132.	<b>Location:</b> 235 Mills Gap Road
Photographer: Susan Avritt (Wood)	Date: December 19, 2018



<b>Photograph No. 4:</b> View of medium permanganate staining from 33.6 to 35 feet bgs in soil boring SB-127.	Location: 235 Mills Gap Road
Photographer: Susan Avritt (Wood)	Date: December 18, 2018