REMEDIAL INVESTIGATION REPORT FOR FTMM-58

FORT MONMOUTH, OCEANPORT, MONMOUTH COUNTY, NEW JERSEY

BRAC 05 Facility
Contract W912DY-09-D-0062
Task Order: 0012, Project No. 369857

Submitted To:

U.S. Corps of Engineers, New York District

and

U.S. Army Engineering and Support Center

Huntsville, Alabama

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September 2020

New Jersey Department of Environmental Protection
Site Remediation Program

Report Certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites

These certifications are to be used for reports submitted for RCRA GPRA 2020, CERCLA, and Federal Facility Sites. The Department has developed guidance for report certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites under traditional oversight. The "Person Responsible for Conducting the Remediation Information and Certification" is required to be submitted with each report. For those sites that are required or opt to use a Licensed Site Remediation Professional (LSRP) the report must also be certified by the LSRP using the "Licensed Site Remediation Professional Information and Statement". For additional guidance regarding the requirement for LSRPs at RCRA GPRA 2020, CERCLA and Federal Facility Sites see http://www.nj.gov/dep/srp/srra/training/matrix/quick_ref/rcra_cercla_fed_facility_sites.pdf.

Document:

- "Remedial Investigation Report for FTMM-58, Fort Monmouth, Oceanport, Monmouth County, New Jersey" (September 2020)

PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: William R. Colvin
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City/Town: Oceanport State: NJ Zip Code: 07757
Email Address: william.r.colvin18.civ@mail.mil

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: William R Colvin Date: 15 September 2020

Name/Title: William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

Completed form should be sent to:

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1.0 SITE DESCRIPTION

Fort Monmouth (FTMM) is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City, New York, 70 miles northeast of Philadelphia, Pennsylvania, and 40 miles east of Trenton, New Jersey. The Atlantic Ocean is approximately three miles to the east. FTMM was comprised of three areas: the Main Post (MP), the Charles Wood Area (CWA), and the Evans Area (EA). Installation Restoration Program Site FTMM-58 is located in the CWA of Former FTMM. FTMM-58 was a combination convenience store (Building 2567) and gasoline station located at the corner of Hope Road and Laboratory Road. The facility sold gasoline and other household commodities to active, reserve, and retired military personnel and their dependents from approximately 1972 to FTMM's closure in 2011. No automotive repair work was conducted at FTMM-58. The site location within the CWA is shown on **Figure 1** and the site layout of FTMM-58 is presented on **Figure 2**. Regulatory correspondence and a summary of important historical information are presented in **Appendices A and B**, respectively. A chronological summary of activities at FTMM-58 is provided in **Table 1**.

In December 1989, the Department of Public Works (DPW) at FTMM notified the New Jersey Department of Environmental Protection (NJDEP) of a fuel leak at the gas station and a Discharge Investigation and Corrective Action Report (DICAR) Case Number 89-12-12-1442 was assigned to the release. In January 1990, a tightness test was conducted on a suspected leaking underground gasoline pipeline between the dispenser island and the original four USTs (UST Registration Nos. 81515-42 through 45) to the east of the dispensing island. The pipeline tested tight. In January 1991, the four steel USTs east of the dispensing island (No. 81515-42 through 45) were tightness tested, and UST No. 81515-43 failed the test. NJDEP was notified and DICAR Case No. 91-08-27-1414 was assigned (Weston 1995). The construction of a new fuel dispensing facility at Building 2567, including installation of three double-wall fiberglass gasoline USTs (Nos. 81515-66 through -68) to the west of the dispensing island, was completed in 1993. Also, the previous four steel gasoline USTs (No. 81515-42 through 45) were removed in 1993.

Currently there are no USTs in place at the site. The site UST closure status is described in **Table 2** and summarized below (see **Figure 2** for the locations of former USTs):

- One 1,000-gallon steel No. 2 fuel oil UST (No. 81515-33) was formerly located adjacent to the north side of Building 2567; this UST was installed in 1969 and removed on 31 December 1991 (Weston, 1993, which is provided in **Appendix B**). There was no UST-related contamination encountered in excess of current NJDEP cleanup standards (NJDEP, 2017), and therefore an NFA determination is warranted for this UST.
- One 550-gallon steel waste oil UST (No. 81515-46) was installed in 1972 and removed on 31 December 1991 (Weston, 1993, which is provided in **Attachment B**). There was no UST-related contamination encountered in excess of current NJDEP cleanup standards (NJDEP, 2017), and therefore an NFA determination is warranted for this UST.
- Three 10,000-gallon and one 6,000-gallon steel gasoline USTs were installed in 1972 and removed on 24 February 1993 (Nos. 81515-42 through -45) (Weston, 1995, which is provided in **Appendix B**).
- Three 10,000-gallon double-wall fiberglass-reinforced plastic gasoline USTs (Nos. 81515-66 through -68) were installed in 1993 and removed on 16 October 2008 (Versar 2005). The results of 2008 soil samples collected from the UST excavation are presented in **Appendix B.** No UST-related contamination was encountered in excess of current NJDEP cleanup standards (NJDEP, 2017), and therefore an NFA determination is warranted for these USTs.

These USTs were replaced with an above-ground storage tank (AST) system at approximately the same location, which remains on site.

The excavation and removal of approximately 936 cubic yards of petroleum-contaminated soil from the UST and dispenser areas was also performed in 1993 to a depth of 11 ft (ft) (shown on **Figure 2**) (Weston, 1995; Versar, 2005; both are provided in **Appendix B**). Petroleum contamination at the site is attributed to the leaking fuel line and the area near the four older steel gasoline USTs (UST Registration Nos. 81515-42 through -45) where the tightness test failed at UST No. 81515-43.

1.1 Site Land Use

Ownership of the former gas station has been transferred to Monmouth County. Building 2567 is currently unoccupied and not in use, while the paved area near the building is used by the County as employee and overflow parking for the adjoining Fort Monmouth Recreation Center, which is operated by the Monmouth County Park System. This parking area is located approximately 200 ft west of Building 2567. The dispenser island, canopy, and ASTs remain on site. Dense wooded areas are located to the south, and wet lowland areas are located to the north and east. Anticipated future land use for FTMM-58 is for storage at Building 2567 and a parking area for vehicles. A wetland boardwalk may be installed in the area as well (Fort Monmouth Economic Revitalization Authority [FMERA], 2020).

1.2 Geology and Hydrogeology

The Vincentown, Hornerstown, and Tinton formations are the unconsolidated bedrock units that outcrop or occur close to the ground surface in the area of FTMM (Stanford and Sugarman, 2010; an excerpt is provided in **Appendix B**). A relatively thin veneer (i.e., 5 ft or less) of surficial deposits covers most of the unconsolidated bedrock (Stanford, 2000). The Hornerstown Formation underlies the northern portion of the CWA including FTMM-58 and consists of glauconitic (>50%) clay and silty clay. This unstratified formation is olive, dark green and black where unweathered and olive-brown with brown to reddish-brown mottles where weathered (Stanford and Sugarman, 2010). The Hornerstown Formation is typically 25 to 30 ft thick, but the depth to the underlying Tinton Formation at FTMM-58 is not known. The overlying Vincentown Formation (a glauconitic, silty, medium to coarse sand) outcrops across Hope Road to the east of FTMM-58 (Stanford and Sugarman, 2010).

Based on the recent soil boring logs (**Attachment C**) and the previous RI Report (Versar, 2005), soil at FTMM-58 consists of fine sand, silt, and clay. Fill material was locally present at depths of up to 5 ft below ground surface (bgs) due to the construction of buildings, underground utilities, and paved areas. The native material underlying the fill at FTMM-58 consists of dark brown to black clay with some fine green sand (Versar, 2005; provided in **Appendix B**) which is consistent with the Hornerstown Formation.

The groundwater flow direction at FTMM-58 is predominately to the southeast toward Wampum Brook which is about 650 ft to the south (**Figure 3**). The hydraulic conductivity of formation materials ranged from 18.8 to 35.6 ft/day, with a calculated geometric mean of 25.9 ft/day. The groundwater flow gradient was approximately 0.02 ft per foot (Versar, 2005).

Groundwater levels on 15 January 2018 obtained from eleven monitoring wells at the site ranged from 2.6 to 6.8 ft bgs. Groundwater elevations are summarized in **Table 3** and a groundwater contour map is presented in **Figure 3**.

2.0 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Soil Removal and Historical Soil Sampling (February 1993 to January 2013)

In 1991, two steel USTs located adjacent to Building 2567 were closed and removed. Of these two tanks, one 1,000 gallon steel No. 2 fuel UST (No. 81515-33) was removed, and no holes or signs of corrosion were noted. A 550 gallon steel waste oil UST (No. 81515-46) was also removed, and it was determined that this tank had never been in use. All soils were free of evidence of contamination and were backfilled into the excavation following the removal of the USTs (Weston 1993; provided in **Appendix B**). Eight post excavation samples were collected, and all contained either non-detect concentrations or concentrations below the current NJDEP soil remediations standards (NJDEP, 2017).

Petroleum-contaminated soil was excavated from the gasoline UST and dispenser areas in 1993 (**Figure 2**). The four steel gasoline USTs (UST Nos. 81515-42 through -45) formerly located 30 feet southeast of Building 2567 were removed in February 1993. Based on visual observations and screening with a photoionization detector, approximately 936 cubic yards of soil were excavated. Elevated concentrations of benzene exceeding the current RDCSRS and IGWSSL were detected in post-excavated soil samples collected near the dispenser area. Benzene concentrations ranged from 14 to 85 J mg/Kg (J flag indicates an estimated concentration), which exceeded the current RDCSRS (2 mg/kg) and IGWSSL (0.005 mg/kg) (Weston, 1995; provided in **Appendix B**).

Three 10,000-gallon, double walled fiberglass gasoline USTs (No. 81515-66 through -68) formerly located approximately 10 ft west of Building 2567 were closed and removed in October 2008. Soil staining and odors were not observed during UST removals. No holes or signs of corrosion were noted. Seven post excavation samples were collected, and all contained concentrations below the NJDEP RDCSRS (this analytical data is presented in **Appendix B)**.

Additional soil sampling was performed by FTMM in January 2013 to assess the potential for contamination along transfer piping from the former fiberglass gasoline USTs to the fuel dispensers (UST Nos. 8515-66 through -68 on **Figure 2**). . Seven soil samples (PSB-1 through PSB-7) were collected at a depth interval of 2.5 to 3 feet bgs within the unsaturated zone and analyzed for VOCs and tentatively identified compounds (TICs) and lead. All soil samples were below the NJDEP RDCSRS. One sample (P34-PSB-7) had a benzene concentration (0.011 mg/kg) that exceeded the NJDEP IGW SSL (0.005 mg/kg) (**Attachment B**). This sample was collected in the unsaturated zone along the piping.

2.2 Monitoring Well Installation and Long-Term Monitoring (LTM) Program

Four monitoring wells (2567MW01 through 2567MW04) were installed to evaluate groundwater quality around the eastern UST areas (Nos. 81515-42 through -45) following their removal in 1991. One additional downgradient monitoring well (2567MW05) located across the intersection of Hope Road and Laboratory Road was installed in 1994, and two additional side-gradient monitoring wells (2567MW06 and 2567MW07) were installed south of Laboratory Road in 2000 to delineate *tert*-butyl alcohol (TBA) exceedances at 2567MW01. Refer to **Figure 2** for each of these seven initial permanent monitoring well locations; an additional four wells (2567MW08 through 2567MW11) were installed in 2017 by Parsons as described in Section 3.2.

Quarterly LTM of groundwater started in 1997. Both volatile organic compounds (VOCs) and target analyte list (TAL) metals were initially detected in groundwater samples at concentrations above their respective New Jersey Ground Water Quality Criteria (GWQC). The Army concluded that metal detections were the direct result of acid leaching of suspended solids in groundwater samples and recommended no further

analysis for metals in groundwater at FTMM-58 (Calibre Systems, Inc. 2011). During 30 historical groundwater sampling events, up to four VOCs were detected above the GWQC. However, based upon frequency of detection and concentrations, (TBA) was identified as the only COC at FTMM-58 (Versar, 2005). Historical and recent groundwater analytical results were presented in Parsons (2017); 2018 TBA results continued to exceed the GWQC in well 2567MW01. These recent VOC exceedances are discussed further in Section 3.2.1. Based on an evaluation of the TBA concentration trend over time, this well may have had remnant TBA present in the well screen and sand pack. Therefore, 2567MW01 was abandoned, and a new two-inch monitoring well, 2567MW01R, was installed in July 2018 approximately 10 feet downgradient of 2567MW01. TBA results from samples of this new well were below the GWQC as discussed in Section 3.2.

2.3 Groundwater Remediation - RegenOx injections

Three injections events were performed using RegenOx™ (29 November through 3 December 2010; 3 to 6 May 2011; and June 2011) under an approved NJDEP Permit-by-Rule (PBR) (Army, 2010; **Appendix A**) to reduce TBA concentrations in groundwater near 2567MW01. Injection areas are presented in three figures in **Appendix B**. Post-injection performance monitoring was not performed until annual LTM was resumed in the August 2013 baseline groundwater monitoring event (Parsons, 2014). Results are discussed in Section 3.2.

3.0 REMEDIAL INVESTIGATION RESULTS

This section summarizes more recent remedial investigation results from March 2016 through March 2019. Sampling locations are shown in **Figure 2**. Soil boring logs and well construction logs are presented in **Appendix C** and field notes are presented in **Appendix D**.

3.1 Soil Quality

Additional soil sampling around the previous excavation of the former dispenser island area was performed by Parsons to evaluate historical post-excavation sample concentrations of benzene exceeding the current RDCSRS. In March 2016 and August 2016, nine soil borings (PAR-34-SB-01 through PAR-34-SB-09) were advanced and sampled at three depth intervals to delineate benzene detected in historical soil samples N, O, Q, and G (see **Figure 2** and **Appendix B**).

Soil sampling locations are shown in **Figure 2** and soil analytical results are summarized in **Table 4**.

3.1.1 Exceedances of NJDEP Comparison Criteria

Soil analytical results including the exceedances of the RDCSRS and IGWSSL are shown in **Figure 4** and **Table 4**. The soil results that exceeded applicable standards or screening levels are as follows**:**

- Benzene concentration of 0.078 J mg/kg (6.0-6.5 bgs) exceeded the NJDEP IGWSSL of 0.005 mg/kg at PAR-34-SB-01.
- Benzene concentration of 3.2 mg/kg (6.0-6.5 bgs) in the primary and 2.5 mg/kg in the duplicate exceeded the NJDEP RDCSRS of 2 mg/kg at PAR-34-SB-05.
- Benzene concentration of 0.0081 J mg/kg (7.5-8.0 bgs) exceeded the NJDEP IGWSSL of 0.005 mg/kg at PAR-34-SB-05.
- Benzene concentration of 0.033 J mg/kg (6.0-6.5 bgs) exceeded the NJDEP IGWSSL of 0.005 mg/kg at PAR-34-SB-06.

- Ethylbenzene concentration of 38.4 mg/kg (7.5-8.0 bgs) in the primary and 29.4 mg/kg in the duplicate exceeded the NJDEP IGWSSL of 13 mg/kg at PAR-34-SB-05.
- Naphthalene concentration of 7 mg/kg (6.0-6.5 bgs) exceeded the NJDEP RDCSRS of 6 mg/kg at PAR-34-SB-05.

As noted by NJDEP (letter dated 10 January 2017), a soil benzene concentration of 140 J mg/kg reported in Figure B1 of Parsons (2016a and 2016b) was not consistent with the concentration of 0.078 J mg/kg reported for the same sample in Table 1 of Parsons (2016c). The higher concentration was an error and was corrected during subsequent data validation. Therefore, the sample collected at PAR-34-SB-01 from 6 to 6.5 feet bgs exceeded the IGWSSL but not the RDCSRS.

3.1.2 Constituents of Concern (COCs)

Benzene concentrations found in the 1993 post-excavation soil samples have significantly attenuated over time, and RDCSRS exceedances of benzene and naphthalene were identified in only one soil boring location (PAR-34-SB-05) within the depth interval of 6 to 8 feet bgs (which included two samples).

IGWSSL standards were used to evaluate the potential impact to groundwater but are relevant only for soil samples collected within the unsaturated zone. Only one historical sample (benzene in PSB-7 at 2.5 to 3 ft bgs) exceeded the applicable IGWSSL standard within the unsaturated zone (**Figure 4**).

Based on these results, benzene and naphthalene in soil were identified as COCs.

3.2 Groundwater Results

Locations of permanent and temporary monitoring wells are presented in **Figure 2**. Groundwater analytical results from two temporary wells and 58 samples from 11 permanent monitoring wells sampled since the August 2013 sampling event are presented in **Table 5**. TBA was previously identified as the only groundwater COC at the site (Section 2.2), but other petroleum-related VOCs were also identified in groundwater in more recent (2016 to 2018) investigations. Below are descriptions of the sampling programs to investigate other petroleum-related VOCs as well as TBA in groundwater.

Other petroleum-related VOCs in groundwater – Two groundwater grab samples (PAR-34-TMW-05 and -06) were initially collected using temporary wells installed at borings PAR-34-SB-05 and PAR-34-SB-06. A total of four permanent monitoring wells (2567MW08 through 2567MW11) were subsequently installed between January and November 2017 to delineate petroleum-related VOCs in groundwater near the dispenser area. These wells were sampled in April 2017 and January 2018.

TBA in groundwater – TBA sampling was performed since 2013 at the following locations (listed chronologically; results are presented in Section 3.2.1):

- monitoring wells 2567MW01 and 2567MW03 during the October 2014 and November 2015 sampling events;
- monitoring wells 2567MW01, 2567MW03 and 2567MW05 in October 2016;
- monitoring wells 2567MW-08 through 2567MW10 in April 2017;
- monitoring wells 2567MW02, 2567MW03, and 2567MW08 through 2567MW11 during the January 2018 event;
- monitoring wells 2567MW01 and 2567MW01R during the July 2018 event, to compare results from the replacement well (2567MW01R) with results from the well being replaced (2567MW01); and

- monitoring well 2567MW01R during the July 2018 and March 2019 event.

3.2.1 Exceedances of NJDEP Comparison Criteria

Groundwater analytical results from 2016 to 2018 including locations exceeding the NJDEP GWQC are shown in **Figure 5.**

Petroleum-related VOCs in Groundwater

Groundwater results from the two groundwater grab samples (PAR-34-TMW-05 and TMW-06) collected in 2016 exceeded the GWQC for the following petroleum-related VOCs: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, meta/para xylene, propylbenzene, and total VOC TICs; the higher concentrations and most exceedances were at TWM-05.

Only one permanent monitoring well (2567MW10) exceeded the GWQC for the petroleum-related VOCs 1,2,4-trimethylbenzene, benzene, and xylenes during the April 2017 sampling event, and for only benzene during the January 2018 and July 2018 events. Benzene concentrations appear to be decreasing from 2017 to 2019 (**Figure 5**), and are expected to be reduced below the GWQC over time.

TBA in Groundwater

TBA concentrations above the GWQC of 100 µg/L were observed in monitoring well 2567MW01 during the October 2014 (260 µg/L), November 2015 (240 µg/L), October 2016 (344 µg/L), and July 2018 (293 J µg/L) groundwater sampling events (**Figure 5** and **Appendix B**). As described in Section 2.2, the well was abandoned in 2020 as it was suspected that remnant TBA was present in the well screen and sand pack. Replacement well 2567MW01R was installed with a screen at a similar depth as 2567MW01 in 2018. Both samples collected at the replacement well in 2018 and 2019 were below the GWQC (27 J ug/L and 14.7 ug/L respectively).

3.2.2 Constituents of Concern (COCS)

Six VOCs (see Section 4.2.1) were detected at concentrations above their GWQC in one temporary well (PAR-34-TMW-05) in August 2016. However, there were no VOC exceedances in the permanent well (2567MW08) subsequently installed adjacent to the location of PAR-34-TMW-05. In comparison to temporary well results, the results from the permanent wells are much more representative of groundwater conditions because permanent wells are developed and purged prior to the implementation of low flow groundwater sampling.

Benzene concentrations exceeded the GWQC in monitoring well 2567MW10 during each sampling event (April 2017, January 2018, and July 2018). Therefore, benzene is a COC. Other VOC exceedances (1,2,4–trimethylbenzene and xylenes) identified in April 2017 were not confirmed in the January or July 2018 sampling events and therefore are not considered COCs.

TBA concentrations from the most recent sampling events (2018 and 2019) in replacement monitoring well 2567MW01R are below the GWQC. Therefore, TBA is not a COC in groundwater at FTMM-58.

3.3 Conceptual Site Model

The site was formerly used as a gasoline station and today is currently used for vehicle parking. All of the former USTs have been removed from the site and excavations of petroleum contaminated soil have been performed to remove source soils. In August 2020, an additional soil excavation was performed and post-excavation confirmation soil samples were collected and analyzed; those results will be submitted under separate cover. An AST remains at the site along with associated transfer piping leading to the current

dispenser canopy. The potential sources at FTMM-58 include the older fuel pump dispensers, the steel gasoline USTs and associated piping, which have all been removed. Residual contamination in petroleum-contaminated soil may still be present near the dispenser area. Groundwater flow is consistently towards the southeast with a gradient of approximately 0.02 feet per foot (Versar, 2005).

Transport and exposure pathways that could impact human and ecological receptors include chemicals that were released in the subsurface soil and leached into shallow groundwater to form a dissolved-phase chemical. The dissolved-phase chemicals in groundwater have the potential to move to the southeast consistent with the direction of the groundwater hydraulic gradient.

COCs at FTMM-58 include fuel-related VOCs in soil and groundwater. Based on the sampling, COCs in soil that exceed the RDCSRSs include benzene and naphthalene. COCs in groundwater that exceed the GWQC include benzene.

South of Building 2567 and near the dispenser area, benzene concentrations were historically found exceeding NJDEP soil and groundwater standards in one location. However, benzene concentrations in soil were substantially lower in 2016 than in the post-excavation samples of 1993, suggesting that natural attenuation has occurred. Benzene in both soil and groundwater are expected to continue to degrade and attenuate over time due to natural processes.

Current or potential future human receptors at FTMM-58 are workers at the former gas station. Using these current or potential receptors, the complete exposure pathways by which individual receptors may contact chemicals present in the soil gas, groundwater, and soil at the site were determined. A complete exposure pathway requires the following three key elements:

- contaminant source;
- migration route; and
- point for human exposure (e.g., soil, air, or water).

Currently, the area where COCs are present is paved and therefore there is no potential for human exposure unless intrusive work is performed. If pavement is removed in the future, personnel may be exposed to chemicals in surface and subsurface soil via incidental ingestion, dermal contact, and inhalation of dust or volatiles. Intrusive workers, such as utility workers, may be exposed to contaminants in surface and subsurface soil beneath the pavement via the same pathways listed above for site personnel.

Personnel involved with intrusive work below the water table may be exposed to chemicals in groundwater via incidental ingestion, dermal contact, and inhalation of volatiles. If extraction of site groundwater for potable use were to occur in the future, then potable water users may be exposed to contaminants in groundwater via ingestion, and the same three pathways listed above for intrusive workers. The isolated occurrences of relatively low concentrations of dissolved-phase hydrocarbons around former source areas appear to be decreasing over time (e.g., well 2567MW10) due to natural biodegradation of fuel hydrocarbons in soil and groundwater.

The nearest surface water body (Wampum Brook) is 650 feet from the site, and site-related COCs are limited to the immediate site vicinity near former source areas, and there is no evidence of significant migration of COCs in groundwater downgradient of the site. Therefore, there is no migration route for site-related COCs to impact surface water or sediment.

4.0 SOIL REMOVAL ACTIONS

In August 2020, the Army implemented a soil removal action at FTMM-58 to remove petroleum contamination in soil, to accelerate the property transfer for beneficial reuse, and to reduce the potential environmental liability associated with this site. Removal action activities included site preparation, excavation of contaminated soil, collection of post-excavation soil samples, offsite transportation and disposal, and site restoration. The results of the soil removal action will be presented in a Remedial Action Completion Report (RACR) which will be submitted under separate cover.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The recent sampling results indicate that isolated occurrences of benzene and naphthalene hydrocarbons were present in the soil and groundwater above NJDEP standards. However, the concentrations of these compounds have been reduced over time due to the previous active remediation activities, ongoing natural biodegradation, and the August 2020 soil removal actions (to be described in the RACR submitted under separate cover). Since petroleum releases are excluded from CERCLA, the Army at Fort Monmouth is subject to NJDEP regulations for the investigation and remediation of these contaminants.

With regard to groundwater, TBA concentrations from the latest sampling event in 2018 and 2019 in replacement monitoring well 2567MW01R are below the GWQC. Therefore, TBA is no longer an issue in groundwater at FTMM-58 and no further sampling is recommended. Benzene exceeded the NJDEP GWQC in groundwater at one location (2567MW10). Since 2013, after 8 rounds of sampling, well 2567MW03 (located 75 feet downgradient of 2567MW10) has consistently exhibited non-detect results for VOCs in groundwater. The benzene exceedance in 2567MW10 appears to be localized to one well (i.e., similar to TBA in well 2567MW01R) and not migrating. Benzene concentrations are expected to be reduced below the GWQC over time, and the completed August 2020 soil removal action will likely result in further reductions in groundwater concentrations. Therefore, additional groundwater monitoring of well 2567MW10 is recommended to demonstrate attenuation of benzene in groundwater.

No COCs were identified in soil post-excavation samples following UST removals in 1991, 1993 and 2008. Therefore, the Army requests NJDEP concurrence that a No Further Action determination is warranted for UST Registration Nos. 81515-66 through -68, UST Registration Nos. 81515-33, and UST Registration Nos. 81515-46. An NFA determination for UST Registration Nos. 81515-42 through -45 and for FTMM-58 as a whole will be warranted after demonstrating through additional monitoring that benzene concentrations in groundwater have been reduced to less than the GWQC.

6.0 REFERENCES

Calibre Systems, Inc. 2011. *Site 2567 (FTMM-58) Remedial Action Progress Report (1st Quarter 2009 through 3rd Quarter 2010), U.S. Army Garrison Fort Monmouth, Charles Wood Area Fort Monmouth, New Jersey*. November 2011.

Fort Monmouth Economic Revitalization Authority [FMERA]. 2020. E-mail from Joe Fallon of the FMERA to William Colvin; re: Shopette. 15 April.

NJDEP. 2012. *Site Remediation Program Monitored Natural Attenuation Technical Guidance.* Version 1.0. March 1.

NJDEP. 2017. *N.J.A.C 7:26D Remediation Standards.* Date last amended 18 September 2017.

Parsons, 2014. *August 2013 Baseline Groundwater Sampling Report, Fort Monmouth, Oceanport, Monmouth County, New Jersey*.

Parsons, 2016a. *Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* July 7.

Parsons, 2016b. *Revised Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* August 4.

Parsons, 2016c. *December 2016 Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* December 28.

Parsons, 2017. *Annual (Fourth Quarter) 2016 Groundwater Sampling Report, Fort Monmouth, Oceanport, Monmouth County, New Jersey.* October.

Stanford. 2000. Surficial Geology of the Long Branch Quadrangle. Monmouth County, New Jersey. Open File Map OFM-38. New Jersey Geological Survey.

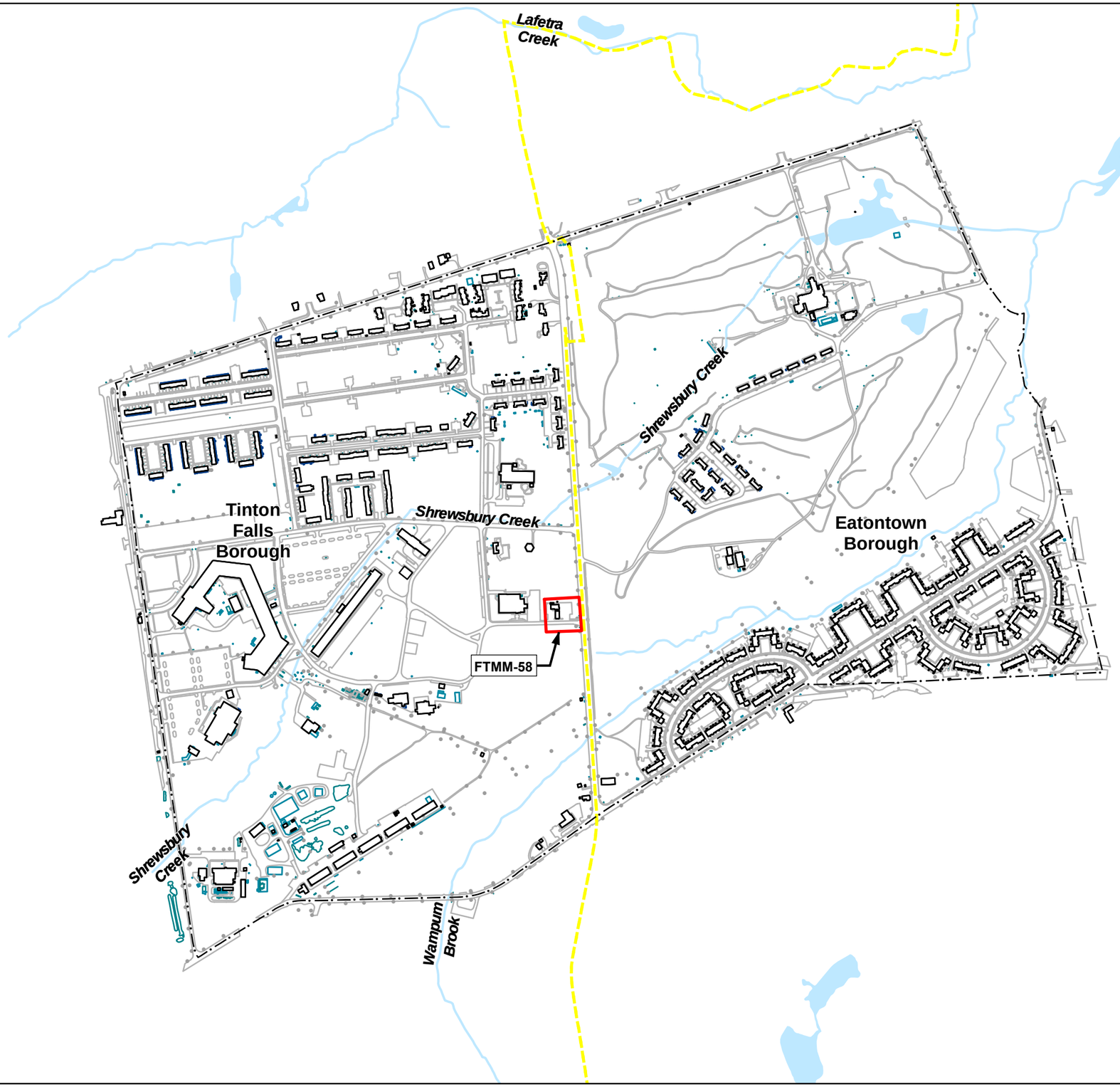
Stanford and Sugarman. 2010. Bedrock Geology of the Long Branch Quadrangle. Monmouth County, New Jersey. Open File Map OFM-78. New Jersey Geological Survey.

Versar. 2005. *Remedial Investigation Report and Remedial Action Work Plan, Site 2567, Fort Monmouth, NJ.* October 28.

Weston (Roy F. Weston, Inc.), 1993. *UST Closure and Site Assessment Report for Building 2567, Tanks 33 and 46, Fort Monmouth, New Jersey.* October.

Weston, 1995. *Underground Storage Tank Closure and Site Investigation Report, Building 2567, UST Nos 42 through 45*. January.

FIGURES



LEGEND:

- Parcel Boundary
- Installation Boundary
- Municipal Boundary
- Surface Water Feature

N

1 inch = 750 feet

0 375 750 1,500 Feet

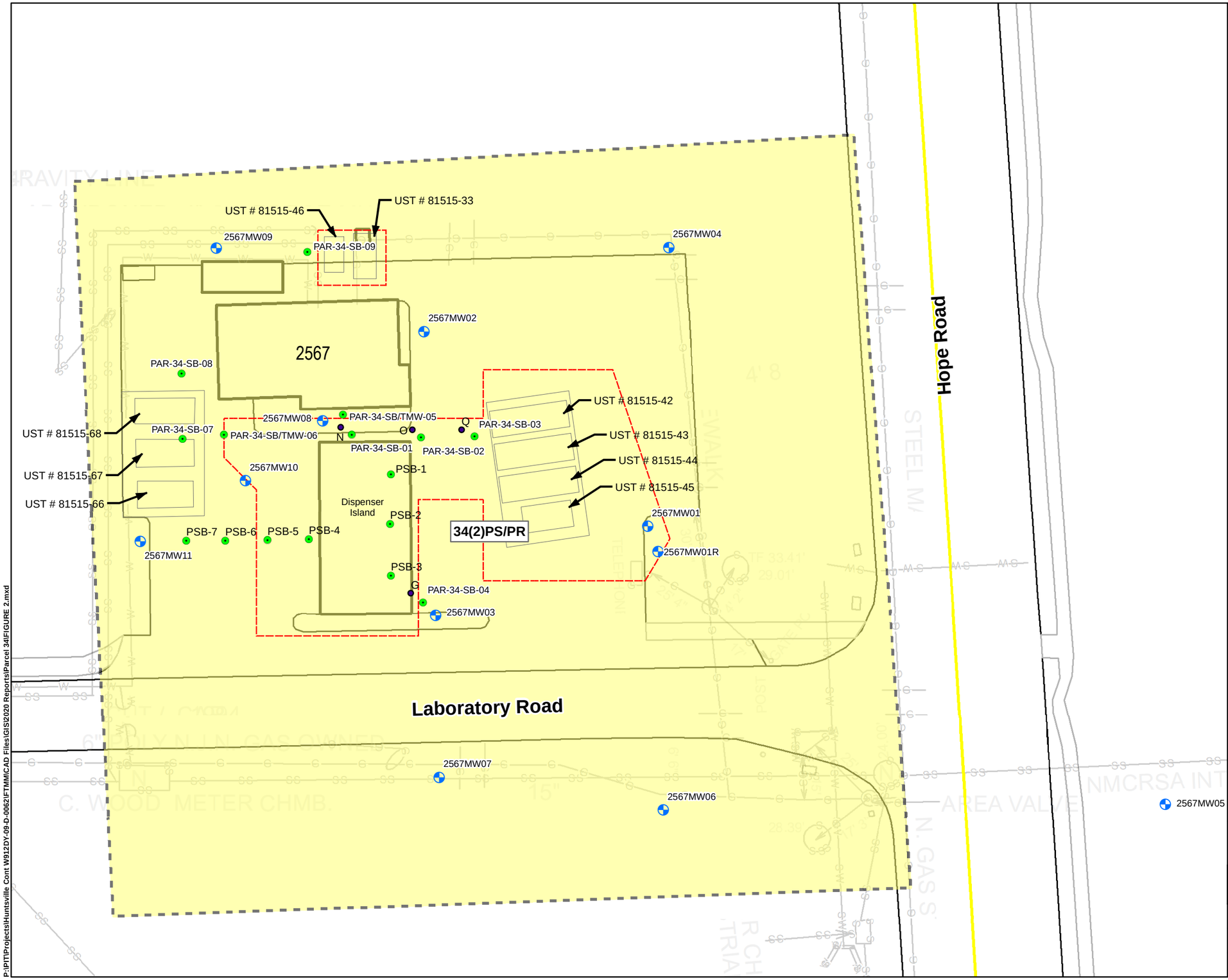
Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

FTMM-58 SITE LOCATION

CREATED BY: RR	REVIEWED BY: JC
DATE: FEB. 2018	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06031	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\Parcel 34\FIGURE 1.mxd 2/20/2018 11:19:36 AM



LEGEND:

- Surface/Subsurface Soil Sample\Temporary Monitoring Well Location (2013, 2016)
- Historical Soil Sample (1993)
- Shallow Monitoring Well
- Parcel 34 Boundary
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation Area
- Former UST Location

N

1 inch = 30 feet

0 15 30 60 Feet

Source: FTMM Supplied CAD

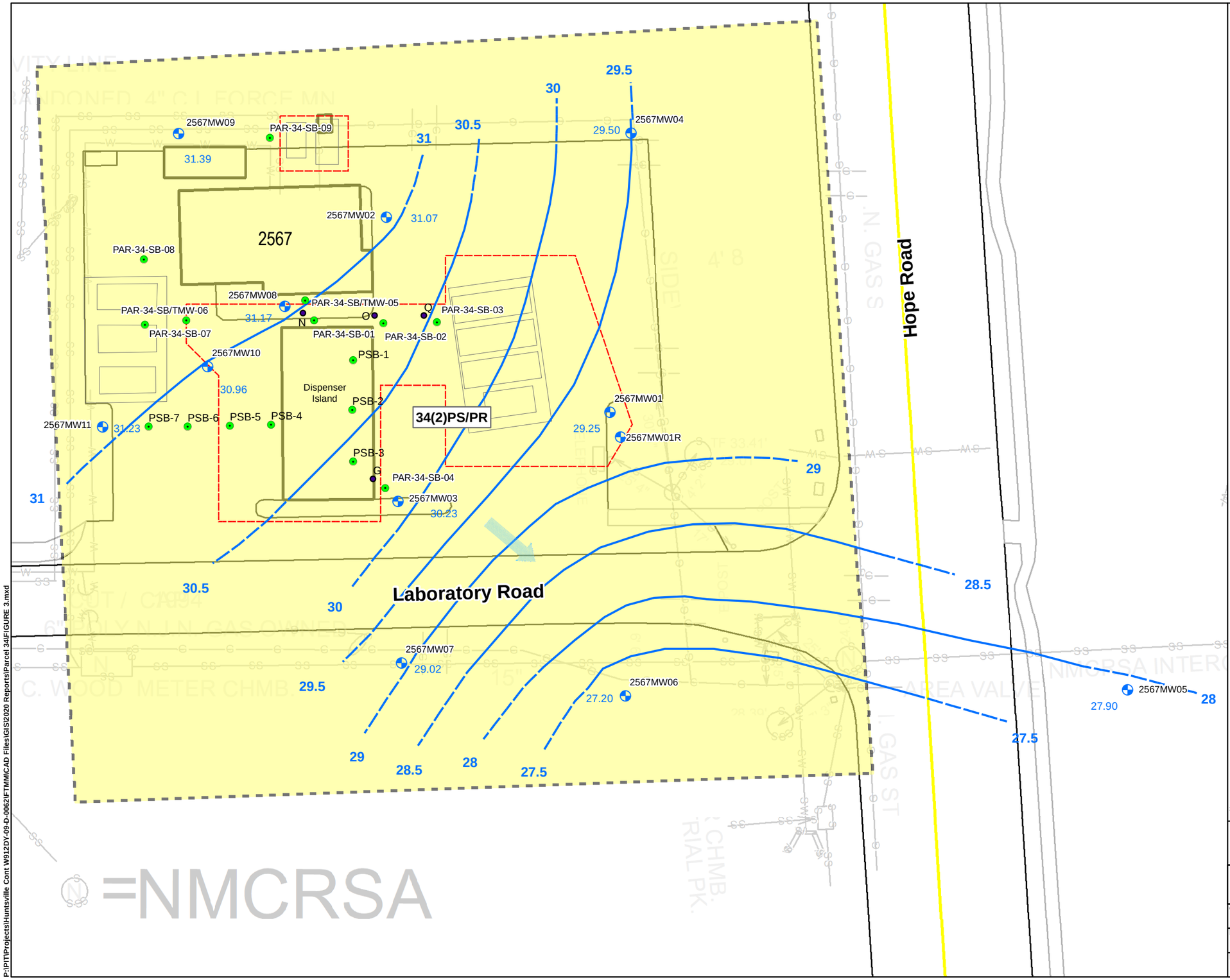
PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

FTMM-58
SITE LAYOUT AND SAMPLING LOCATIONS

CREATED BY:	REVIEWED BY:
RR	JC
DATE:	FIGURE NUMBER:
APR. 2020	FIGURE 2
PROJECT NUMBER:	FILE:
748810-06014	FIGURE 2.mxd

P:\PITTProjects\Huntsville Cont W912DY-09-D-0062\FTMMICAD Files\GIS\2020 Reports\Parcel 34\FIGURE 2.mxd



LEGEND:

- Surface/Subsurface Soil Sample\Temporary Monitoring Well Location (2013, 2016)
- Historical Soil Sample (1993)
- Shallow Monitoring Well
- Parcel 34 Boundary
- Municipal Boundary
- Former UST Location
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation Area
- Inferred Groundwater Flow Direction
- Potentiometric Surface Elevation Contour
- Inferred Potentiometric Surface Elevation Contour
- 8.57 Groundwater Elevation Recorded on January 15, 2018 (NAD88) (ft.)
- NA Unavailable

N

1 inch = 30 feet

0 15 30 60 Feet

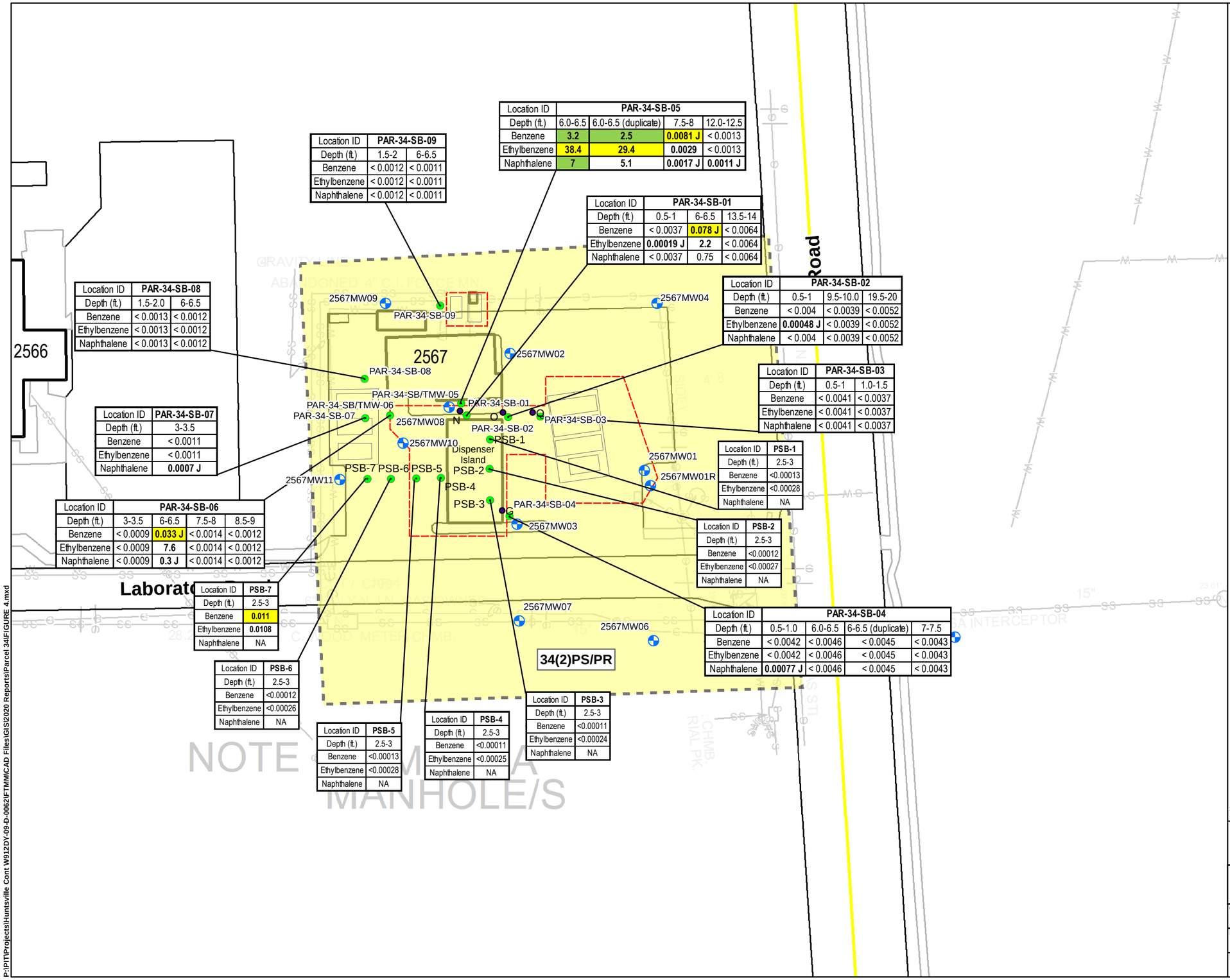
Source: FTMM Supplied CAD

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth New Jersey**

FTMM-58
GROUNDWATER CONTOURS - JAN. 15, 2018

CREATED BY: RR	REVIEWED BY: JC
DATE: JUL. 2020	FIGURE NUMBER: FIGURE 3
PROJECT NUMBER: 748810-06014	FILE: FIGURE 3.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\IFTMM\CAD Files\GIS\2020 Reports\Parcel 34\FIGURE 3.mxd



Location ID	PAR-34-SB-09	
Depth (ft.)	1.5-2	6-6.5
Benzene	< 0.0012	< 0.0011
Ethylbenzene	< 0.0012	< 0.0011
Naphthalene	< 0.0012	< 0.0011

Location ID	PAR-34-SB-05			
Depth (ft.)	6.0-6.5	6.0-6.5 (duplicate)	7.5-8	12.0-12.5
Benzene	**3.2**	**2.5**	**0.0081 J**	< 0.0013
Ethylbenzene	**38.4**	**29.4**	**0.0029**	< 0.0013
Naphthalene	**7**	**5.1**	**0.0017 J**	**0.0011 J**

Location ID	PAR-34-SB-01		
Depth (ft.)	0.5-1	6-6.5	13.5-14
Benzene	< 0.0037	**0.078 J**	< 0.0064
Ethylbenzene	**0.00019 J**	**2.2**	< 0.0064
Naphthalene	< 0.0037	0.75	< 0.0064

Location ID	PAR-34-SB-08	
Depth (ft.)	1.5-2.0	6-6.5
Benzene	< 0.0013	< 0.0012
Ethylbenzene	< 0.0013	< 0.0012
Naphthalene	< 0.0013	< 0.0012

Location ID	PAR-34-SB-02		
Depth (ft.)	0.5-1	9.5-10.0	19.5-20
Benzene	< 0.004	< 0.0039	< 0.0052
Ethylbenzene	**0.00048 J**	< 0.0039	< 0.0052
Naphthalene	< 0.004	< 0.0039	< 0.0052

Location ID	PAR-34-SB-03	
Depth (ft.)	0.5-1	1.0-1.5
Benzene	< 0.0041	< 0.0037
Ethylbenzene	< 0.0041	< 0.0037
Naphthalene	< 0.0041	< 0.0037

Location ID	PAR-34-SB-07	
Depth (ft.)	3-3.5	
Benzene	< 0.0011	
Ethylbenzene	< 0.0011	
Naphthalene	**0.0007 J**	

Location ID	PSB-1
Depth (ft.)	2.5-3
Benzene	<0.00013
Ethylbenzene	<0.00028
Naphthalene	NA

Location ID	PAR-34-SB-06			
Depth (ft.)	3-3.5	6-6.5	7.5-8	8.5-9
Benzene	< 0.0009	**0.033 J**	< 0.0014	< 0.0012
Ethylbenzene	< 0.0009	**7.6**	< 0.0014	< 0.0012
Naphthalene	< 0.0009	**0.3 J**	< 0.0014	< 0.0012

Location ID	PSB-2
Depth (ft.)	2.5-3
Benzene	<0.00012
Ethylbenzene	<0.00027
Naphthalene	NA

Location ID	PSB-7
Depth (ft.)	2.5-3
Benzene	**0.011**
Ethylbenzene	**0.0108**
Naphthalene	NA

Location ID	PAR-34-SB-04			
Depth (ft.)	0.5-1.0	6.0-6.5	6-6.5 (duplicate)	7-7.5
Benzene	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Ethylbenzene	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Naphthalene	**0.00077 J**	< 0.0046	< 0.0045	< 0.0043

Location ID	PSB-6
Depth (ft.)	2.5-3
Benzene	<0.00012
Ethylbenzene	<0.00026
Naphthalene	NA

Location ID	PSB-5
Depth (ft.)	2.5-3
Benzene	<0.00013
Ethylbenzene	<0.00028
Naphthalene	NA

Location ID	PSB-4
Depth (ft.)	2.5-3
Benzene	<0.00011
Ethylbenzene	<0.00025
Naphthalene	NA

Location ID	PSB-3
Depth (ft.)	2.5-3
Benzene	<0.00011
Ethylbenzene	<0.00024
Naphthalene	NA

LEGEND:

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- Parcel 34 Boundary
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- Former UST Location
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation Area

Notes:
Green highlights shows exceedances of the New Jersey Residential Direct Contact Soil Remediation Standard (NJDEP RDCSRS):
Yellow highlights shows exceedances of the New Jersey Impact to GW Soil Screening Level (NJDEP IGWSSL):

Parameter	NJ Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level
Benzene	2	0.005
Ethylbenzene	7,800	13
Naphthalene	6	25

Concentrations are mg/Kg.
J - estimated detected value due to a concentration below the reporting limit
< 0.0013 - Non detect
TBA - Tert Butyl Alcohol

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

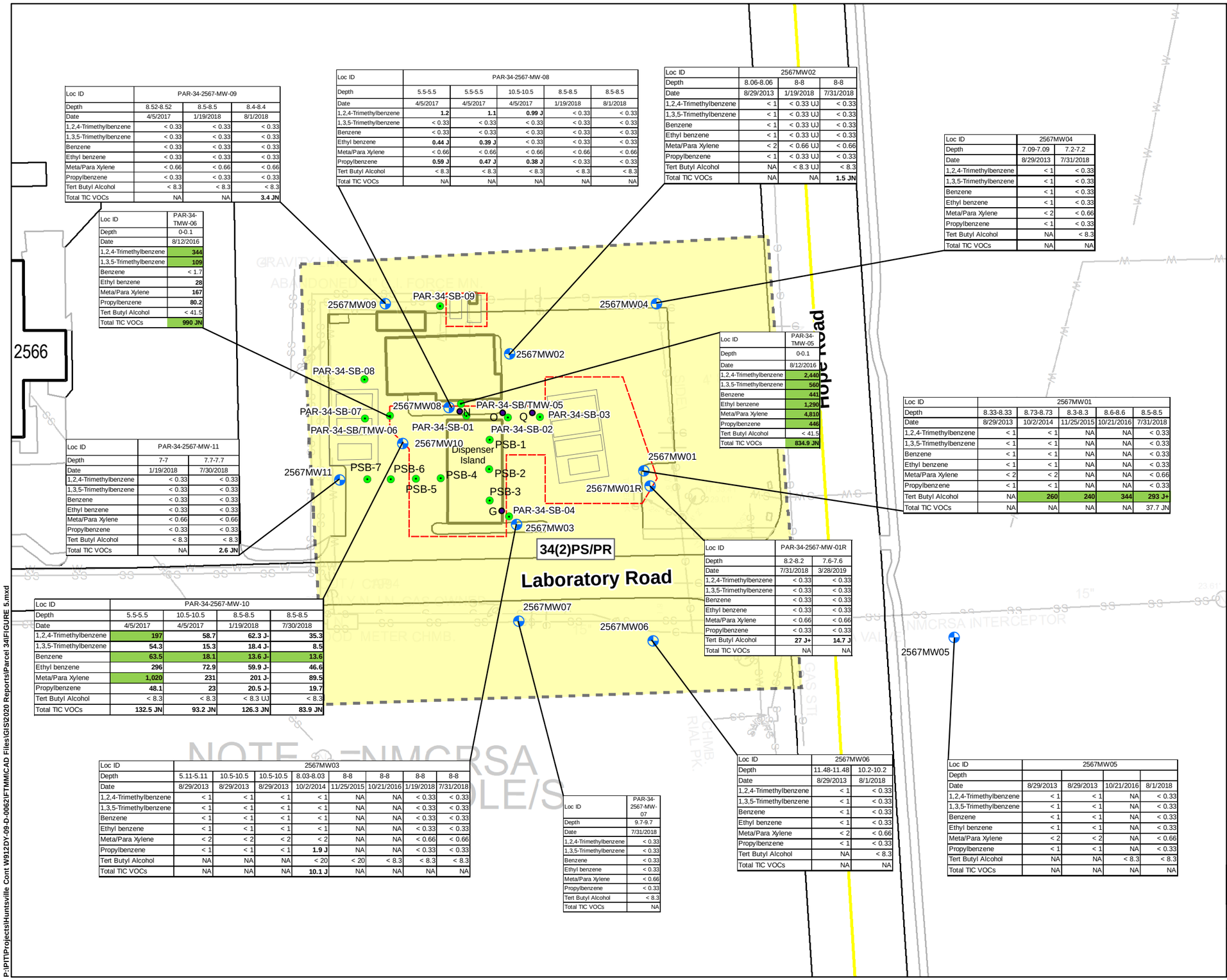
PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

FTMM-58
SOIL ANALYTICAL RESULTS

CREATED BY:	REVIEWED BY:
RR	JC
DATE: JUL. 2020	FIGURE NUMBER: FIGURE 4
PROJECT NUMBER: 748810-06014	FILE: FIGURE 4.mxd

P:\PITTProjects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2020 Reports\Parcel 34\FIGURE 4.mxd



Loc ID	PAR-34-2567-MW-09		
Depth	8.52-8.52	8.5-8.5	8.4-8.4
Date	4/5/2017	1/19/2018	8/1/2018
1,2,4-Trimethylbenzene	< 0.33	< 0.33	< 0.33
1,3,5-Trimethylbenzene	< 0.33	< 0.33	< 0.33
Benzene	< 0.33	< 0.33	< 0.33
Ethyl benzene	< 0.33	< 0.33	< 0.33
Meta/Para Xylene	< 0.66	< 0.66	< 0.66
Propylbenzene	< 0.33	< 0.33	< 0.33
Tert Butyl Alcohol	< 8.3	< 8.3	< 8.3
Total TIC VOCs	NA	NA	**3.4 JN**

Loc ID	PAR-34-2567-MW-08				
Depth	5.5-5.5	5.5-5.5	10.5-10.5	8.5-8.5	8.5-8.5
Date	4/5/2017	4/5/2017	4/5/2017	1/19/2018	8/1/2018
1,2,4-Trimethylbenzene	**1.2**	**1.1**	**0.99 J**	< 0.33	< 0.33
1,3,5-Trimethylbenzene	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Benzene	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Ethyl benzene	**0.44 J**	**0.39 J**	< 0.33	< 0.33	< 0.33
Meta/Para Xylene	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66
Propylbenzene	**0.59 J**	**0.47 J**	**0.38 J**	< 0.33	< 0.33
Tert Butyl Alcohol	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3
Total TIC VOCs	NA	NA	NA	NA	NA

Loc ID	2567MW02		
Depth	8.06-8.06	8-8	8-8
Date	8/29/2013	1/19/2018	7/31/2018
1,2,4-Trimethylbenzene	< 1	< 0.33 UJ	< 0.33
1,3,5-Trimethylbenzene	< 1	< 0.33 UJ	< 0.33
Benzene	< 1	< 0.33 UJ	< 0.33
Ethyl benzene	< 1	< 0.33 UJ	< 0.33
Meta/Para Xylene	< 2	< 0.66 UJ	< 0.66
Propylbenzene	< 1	< 0.33 UJ	< 0.33
Tert Butyl Alcohol	NA	< 8.3 UJ	< 8.3
Total TIC VOCs	NA	NA	**1.5 JN**

Loc ID	2567MW04	
Depth	7.09-7.09	7.2-7.2
Date	8/29/2013	7/31/2018
1,2,4-Trimethylbenzene	< 1	< 0.33
1,3,5-Trimethylbenzene	< 1	< 0.33
Benzene	< 1	< 0.33
Ethyl benzene	< 1	< 0.33
Meta/Para Xylene	< 2	< 0.66
Propylbenzene	< 1	< 0.33
Tert Butyl Alcohol	NA	< 8.3
Total TIC VOCs	NA	NA

Loc ID	PAR-34-TMW-06
Depth	0-0.1
Date	8/12/2016
1,2,4-Trimethylbenzene	**344**
1,3,5-Trimethylbenzene	**109**
Benzene	< 1.7
Ethyl benzene	**28**
Meta/Para Xylene	**167**
Propylbenzene	**80.2**
Tert Butyl Alcohol	< 41.5
Total TIC VOCs	**990 JN**

Loc ID	PAR-34-TMW-05
Depth	0-0.1
Date	8/12/2016
1,2,4-Trimethylbenzene	**2,440**
1,3,5-Trimethylbenzene	**560**
Benzene	**441**
Ethyl benzene	**1,290**
Meta/Para Xylene	**4,810**
Propylbenzene	**446**
Tert Butyl Alcohol	< 41.5
Total TIC VOCs	**834.9 JN**

Loc ID	2567MW01				
Depth	8.33-8.33	8.73-8.73	8.3-8.3	8.6-8.6	8.5-8.5
Date	8/29/2013	10/2/2014	11/25/2015	10/21/2016	7/31/2018
1,2,4-Trimethylbenzene	< 1	< 1	NA	NA	< 0.33
1,3,5-Trimethylbenzene	< 1	< 1	NA	NA	< 0.33
Benzene	< 1	< 1	NA	NA	< 0.33
Ethyl benzene	< 1	< 1	NA	NA	< 0.33
Meta/Para Xylene	< 2	< 2	NA	NA	< 0.66
Propylbenzene	< 1	< 1	NA	NA	< 0.33
Tert Butyl Alcohol	NA	**260**	**240**	**344**	**293 J+**
Total TIC VOCs	NA	NA	NA	NA	37.7 JN

Loc ID	PAR-34-2567-MW-11	
Depth	7-7	7.7-7.7
Date	1/19/2018	7/30/2018
1,2,4-Trimethylbenzene	< 0.33	< 0.33
1,3,5-Trimethylbenzene	< 0.33	< 0.33
Benzene	< 0.33	< 0.33
Ethyl benzene	< 0.33	< 0.33
Meta/Para Xylene	< 0.66	< 0.66
Propylbenzene	< 0.33	< 0.33
Tert Butyl Alcohol	< 8.3	< 8.3
Total TIC VOCs	NA	**2.6 JN**

Loc ID	PAR-34-2567-MW-01R	
Depth	8.2-8.2	7.6-7.6
Date	7/31/2018	3/28/2019
1,2,4-Trimethylbenzene	< 0.33	< 0.33
1,3,5-Trimethylbenzene	< 0.33	< 0.33
Benzene	< 0.33	< 0.33
Ethyl benzene	< 0.33	< 0.33
Meta/Para Xylene	< 0.66	< 0.66
Propylbenzene	< 0.33	< 0.33
Tert Butyl Alcohol	**27 J+**	**14.7 J**
Total TIC VOCs	NA	NA

Loc ID	PAR-34-2567-MW-10			
Depth	5.5-5.5	10.5-10.5	8.5-8.5	8.5-8.5
Date	4/5/2017	4/5/2017	1/19/2018	7/30/2018
1,2,4-Trimethylbenzene	**197**	**58.7**	**62.3 J-**	**35.3**
1,3,5-Trimethylbenzene	**54.3**	**15.3**	**18.4 J-**	**8.5**
Benzene	**63.5**	**18.1**	**13.6 J-**	**13.6**
Ethyl benzene	**296**	**72.9**	**59.9 J-**	**46.6**
Meta/Para Xylene	**1,020**	**231**	**201 J-**	**89.5**
Propylbenzene	**48.1**	**23**	**20.5 J-**	**19.7**
Tert Butyl Alcohol	< 8.3	< 8.3	< 8.3 UJ	< 8.3
Total TIC VOCs	**132.5 JN**	**93.2 JN**	**126.3 JN**	**83.9 JN**

Loc ID	2567MW03								
Depth	5.11-5.11	10.5-10.5	10.5-10.5	8.03-8.03	8-8	8-8	8-8	8-8	
Date	8/29/2013	8/29/2013	8/29/2013	10/2/2014	11/25/2015	10/21/2016	1/19/2018	7/31/2018	
1,2,4-Trimethylbenzene	< 1	< 1	< 1	< 1	NA	NA	< 0.33	< 0.33	
1,3,5-Trimethylbenzene	< 1	< 1	< 1	< 1	NA	NA	< 0.33	< 0.33	
Benzene	< 1	< 1	< 1	< 1	NA	NA	< 0.33	< 0.33	
Ethyl benzene	< 1	< 1	< 1	< 1	NA	NA	< 0.33	< 0.33	
Meta/Para Xylene	< 2	< 2	< 2	< 2	NA	NA	< 0.66	< 0.66	
Propylbenzene	< 1	< 1	< 1	**1.9 J**	NA	NA	< 0.33	< 0.33	
Tert Butyl Alcohol	NA	NA	NA	< 20	< 20	< 8.3	< 8.3	< 8.3	
Total TIC VOCs	NA	NA	NA	**10.1 J**	NA	NA	NA	NA	

Loc ID	PAR-34-2567-MW-07
Depth	9.7-9.7
Date	7/31/2018
1,2,4-Trimethylbenzene	< 0.33
1,3,5-Trimethylbenzene	< 0.33
Benzene	< 0.33
Ethyl benzene	< 0.33
Meta/Para Xylene	< 0.66
Propylbenzene	< 0.33
Tert Butyl Alcohol	< 8.3
Total TIC VOCs	NA

Loc ID	2567MW06	
Depth	11.48-11.48	10.2-10.2
Date	8/29/2013	8/1/2018
1,2,4-Trimethylbenzene	< 1	< 0.33
1,3,5-Trimethylbenzene	< 1	< 0.33
Benzene	< 1	< 0.33
Ethyl benzene	< 1	< 0.33
Meta/Para Xylene	< 2	< 0.66
Propylbenzene	< 1	< 0.33
Tert Butyl Alcohol	NA	< 8.3
Total TIC VOCs	NA	NA

Loc ID	2567MW05			
Depth				
Date	8/29/2013	8/29/2013	10/21/2016	8/1/2018
1,2,4-Trimethylbenzene	< 1	< 1	NA	< 0.33
1,3,5-Trimethylbenzene	< 1	< 1	NA	< 0.33
Benzene	< 1	< 1	NA	< 0.33
Ethyl benzene	< 1	< 1	NA	< 0.33
Meta/Para Xylene	< 2	< 2	NA	< 0.66
Propylbenzene	< 1	< 1	NA	< 0.33
Tert Butyl Alcohol	NA	NA	< 8.3	< 8.3
Total TIC VOCs	NA	NA	NA	NA

LEGEND:

- Surface/Subsurface Soil Sample\Temporary Monitoring Well Location (2013, 2016)
- Historical Soil Sample (1993)
- Shallow Monitoring Well
- Parcel 34 Boundary
- Municipal Boundary
- Former UST Location
- W Water Line
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- SW Storm Sewer Line
- G Gas Line
- Excavation Area

Notes:

Green highlights shows exceedances of the New Jersey Ground Water Quality Criteria (NJ GWQS):

Parameter	NJ Ground Water Quality Standard
1,2,4-Trimethylbenzene	100
1,3,5-Trimethylbenzene	100
Benzene	1
Ethyl benzene	700
Propylbenzene	1,000
TBA	100
Total Xylenes	1,000

Concentrations are ug/L.
JN - Tentatively identified compound, estimated concentration
J+ - The result is an estimated quantity, but the result may be biased high
J- - The result is an estimated quantity, but the result may be biased low
NA - Not Analyzed
<0.33 - Not Detected

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

PARSONS
401 Diamond Drive NW, Huntsville AL

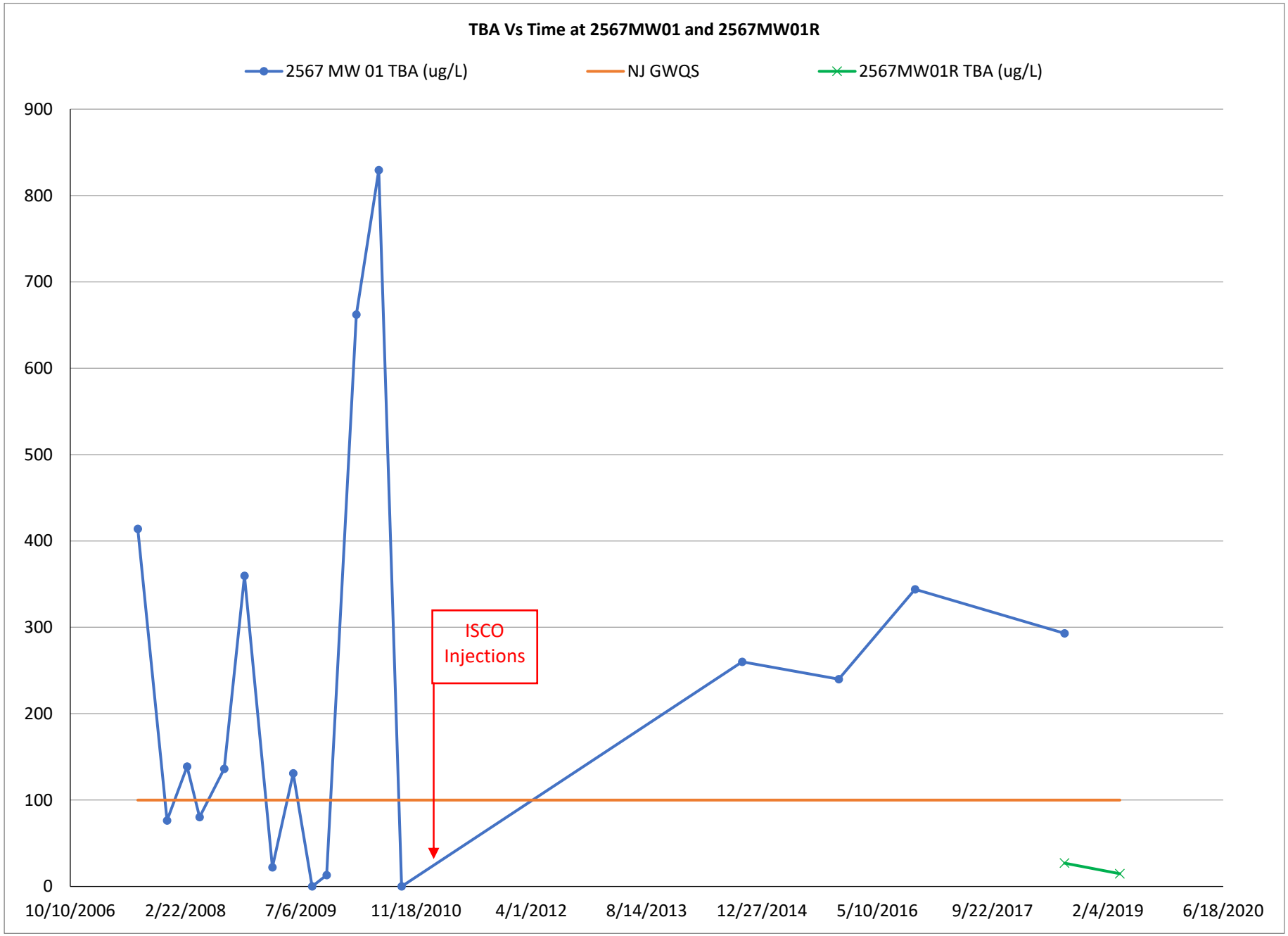
Fort Monmouth New Jersey

FTMM-58
GROUNDWATER ANALYTICAL RESULTS

CREATED BY:	REVIEWED BY:
RR	JC
DATE: JUL. 2020	FIGURE NUMBER: FIGURE 5
PROJECT NUMBER: 748810-06014	FILE: FIGURE 5.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2020 Reports\Parcel 34\FIGURE 5.mxd

Figure 6


TBA Vs Time at 2567MW01 and 2567MW01R
2567 MW 01 TBA (ug/L)
NJ GWQS
2567MW01R TBA (ug/L)
900
800
700
600
500
400
300
200
100
0
ISCO Injections
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013
12/27/2014
5/10/2016
9/22/2017
2/4/2019
6/18/2020

TABLES

TABLE 1
CHRONOLOGY OF EVENTS
PARCEL 34/FTMM-58
FORT MONMOUTH, NEW JERSEY

1918 – Fort Monmouth (FTMM) was established.
1969 – One 1,000-gallon steel No. 2 fuel oil UST (Registration No. 81515-33) was installed adjacent to building 2567.
1972-2011 – Period of operation of the convenience store and gasoline station located in the CWA.
1972 – Installation of three 10,000-gallon, one 6,000-gallon steel gasoline USTs (Registration Nos. 81515-42 through 81515-45) located southeast of Building 2567, and one 550-gallon steel waste oil UST (UST No. 81515-46) located north of Building 2567.
1989 – The FTMM Department of Public Works (DPW) notified the NJDEP of a fuel leak at the CWA gas station and a Discharge Investigation and Corrective Action Report (DICAR) Case No. 89-12-12-1442 was assigned to the reported release (December). A specific UST was not identified in the DICAR.
1990 – Tightness test was conducted on the suspected leaking gasoline line located between the dispenser area and the tank field and tested tight (January).
1991 – USTs were tightness tested, and 10,000-gallon UST No. 81515-43 failed. The NJDEP was notified and DICAR Case No. 91-08-27-1414 was assigned (January).
1991 – The No. 2 fuel oil and waste USTs located north of Bldg. 2567was removed in October and December. No holes in the USTs and no contaminated soils were observed surrounding the USTs (Weston, 1993). Eight post-excavation samples were collected and analyzed for total petroleum hydrocarbons (TPHCs). TPHCs concentrations were either non-detect or less than the then current NJDEP Soil Cleanup Criteria in effect at that time (Weston, 1993). Four groundwater monitoring wells (2567MW01 through 2567MW04) were installed to evaluate groundwater quality in the area of Building 2567.
1993 – Construction of a new fuel dispensing facility at Building 2567 was completed in 1993 including removal of the four steel gasoline USTs (Nos. 81515-42 through 81515-45) and installation of three 10,000-gallon double-wall fiberglass-reinforced plastic gasoline USTs (Registration Nos. 81515-66 through -68) south west of Building 2567. Approximately 936 cubic yards of petroleum contaminated soil from the UST and dispenser areas was excavated. No holes in the four tanks were observed (Weston, 1995). A total of 23 post-excavation soil samples were collected at the perimeter of the excavation of the four USTs and the dispenser area. Several soil sample concentrations exceeded the then current Residential Direct Contact Soil Remediation Standard (RDCSRS) and Impact to Groundwater Soil Screening level (IGWSSL) for benzene, ethylbenzene, and xylenes. (Weston, 1995)
1994 – Installation of one groundwater monitoring well (2567MW05) as part of the tank closure.
1995-2010 – Quarterly groundwater monitoring was performed at the site as part of a long-term monitoring program (LTM). *Tert* Butyl Alcohol (TBA) was identified as a Contaminant of Concern (COC) in groundwater due to TBA concentration exceeding the Groundwater Water Quality Standard (GWQS) in monitoring well 2567MW01.

2000 – Two additional monitoring wells (2567MW06 and 2567MW07) were installed by the DPW.
2004- Additional Geoprobe® groundwater screening samples were collected from seven points in February and April of 2004 by the DPW.
2005 – A Remedial Investigation Report / Remedial Action Work Plan (RIR/RAWP) was submitted to include a groundwater sampling program, define the areal extent of potential contaminants and to evaluate impacts to groundwater at the former UST locations (Versar, 2005).
2008 – The three doubled walled fiberglass USTs (Nos. 81515-66 through -68) were removed in October 2008. The USTs were cleaned, excavated, and disposed offsite. No soil staining or fuel odor was observed. Post-excavation soil samples collected contained VOCs at concentrations less than NJDEP Soil Cleanup Criteria. The USTs were replaced with an above-ground storage tank (AST) system at approximately the same location, which remains on site.
2010 – A Remedial Action Progress Report (RAPR) was submitted covering 19 rounds of groundwater sampling starting from 2nd Quarter 2004 through 4th Quarter 2008. (VEETech, 2010). It was concluded that TBA levels had decreased substantially since monitoring began in 1997 although concentrations of TBA were above NJDEP GWQS in 2567MW01.
2011 – A RAPR was submitted covering monitoring activities from 1st Quarter 2009 through 3rd Quarter 2010 (Caliber, 2011).
2010-2011 – Three injections events were performed using RegenOx™ (November/December 2010; May 2011; and June 2011) under an approved NJDEP Permit-by-Rule (PBR) to reduce TBA concentration in groundwater near 2567MW01.
2011 – The base was officially closed on 15 September 2011.
2013 – Groundwater sampling was conducted at Parcel 34 in August 2013 to re-establish baseline groundwater conditions following temporary suspension of groundwater sampling (Parsons, 2014).
2013 - Soil sampling was performed by FTMM in January 2013 to assess the potential for contamination along piping run from the former fiberglass gasoline USTs to the fuel dispensers. Seven soil samples (PSB-01 through PSB-07) were collected at a depth interval of 2.5 to 3 feet bgs within the unsaturated zone. One soil sample (PSB-07) concentration exceeded the current IGWSSL for benzene.
2015 – NJDEP requested additional soil sampling around the excavation of the former dispenser island area to be performed to evaluate historical post-excavation sample concentrations of benzene exceeding the current RDCSRS. (June 26)
2015 – *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80, and 83* (ECP WPA) was submitted to NJDEP and include the collection of four soil samples (PAR-34-SB-01 through PAR-SB-04) at historical excavation sidewall sample locations that had relatively high BTEX concentrations. (November)
2015 – Annual (Fourth Quarter) 2014 Groundwater Sampling Report submitted. TBA concentrations at 2567MW01 have been decreasing from a high of 829.45 µg/L (June 2010) to 260 µg/L (December 2014) although still above the NJDEP GWQS (100 µg/L).
2016 - Soil samples (PAR-34-SB-01 through PAR-SB-04) were collected per ECP WPA

2016 – A *Letter Work Plan Addendum for Parcel 34* (LWPA) was submitted and includes the advancement of four additional soil borings (PAR-34-SB-05 through PAR-34-SB-08) (July 7).
2016 – NJDEP requested the evaluation of the groundwater quality in the dispenser area as part of the review of the LWPA. (July 28)
2016 – A *Revised LWPA* was submitted responding to NJDEP request by adding the collection of two groundwater grab samples (PAR-34-TMW-05 and PAR-34-TMW-06) for VOCs which was subsequently approved by NJDEP.
2016 - Soil samples (PAR-34-SB-05 through PAR-34-SB-08) and groundwater grab samples (PAR-34-TMW-05 and PAR-34-TMW-06) were collected. Soil samples PAR-34-SB-05 and PAR-34-SB-06 showed exceedances of RDCSRS and IGWSSL for benzene, ethylbenzene and naphthalene. Corresponding groundwater grab samples (PAR-34-TMW-05 and PAR-34-TMW-06) showed exceedances of six VOCs above their GWQS. (August)
2016 – Annual (Fourth Quarter) 2015 Groundwater Sampling Report was submitted. (September)
2016 – A *December 2016 LWPA for Parcel 34* was submitted to address VOC groundwater exceedances encountered during the August 2016 sampling event at PAR-34-TMW-05 and PAR-34-TMW-06 locations.
2017 – Annual (Fourth Quarter) 2016 Groundwater Sampling Report was submitted (June).
2017 – Three monitoring wells (2567MW08 through 2567MW10) were installed for further delineation of the petroleum related VOCs contamination (March).
2017 – A *LWPA for Parcel 34* was submitted for delineation to the west of the petroleum related VOCs contamination. (August)
2017 - Monitoring well 2567MW11 was installed per August 2017 LWPA. (November)
2018 – Six monitoring wells (2567MW02, -MW03, -MW08, -MW09, -MW10 and -MW11) were sampled per August 2017 LWPA. Benzene was the only VOC detected in well 2567MW10 that exceeded its GWQS of 1 µg/L. (January).
2018 – Monitoring well 2567MW01R was installed to replace well 2567MW01 (May)
2018 – Monitoring well 2567MW01 and 2567MW01R were sampled; TBA exceeded the GWQS in older well 2567MW01 (293 µg/L) but not in the replacement well 2567MW01R (27 µg/L) (July)
2019 – Monitoring well 2567MW01R was re-sampled; TBA results (14.7 µg/L) were less than GWQS in this 2nd round. (March)

Table 2
Summary of Bldg. 2567 Gasoline Station Underground Storage Tanks (USTs)
FTMM-58

Site Name	Residential?	Registration ID	DICAR	Tank Size and Type	Product	Date Tank Removed	No Further Action (NFA) Approved or Requested Status
2567A	NO	81515-45	91-8-27-1414	6,000 gallon steel	GASOLINE	2/24/1993	Associated with the initial (1991) DICAR release; NFA requested based on findings of this RI Report.
2567A	NO	81515-43	91-8-27-1414	10,000 gallon steel	GASOLINE	2/24/1993	Associated with the initial (1991) DICAR release; NFA requested based on findings of this RI Report.
2567A	NO	81515-44	91-8-27-1414	10,000 gallon steel	GASOLINE	2/24/1993	Associated with the initial (1991) DICAR release; NFA requested based on findings of this RI Report.
2567A	NO	81515-42	91-8-27-1414	10,000 gallon steel	GASOLINE	2/24/1993	Associated with the initial (1991) DICAR release; NFA requested based on findings of this RI Report.
2567B	NO	81515-46	None	550 gallon steel	WASTE OIL	12/31/1991	NFA requested; supporting information included in the 1993 Weston report provided in Attachment B.
2567C	NO	81515-33	None	1,000 gallon steel	#2 FUEL OIL	12/31/1991	NFA requested; supporting information included in the 1993 Weston report provided in Attachment B.
2567D	NO	81515-68	91-8-27-1414	10,000 gallon double-wall fiberglass-reinforced plastic	GASOLINE	10/16/08	NFA requested; supporting information included in the 2008 analytical data report provided in Attachment B.
2567D	NO	81515-67	91-8-27-1414	10,000 gallon double-wall fiberglass-reinforced plastic	GASOLINE	10/15/08	NFA requested; supporting information included in the 2008 analytical data report provided in Attachment B.
2567D	NO	81515-66	91-8-27-1414	10,000 gallon double-wall fiberglass-reinforced plastic	GASOLINE	10/10/08	NFA requested; supporting information included in the 2008 analytical data report provided in Attachment B.

TABLE 3
GROUNDWATER GAUGING DATA AND ELEVATIONS (JANUARY 15, 2018)
FTMM-58
FORT MONMOUTH, NEW JERSEY

Monitoring Wells	Well Permit #	Y Coord. (North)	X Coord. (East)	Installation Date	Total Depth	Well Riser Pipe Casing Length	Well Screen Length	Top of PVC Well Casing Elevation	Slot Size	Flush Mount or Stickup Protective Casing (FM or SU)	Protective Casing Elevation	Ground Surface Elevation	Gauged Depth to Water	Gauged Depth to Bottom	Calculated Groundwater Elevation
					(ft.)				in		(ft.)	(ft.)	(ft. TOC)	(ft. TOC)	(ft.)
2567MW01	29-26925	532956.749	609537.780	9/30/1991	13.00	3.00	10.00	**32.86**	0.01	N/A	N/A	N/A	3.61	12.90	29.25
2567MW02	29-26926	533016.726	609468.755	10/1/1991	13.00	3.00	10.00	**34.17**	0.01	N/A	N/A	N/A	3.10	12.70	31.07
2567MW03	29-26927	532929.317	609472.358	10/1/1991	13.00	3.00	10.00	**32.79**	0.01	N/A	N/A	N/A	2.56	12.97	30.23
2567MW04	29-26928	533042.700	609544.264	9/30/1991	12.00	2.00	10.00	**32.42**	0.01	N/A	N/A	N/A	2.92	11.80	29.50
2567MW05	29-31783	532871.131	609697.518	9/23/1994	12.50	2.50	10.00	**33.90**	0.01	N/A	N/A	N/A	6.00	15.30	27.90
2567MW06	29-42585	532869.379	609542.569	5/12/2000	13.00	3.00	10.00	**34.01**	0.01	N/A	N/A	N/A	6.81	16.21	27.20
2567MW07	29-42586	532879.489	609473.420	5/12/2000	13.00	3.00	10.00	**35.25**	0.01	N/A	N/A	N/A	6.23	16.17	29.02
2567MW08	E201700025	532989.31	609437.472	1/11/2017	13.50	3.50	10.00	**34.17**	0.01	FM	34.47	34.42	3.00	13.20	31.17
2567MW09	E201700026	533042.566	609404.663	1/11/2017	13.50	6.30	10.00	**35.94**	0.01	SU	36.20	33.77	4.55	15.46	31.39
2567MW10	E201700027	532970.834	609413.683	1/11/2017	13.50	3.50	10.00	**33.57**	0.01	FM	33.86	33.81	2.61	12.65	30.96
2567MW11	E201712747	532947.3	609380.1	11/9/2017	12.00	2.00	10.00	34.02	0.10	FM	34.26	34.32	2.79	12.32	31.23

Notes:

- The synoptic round of water levels in the wells was collected on January 15, 2018.
- Well information were provided by FTMM for all wells installed before June 2013.
- ft = feet
- in = inch
- TOC = Top of Casing
- Elevation = feet above mean sea level
- N/A = information not available
- **Bolded** top of casing elevations represent a mathematical adjustment between earlier NAD systems and the NAD 88 spatial system: the wells were reduced 1.09 feet to reflect the changes in the NAD systems.

TABLE 4
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-05				PAR-34-SB-06				PAR-34-SB-07
Sample ID				PAR-34-SB-05-6.0-6.5	PAR-34-SB-105-6.0-6.5	PAR-34-SB-05-7.5-8	PAR-34-SB-05-12.0-12.5	PAR-34-SB-06-3-3.5	PAR-34-SB-06-6-6.5	PAR-34-SB-06-7.5-8	PAR-34-SB-06-8.5-9	PAR-34-SB-07-3-3.5
Sample Date				8/11/2016	8/11/2016	8/11/2016	8/11/2016	8/12/2016	8/12/2016	8/12/2016	8/12/2016	8/12/2016
Volatile Organic Compounds (mg/kg)												
1,2,4-Trimethylbenzene	NLE	NLE	NLE	**96**	**75.1**	**0.028 J**	< 0.0007	< 0.0004	**214 J**	< 0.0007	< 0.0006	< 0.0005 UJ
1,3,5-Trimethylbenzene	NLE	NLE	NLE	**26.4**	**20.8**	**0.002 J**	< 0.0007	< 0.0004	**57.7**	< 0.0007	< 0.0006	**0.0008 J**
Acetone	70,000	NLE	19	< 0.95	< 0.8	**0.24**	**0.041**	**0.065**	**0.28 J**	**0.12**	**0.038**	**0.06 J**
Benzene	2	5	0.005	**3.2**	**2.5**	**0.0081 J**	< 0.0007	< 0.0004	**0.033 J**	< 0.0007	< 0.0006	< 0.0005 UJ
Cymene	NLE	NLE	NLE	< 0.2	< 0.16	**0.001 J**	< 0.0007	< 0.0004	**0.11 J**	< 0.0007	< 0.0006	< 0.0005 UJ
Ethyl benzene	7,800	110,000	13	**38.4**	**29.4**	**0.0029**	< 0.0007	< 0.0004	**7.6**	< 0.0007	< 0.0006	< 0.0005 UJ
Isopropylbenzene	NLE	NLE	NLE	**6.7**	**5.2**	**0.035 J**	< 0.0007	< 0.0004	**15**	**0.0012 J**	< 0.0006	< 0.0005 UJ
Meta/Para Xylene	NLE	NLE	NLE	**177**	**134**	**0.014**	< 0.0007	< 0.0004	**193**	< 0.0007	< 0.0006	< 0.0005 UJ
Methyl ethyl ketone	3,100	44,000	0.9	< 0.95	< 0.8	**0.028**	< 0.0033	< 0.0022	< 0.0041 UJ	**0.0097 J**	< 0.0029	< 0.0027 UJ
Methyl Tertbutyl Ether	110	320	0.2	< 0.2	< 0.16	< 0.0005	< 0.0007	< 0.0004	**0.0035 J**	< 0.0007	**0.001 J**	< 0.0005 UJ
Methylene chloride	46	230	0.01	< 0.2	< 0.16	**0.0021**	< 0.0008	< 0.0005	**0.007 J**	< 0.0008	**0.009**	< 0.0006 UJ
Naphthalene	6	17	25	**7**	**5.1**	**0.0017 J**	**0.0011 J**	< 0.0004	**0.3 J**	< 0.0007	< 0.0006	**0.0007 J**
n-Butylbenzene	NLE	NLE	NLE	**3.4**	< 0.16	< 0.0005 UJ	< 0.0007	< 0.0004	**0.28 J**	< 0.0007	< 0.0006	< 0.0005 UJ
Ortho Xylene	NLE	NLE	NLE	**33.7**	**22.6**	**0.0017 J**	< 0.0007	< 0.0004	< 0.32 UJ	< 0.0007	< 0.0006	**0.0013 J**
Propylbenzene	NLE	NLE	NLE	**16**	**12.6**	**0.066 J**	< 0.0007	< 0.0004	**40.2**	**0.0016 J**	< 0.0006	< 0.0005 UJ
sec-Butylbenzene	NLE	NLE	NLE	< 0.2	< 0.16	**0.0029 J**	< 0.0007	< 0.0004	**0.22 J**	< 0.0007	< 0.0006	< 0.0005 UJ
Toluene	6,300	91,000	7	**0.75**	**0.55**	**0.0043**	**0.0024 J**	**0.003**	**0.017 J**	**0.0032**	**0.0016 J**	**0.0021 J**
Trichlorofluoromethane	23,000	340,000	34	< 0.2	< 0.16	< 0.0005	< 0.0007	< 0.0004	< 0.0008 UJ	< 0.0007	**0.0013 J**	< 0.0005 UJ
TIC VOCs (mg/kg)												
Total TICs	NLE	NLE	NLE	**1.1887 JN**	**0.091 JN**	**1.04 JN**	NA	NA	**0.636 JN**	**0.0529 JN**	NA	**0.003 JN**

TABLE 4
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-08		PAR-34-SB-09		PAR-34-SS-SB-01			PAR-34-SS-SB-02
Sample ID				PAR-34-SB-08-1.5-2.0	PAR-34-SB-08-6-6.5	PAR-34-SB-09-1.5-2	PAR-34-SB-09-6-6.5	PAR-34-SS-SB01-0.5-1	PAR-34-SS-SB01-6-6.5	PAR-34-SS-SB01-13.5-14	PAR-34-SS-SB02-0.5-1
Sample Date				8/12/2016	8/12/2016	8/12/2016	8/12/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016
Volatile Organic Compounds (mg/kg)											
1,2,4-Trimethylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**5.7**	< 0.0032	< 0.002
1,3,5-Trimethylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**1.3**	< 0.0032	< 0.002
Acetone	70,000	NLE	19	**0.062**	**0.092**	**0.073**	**0.039**	< 0.0037	< 0.12	**0.011**	< 0.004
Benzene	2	5	0.005	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**0.078 J**	< 0.0032	< 0.002
Cymene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**0.12 J**	< 0.0032	< 0.002
Ethyl benzene	7,800	110,000	13	< 0.0006	< 0.0006	< 0.0006	< 0.0006	**0.00019 J**	**2.2**	< 0.0032	**0.00048 J**
Isopropylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**1.3**	< 0.0032	< 0.002
Meta/Para Xylene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0037	**1.6**	< 0.0064	< 0.004
Methyl ethyl ketone	3,100	44,000	0.9	< 0.0032	**0.0061 J**	< 0.0029	**0.0038 J**	< 0.0019	< 0.12	< 0.0032	< 0.002
Methyl Tertbutyl Ether	110	320	0.2	< 0.0006	**0.0013 J**	< 0.0006	< 0.0006	< 0.0019	< 0.12	< 0.0032	< 0.002
Methylene chloride	46	230	0.01	< 0.0008	< 0.0007	< 0.0007	< 0.0007	< 0.0019	< 0.12	< 0.0032	< 0.002
Naphthalene	6	17	25	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**0.75**	< 0.0032	< 0.002
n-Butylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**1.1**	< 0.0032	< 0.002
Ortho Xylene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	< 0.12	< 0.0032	< 0.002
Propylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**4**	< 0.0032	< 0.002
sec-Butylbenzene	NLE	NLE	NLE	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	**0.37**	< 0.0032	< 0.002
Toluene	6,300	91,000	7	**0.0046**	**0.0032**	**0.0027**	**0.0029**	< 0.0019	< 0.12	< 0.0032	< 0.002
Trichlorofluoromethane	23,000	340,000	34	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0019	< 0.12	< 0.0032	< 0.002
TIC VOCs (mg/kg)											
Total TICs	NLE	NLE	NLE	NA	NA	NA	NA	**0.0086 J**	**79.9 JN**	**0.0388 JN**	**0.0324 JN**

TABLE 4
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SS-SB-02		PAR-34-SS-SB-03		PAR-34-SS-SB-04			
Sample ID				PAR-34-SS-SB02-9.5-10.0	PAR-34-SS-SB02-19.5-20	PAR-34-SS-SB03-0.5-1	PAR-34-SS-SB03-1.0-1.5	PAR-34-SS-SB04-0.5-1.0	PAR-34-SSSB04-6.0-6.5	PAR34-SS-SB104-6-6.5	PAR-34-SS-SB-04-7-7.5
Sample Date				3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016
Volatile Organic Compounds (mg/kg)											
1,2,4-Trimethylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
1,3,5-Trimethylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Acetone	70,000	NLE	19	**0.0025 J**	< 0.0052	< 0.0041	**0.0052**	**0.015**	< 0.0046	< 0.0045	**0.0071**
Benzene	2	5	0.005	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Cymene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Ethyl benzene	7,800	110,000	13	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Isopropylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	**0.00099 J**	< 0.0023	< 0.0022	< 0.0022
Meta/Para Xylene	NLE	NLE	NLE	< 0.0039	< 0.0052	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Methyl ethyl ketone	3,100	44,000	0.9	< 0.0019	< 0.0026	< 0.0021	< 0.0018	**0.0026 J**	< 0.0023	< 0.0022	< 0.0022
Methyl Tertbutyl Ether	110	320	0.2	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Methylene chloride	46	230	0.01	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Naphthalene	6	17	25	< 0.0019	< 0.0026	< 0.0021	< 0.0018	**0.00077 J**	< 0.0023	< 0.0022	< 0.0022
n-Butylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Ortho Xylene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Propylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	**0.0012 J**	< 0.0023	< 0.0022	< 0.0022
sec-Butylbenzene	NLE	NLE	NLE	< 0.0019	< 0.0026	< 0.0021	< 0.0018	**0.00073 J**	< 0.0023	< 0.0022	< 0.0022
Toluene	6,300	91,000	7	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
Trichlorofluoromethane	23,000	340,000	34	< 0.0019	< 0.0026	< 0.0021	< 0.0018	< 0.0021	< 0.0023	< 0.0022	< 0.0022
TIC VOCs (mg/kg)											
Total TICs	NLE	NLE	NLE	**0.0961 JN**	**0.0203 J**	**0.012 J**	**0.0057 J**	**0.1556 JN**	**0.1211 JN**	**0.1313 JN**	**0.0815 JN**

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

4) ND = not detected in any background sample, no background concentration available.

5) Bold chemical dectection

6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

R = Rejected, data validation rejected the results.

U = non-detect, i.e. not detected at or above this value.

U-DL = Elevated sample detection limit due to difficult sample matrix.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

D = Results from dilution of sample.

J-DL = Elevated sample detection limit due to difficult sample matrix.

JN = Tentatively identified compound, estimated concentration.

UJ=The compound was not detected: however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

J+ = The result is an estimated quantity, but the result may be biased high.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Residential Direct Contact Soil Remediation Standard. ####

  There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.

- Cell Shade values represent a result that is above the NJ Non-Residential Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level ###

- Cell Shade values represent a result that is above both the NJ Residential, Non-Residential, AND NJ Impact to GW Soil Screening Level Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above both the NJ Residential and Non-Residential Direct Contact Soil Remediation Standard. ###

10) Criteria action level source document and web address.

- The NJ Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

  http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Non-Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

  http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised

  http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

TABLE 5
DETECTED GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	PAR-34-2567-MW-01		PAR-34-2567-MW-01R		PAR-34-2567-MW-02		PAR-34-2567-MW-03		PAR-34-2567-MW-04		PAR-34-2567-MW-05	
Sample ID		PAR-34-GW-2567MW01-8.5		PAR-34-GW-2567MW01R-8.2		PAR-34-GW-2567MW01R - 7.6		PAR-34-2567-GW-MW-02-8	PAR-34-GW-2567MW02-8.0	PAR-34-2567-GW-MW-03-8	PAR-34-GW-2567MW03-8.0	PAR-34-GW-2567MW04-7.2	PAR-34-GW-2567MW05-9.5
Sample Date		7/31/2018		7/31/2018		3/28/2019		1/19/2018	7/31/2018	1/19/2018	7/31/2018	7/31/2018	8/1/2018
Filtered		Total		Total		Total		Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)													
1,1,2-Trichloroethane	3	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,2,4-Trimethylbenzene	100	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,3,5-Trimethylbenzene	100	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Acetone	6,000	< 1.6		< 1.6		**5.9**		< 1.6 UJ	< 1.6	< 1.6	< 1.6	< 1.6	**3.2 JB**
Benzene	1	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chloroform	70	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Ethyl benzene	700	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Isopropylbenzene	700	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Meta/Para Xylene	1,000	< 0.66		< 0.66		< 0.66		< 0.66 UJ	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66
Methyl chloride	100	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Methyl ethyl ketone	300	< 1.6		< 1.6		< 1.6		< 1.6 UJ	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Methyl Tertbutyl Ether	70	**0.88 J**		< 0.33		< 0.33		< 0.33 UJ	< 0.33	**0.43 J**	**0.34 J**	< 0.33	< 0.33
Naphthalene	300	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
n-Butylbenzene	100	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Ortho Xylene	1,000	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Propylbenzene	100	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Tert Butyl Alcohol	100	**293 J+**		**27 J+**		**14.7 J**		< 8.3 UJ	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3
Toluene	600	< 0.33		< 0.33		< 0.33		< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Total Xylenes	1,000	< 1		< 1		< 1		< 1 UJ	< 1	< 1	< 1	< 1	< 1
TIC VOCs (µg/l)													
Total TIC VOCs	500	**37.7 JN**		NA		NA		NA	**1.5 JN**	NA	NA	NA	NA

TABLE 5
DETECTED GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	PAR-34-2567-MW-06	PAR-34-2567-MW-07	PAR-34-2567-MW-08					PAR-34-2567-MW-09	
Sample ID		PAR-34-GW-2567MW06-10.2	PAR-34-GW-2567MW07-9.7	PAR-34-GW-2567MW08-5.5	PAR-34-GW-2567MW108-5.5	PAR-34-GW-2567MW08-10.5	PAR-34-2567-GW-MW-08-8.5	PAR-34-GW-2567MW08-8.5	PAR-34-GW-2567MW09-8.52	PAR-34-2567-GW-MW-09-8.5
Sample Date		8/1/2018	7/31/2018	4/5/2017	4/5/2017	4/5/2017	1/19/2018	8/1/2018	4/5/2017	1/19/2018
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)										
1,1,2-Trichloroethane	3	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,2,4-Trimethylbenzene	100	< 0.33	< 0.33	**1.2**	**1.1**	**0.99** J	< 0.33	< 0.33	< 0.33	< 0.33
1,3,5-Trimethylbenzene	100	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Acetone	6,000	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Benzene	1	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chloroform	70	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Ethyl benzene	700	< 0.33	< 0.33	**0.44** J	**0.39** J	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Isopropylbenzene	700	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Meta/Para Xylene	1,000	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66
Methyl chloride	100	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Methyl ethyl ketone	300	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Methyl Tertbutyl Ether	70	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Naphthalene	300	< 0.33	< 0.33	< 0.33 UJ	< 0.33 UJ	< 0.33 UJ	< 0.33	< 0.33	< 0.33	< 0.33
n-Butylbenzene	100	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Ortho Xylene	1,000	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Propylbenzene	100	< 0.33	< 0.33	**0.59** J	**0.47** J	**0.38** J	< 0.33	< 0.33	< 0.33	< 0.33
Tert Butyl Alcohol	100	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3	< 8.3
Toluene	600	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Total Xylenes	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
TIC VOCs (µg/l)										
Total TIC VOCs	500	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5
DETECTED GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
FTMM-58
FORT MONMOUTH, NEW JERSEY

Loc ID		PAR-34-2567-MW-09		PAR-34-2567-MW-10						PAR-34-2567-MW-11				PAR-34-TMW-05		PAR-34-TMW-06	
Sample ID	NJ Ground Water Quality Criteria	PAR-34-GW-2567MW09-8.4		PAR-34-GW-2567MW10-5.5		PAR-34-GW-2567MW10-10.5		PAR-34-2567-GW-MW-10-8.5		PAR-34-GW-2567MW10-8.5		PAR-34-2567-GW-MW-11-7		PAR-34-GW-2567MW11-7.7		PAR-34-TMW-05		PAR-34-TMW-06	
Sample Date		8/1/2018		4/5/2017		4/5/2017		1/19/2018		7/30/2018		1/19/2018		7/30/2018		8/12/2016		8/12/2016	
Filtered		Total		Total		Total		Total		Total		Total		Total		Total		Total	
Volatile Organic Compounds (µg/l)																			
1,1,2-Trichloroethane	3	< 0.33		< 0.33		< 0.33		< 0.33	UJ	**0.71**	**J**	< 0.33		< 0.33		< 1.7		< 1.7	
1,2,4-Trimethylbenzene	100	< 0.33		**197**		**58.7**		**62.3**	**J-**	**35.3**		< 0.33		< 0.33		**2,440**		**344**	
1,3,5-Trimethylbenzene	100	< 0.33		**54.3**		**15.3**		**18.4**	**J-**	**8.5**		< 0.33		< 0.33		**560**		**109**	
Acetone	6,000	< 1.6		**9.4**		**6**		< 1.6	UJ	< 1.6		< 1.6		< 1.6		< 8		< 8	
Benzene	1	< 0.33		**63.5**		**18.1**		**13.6**	**J-**	**13.6**		< 0.33		< 0.33		**441**		< 1.7	
Chloroform	70	< 0.33		< 0.33		< 0.33		< 0.33	UJ	**0.42**	**J**	< 0.33		< 0.33		< 1.7		< 1.7	
Ethyl benzene	700	< 0.33		**296**		**72.9**		**59.9**	**J-**	**46.6**		< 0.33		< 0.33		**1,290**		**28**	
Isopropylbenzene	700	< 0.33		**18.4**		**8.1**		**7.5**	**J-**	**6.7**		< 0.33		< 0.33		**19.5**	**JN**	**35.1**	
Meta/Para Xylene	1,000	< 0.66		**1,020**		**231**		**201**	**J-**	**89.5**		< 0.66		< 0.66		**4,810**		**167**	
Methyl chloride	100	**0.44**	**J**	< 0.33		< 0.33		< 0.33	UJ	< 0.33		< 0.33		**0.38**	**J**	< 1.7		< 1.7	
Methyl ethyl ketone	300	< 1.6		**2.2**	**J**	< 1.6		< 1.6	UJ	< 1.6		< 1.6		< 1.6		< 8		< 8	
Methyl Tertbutyl Ether	70	< 0.33		**0.94**	**J**	**0.39**	**J**	**0.45**	**J**	**0.36**	**J**	< 0.33		< 0.33		**4.5**	**J**	< 1.7	
Naphthalene	300	< 0.33		**26.1**		**9.5**		**9.4**	**J-**	**7.6**		< 0.33		**0.34**	**J**	**145**		**23**	
n-Butylbenzene	100	< 0.33		**2.8**		**1.6**		**1.7**	**J-**	**1.1**		< 0.33		< 0.33		**33.5**		< 1.7	
Ortho Xylene	1,000	< 0.33		**317**		**73.1**		**41.8**	**J-**	< 0.33		< 0.33		< 0.33		**310**		< 1.7	
Propylbenzene	100	< 0.33		**48.1**		**23**		**20.5**	**J-**	**19.7**		< 0.33		< 0.33		**446**		**80.2**	
Tert Butyl Alcohol	100	< 8.3		< 8.3		< 8.3		< 8.3	UJ	< 8.3		< 8.3		< 8.3		< 41.5		< 41.5	
Toluene	600	< 0.33		**441**		**107**		**7.8**	**J-**	**1.1**		< 0.33		< 0.33		**30.3**		< 1.7	
Total Xylenes	1,000	< 1		**1,330**		**304**		**243**	**J-**	**89.5**		< 1		< 1		NA		NA	
TIC VOCs (µg/l)																			
Total TIC VOCs	500	**3.4**	**JN**	**132.5**	**JN**	**93.2**	**JN**	**126.3**	**JN**	**83.9**	**JN**	NA		**2.6**	**JN**	**815.4**	**JN**	**990**	**JN**

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

4) ND = not detected in any background sample, no background concentration available.

5) Bold chemical dectection

6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

R = Rejected, data validation rejected the results.

U = non-detect, i.e. not detected at or above this value.

U-DL = Elevated sample detection limit due to difficult sample matrix.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

D = Results from dilution of sample.

J-DL = Elevated sample detection limit due to difficult sample matrix.

JN = Tentatively identified compound, estimated concentration.

UJ=The compound was not detected: however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

J+ = The result is an estimated quantity, but the result may be biased high.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria ####

NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

NJDEP Interim Generic GWQC values are presented for the NJ GWQS where there is not a XXXXX or a NJDEP Interim Specific GWQC. Available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

10) Criteria action level source document and web address.

- The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010

http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf

APPENDIX A
Regulatory Correspondence

1. NJDEP letter to the Army dated August 16, 1995, re: *UST Closure and Site Investigation Reports, Fort Monmouth Army Base, Tinton Falls, Monmouth County.*
2. Army. 2010*, Request for Permit-by-Rule for RegenOx™/ORC Advanced™ Injection, Fort Monmouth – Site 2567 (FTMM-58) at Charles Wood, Fort Monmouth, New Jersey.* September 2.
3. NJDEP letter to the Army dated October 28, 2010, re: *Approval to Discharge of Ground-Water (DGW) Permit-by-Rule, Site 2567 Injection of RegenOx™/ORC Advanced™, Fort Monmouth, NJ.*
4. NJDEP letter to the Army dated June 16, 2015, re: *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80, and 83 dated February 2015*
5. Parsons, 2016, *Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* July 7.
6. NJDEP letter to the Army dated July 28, 2016, re: *Work Plan Addendum for Parcel 34, Building 2567*
7. Parsons, 2016, *Revised Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* August 4.
8. NJDEP letter to the Army dated August 9, 2016, re: *Revised Letter Work Plan Addendum for Parcel 34, 2567.*
9. Parsons, 2016d. *December 2016 Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* December 28.
10. NJDEP letter to the Army dated January 10, 2017, re: *December 2016 Letter Work Plan Addendum for Parcel 34 (Building 2567).*
11. Parsons, 2017. *Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, Oceanport, Monmouth County, New Jersey.* August 3.

State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

AUG 16 1995

FYI

Mr. James Ott
SELFM-EH-EV
Department of the Army
Headquarters CECOM Fort Monmouth
Fort Monmouth, NJ 07703-5000

Dear Mr. Ott,

Re: UST Closure and Site Investigation Reports
Fort Monmouth Army Base
Tinton Falls, Monmouth County

The NJDEP has received and reviewed the four Underground Storage Tank Closure and Site Investigation Reports submitted by Weston dated January 1995 (received via hand-delivery in June 1995) on behalf of the Fort Monmouth Army Base facility and our comments are provided below.

GENERAL COMMENTS

1) Future submissions must contain all of the soil sample results in a set of tables which, at a minimum, reference soil cleanup criteria, detection limits, sample location and detected concentrations in a single row. Previous comment letters and discussions have requested this informational format as per N.J.A.C. 7:26E-3.10.

2) In reviewing the soil sample results, specifically in the Appendices sections, it is apparent that the Method Detection Limits (MDLs) used for many of the base neutral and volatile organic analysis were above the chemical specific soil cleanup criteria. The NJDEP cannot accept this. Before the NJDEP can accept a No Further Action determination, some information must be provided which assures that those individual compounds which did not have appropriately sensitive MDLs, would not likely be in the soil without other compounds also being present. Benzene, Toluene, Ethylbenzene and Xylene errors cannot be excused, mistakes in sampling and analysis protocol of these compounds may result in resampling.

3) Ground water monitoring wells are **not** required by the Technical Regulations for Site Remediation (Tech Regs) unless the ground water has potentially been impacted by the contaminant source (UST) as per section 3.7 of the Tech Regs. It must be clearly stated in the report why ground water samples are being collected, i.e., what criteria were used to determine potential ground water contaminant impact.

4) Please provide written evidence that QA/QC has been performed as required by the Tech Regs.

SPECIFIC COMMENTS

Building 2018, UST No. 2 - 1000 gallon No. 2 Fuel Oil
The NJDEP agrees with the recommendation to further excavate contaminated soils. Ground water monitoring does not appear necessary at this point in the remediation. Future submittals on this UST should address these concerns:

1) Executive Summary, ES-1: In the last paragraph of this page, it is stated that "In accordance with the Closure Plan Approval and the Technical Guidance Document 25% of soils with TPHC values greater than 1,000 mg/kg were also analyzed for **base neutral** compounds plus **15** tentatively identified compounds (BN+15). The approved closure plan (Appendix A) was proceeded by the aforementioned Tech Regs. The Tech Regs require that soil samples which exceed 1000 ppm TPHC require individual analysis of **volatile organic** substances plus **10** tentatively identified compounds (Table 2-3; Tech Regs). Volatile organic compounds plus 10 tentatively identified compounds must be analyzed for in future post excavation sampling and analysis. Since previous sampling requirements - those which this closure event was conducted under (Interim Closure Requirements for Underground Storage Tanks - November 1991) required base neutral soil samples, these samples will be accepted.

2) Executive Summary, ES-1: Please explain what the "Technical Guidance Document" referenced is.

3) Section 2.0: Additional information should be provided in the text, soil sampling table (2-1), and in a map which clearly explain sample depth and/vs. ground water depth. Please provide this information.

Building 9061, UST No. 36 - 5000 gallon Gasoline UST
The NJDEP has determined, based on the information presented in the report, that soil contaminated above residential cleanup criteria has been excavated. Ground water monitoring results are forthcoming.

4) Executive Summary, ES-2: Along with the ground water sample results report referenced as forthcoming, please provide a brief explanation as to why two monitor wells have been installed in accordance with the Tech Regs. Such explanation can include a discussion of the information regarding ground water depth (14 feet), obvious contamination (holes in the tank) and depth of tank excavation (16 feet).

5) Section 2.0, Page 2-1: Future soil sampling should use stainless steel, laboratory cleaned scoops as per the NJDEP Field Sampling Procedures Manual. Polystyrene

scoops do not appear to have affected the sample results, however, they are not appropriate as they may lead to inaccurate analytical results.

Building 2567, UST Nos. 42, 43, 44, and 45
The soil sample results have revealed that there is significant contamination remaining at the site even after the excavation of considerable amounts of contaminated soil. The NJDEP requires that either the contaminants must be removed/remediated or a Declaration of Environmental Restriction must be applied to the area of concern. There are several treatment alternatives which have proven effective at similar sites. Ground water has shown a significant decrease in contamination over the last sampling events, particularly Benzene. While Methylene Chloride appears to be the remaining contaminant of concern in the ground water, the NJDEP is interested in reviewing the ground water samples taken in September 1994. Why were these not included in a report provided in June 1995?

6) Section 1.2, Page 1-2: USTs 42 to 45 were tight tested, yet the forth paragraph states that "UST Nos. 42 and 44 passed the tank system tightness test, although UST No. 43 failed". What about tank No. 45? It is assumed that this tank also failed the tightness testing. Please explain.

7) Section 2.3, Page 2-2: It is stated that on February 2, 1994 four post excavation soil samples were taken and then an additional 23 soil samples were taken on February 24. Why was there a 21-day delay and why were 23 soil samples collected? Were these samples biased to the areas of greatest contamination? How many samples were taken in relation to the piping? Did the piping reveal any leakage (particularly since the tanks appeared to be hole-free)? Why did Feb. 2 samples reveal no TPHC contamination, but subsequent sampling revealed significant contamination. (Especially since there are several factors to consider; different laboratories provided the analysis, Feb 2 samples were taken at the bottoms of the excavation, etc.) Please provide additional information and reasoning for the number, placement and delay in collecting samples.

8) Section 3.2, Page 3-16: The second paragraph of Section 3.2 appears to be a general "catch-all" declaration. Please expand this to explain if there was significant contamination left in place due to removal constituting a potential threat to the "integrity of structure and roadways."

Building 2700.4, UST No. 62
This report details the removal and investigation of the 550 gallon diesel fuel UST and stated that all soil contamination above the NJDEP direct contact cleanup criteria was excavated. Ground water monitoring well analytical results will be forthcoming.

9) Table 3-1, Page 3-2: Please explain why the duplicate sample for "Site E" was analyzed for a VO and BN scan when this sample was not analyzed for TPHC. Why were the analytical results for all of the VO+15 (only +10 required) and all of the BN+15 (not

a required parameter) not provided in the tables? This information must be provided to assure the NJDEP that there is no contamination above the applicable cleanup criteria.

10) Table 3-1, Page 3-2: Where are the field blank results? 10 samples were to be analyzed, why are there only results for 7 samples?

In order for the NJDEP to approve the above reviewed reports, the information required by these results must be provided in full in a single submittal for each individual site/report. These are the minimum requirements of the Tech Regs.

If you should have any questions or require additional information, please do not hesitate to contact me at (609) 633-1455.

Sincerely,

Ian R. Curtis, Case Manager
Bureau of Federal Case Management

RPCE\BFCM\FTMMTH28.IRC

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY GARRISON FORT MONMOUTH
FORT MONMOUTH, NEW JERSEY 07703-5000

REPLY TO
ATTENTION OF

Directorate of Public Works

FILE COPY

September 2, 2010

Larry Quinn, Site Manager
New Jersey Department of Environmental Protection
Bureau of Investigation, Design and Construction
401 East State Street, P.O Box 413
Trenton, New Jersey 08625-0413

Subject: Request for Permit-by-Rule for RegenOx™/ORC Advanced™ Injection Fort Monmouth – Site 2567 (FTMM-58) at Charles Wood Fort Monmouth, NJ 07703

Dear Mr. Quinn:

The U.S. Army Fort Monmouth, Directorate of Public Works (DPW) is requesting authorization via Permit-by-Rule pursuant to the New Jersey Pollutant Discharge Elimination System (NJPDES), N.J.A.C. 7:14A-1 *et seq.* to permit the injection of RegenOx with the option of injecting Oxygen Release Compound (ORC) Advanced into the subsurface as a final polish in an effort to remediate organic Contaminant of Concern (COC) detected in groundwater.

Background

The site is located in the Charles Wood section of Fort Monmouth at the northwest corner of the intersection between Laboratory and Hope Roads. The site includes Building 2567 (Charles Wood Gas Station) and two gasoline dispenser islands within the paved area south of the building (Figure 1). Surrounding the site are dense wooded areas located to the south and to the east.

According to Weston's *UST Closure and Site Assessment Report for Building 2567, Tanks 33 and 46* dated October 1, 1993, two single-wall, steel underground storage tanks (USTs) adjacent to Building 2567 were removed on December 31, 1991. Tank No. 33 was a 1,000-gallon No. 2 fuel oil UST installed in 1969 and tank No. 46 was a 500-gallon waste oil UST installed in 1972. No holes in the tank were observed and no potentially contaminated soils were observed surrounding the UST. According to United States Department of Health (DOH) records, UST No. 46 was never in use. Following removal of both tanks, eight post-excavation soil samples were collected and analyzed for total petroleum hydrocarbons (TPHC). The concentrations of TPHC were either "not detected" (ND) or detected at concentrations less than New Jersey Department of Environmental Protection (NJDEP) proposed soil cleanup criterion of 10,000 milligrams per kilogram (mg/kg).

According to Weston's *UST Closure and Site Assessment Report, Building 2567, UST Nos. 42, 43, 44, and 45* dated January 1995, four gasoline USTs were approximately 30 feet southeast of Building 2567. Tank Nos. 42, 43, and 44 were single-walled, steel 10,000-gallon unleaded gasoline USTs installed in 1972. Tank No. 45 was a single-walled, steel 6,000-gallon leaded gasoline UST installed in 1972.

On December 12, 1989, the DPW notified the NJDEP of a fuel leak at the site (Case No. 89-12-12-1442). In January 1990, a tightness test conducted on the premium gasoline product line indicated no leaks. Four groundwater monitoring wells (2567MW01, 2567MW02, 2567MW03, and 2567MW04) were installed in October 1991 and another (2567MW05) in 1994 to evaluate groundwater quality throughout the site.

On February 2, 1993, UST Nos. 42, 43, 44, and 45 and all associated piping were closed and removed. No holes were observed in any of the USTs and no sheen was observed on the groundwater table after removal. Based on evidence of staining and photoionization detector (PID) readings, approximately 950 cubic yards of soil was excavated from the area surrounding the USTs and dispenser island. The excavation was extended to the groundwater table (approximately 11 feet below surface grade). Four post-excavation soil samples collected from the bottom and north sides of the excavation were analyzed for TPHC.

On February 8, 1993, eight post-excavation soil samples were collected from the east sidewall and also analyzed for TPHC. All TPHC concentrations were either ND or detected at concentrations less than the NJDEP soil cleanup criterion of 10,000 mg/kg at the time.

On February 24, 1993, 23 post-excavation soil samples (A through W) were collected from the sidewalls of the excavation area and analyzed for TPHC, volatile organic compounds (VOCs) +15 tentatively identified compounds (TICs), and lead. The soil analytical results were compared to the NJDEP *Residential Direct Contact Soil Cleanup Criteria* (RDCSCC) and *Impact on Groundwater Soil Cleanup Criteria* (IGWSCC).

Benzene was detected at concentrations ranging from ND to 45 mg/kg. Soil samples B, E, F, G, H, I, J, K, L, M, N, O, P, Q, S, and V exceeded the IGWSCC of 0.005 mg/kg. Soil samples G, I, K, L, M, N, O, Q, and W exceeded the RDCSCC of 2 mg/kg for benzene.

Soil results for lead ranged from ND to 129 mg/kg. No samples exceeded RDCSCC of 400 mg/kg; however soil samples A, M, and O exceeded the IGWSCC of 59 mg/kg.

Ethylbenzene was detected at concentrations ranging from ND to 210 mg/kg. Soil samples B, G, H, I, J, K, L, M, N, O, Q, and W exceeded the IGWSCC of 8 mg/kg but were less than the RDCSCC of 7,800 mg/kg.

Total xylenes were detected at concentrations ranging from ND to 1,200 mg/kg. Soil samples B, G, I, J, K, L, M, N, O, P, Q, and W exceeded the IGWSCC of 12 mg/kg for total xylenes. No soil samples contained xylenes at concentrations exceeding the RDCSCC of 12,000 mg/kg.

Monitoring wells 2567MW01, 2567MW02, 2567MW03, and 2567MW04 were sampled in five sampling rounds (December 1991, October 1992, April 1993, February 1994, and March 1994). The groundwater samples that were collected during December 1991, October 1992, February 1994, and March 1994 were analyzed for VOCs+15. The groundwater samples that were collected in April 1993 were analyzed for semi-volatile organic compounds (SVOCs)+15. Methyl *tert*-butyl ether (MTBE) and *tert*-butyl alcohol (TBA) were identified as groundwater contaminants because the concentrations exceeded the NJDEP Ground Water Quality Standards (GWQS) of 70 and 100 micrograms per liter (µg /L), respectively.

According to ATC's *Groundwater Monitoring Report* dated 2000, groundwater samples collected during six quarterly rounds from May 1995 to April 1997 identified TBA as a groundwater

contaminant. In four groundwater sampling rounds (May 1995, August 1995, November 1995 and February 1996), TBA exceeded the GWQS of 100 µg/L in samples collected at 2567MW01, at concentrations ranging from 780 to 930 µg/L.

According to Versar's *Remedial Investigation (RI) Report/Remedial Action Workplan* dated October 2005, the RI included groundwater monitoring from April 1997 through January 2004. In 2000, two additional groundwater monitoring wells (2567MW06 and 2567MW07) were installed. Four VOCs and five Target Analyte List (TAL) metals were detected at concentrations exceeding the NJDEP GWQS during the 30 quarterly sampling events. Based on incidence of detection and concentrations, TBA was identified as the only COC at the site. The report recommended that groundwater monitoring and sampling be continued to monitor TBA degradation through natural attenuation.

The UST *Closure and Remedial Investigation Report, Charles Wood Section, Building 2567* was prepared by TECOM-Vinnell Services (TVS) in May 2009. There were three double-walled, 10,000-gallon unleaded gasoline fiberglass USTs (Nos. 0081515-66, 0081515-67, 0081515-68) near Building 2567 and were installed in 1993. On October 26, 2008, all three USTs were cleaned, excavated , and disposed of in accordance with NJDEP requirements. Soil staining and fuel odor were not observed during the UST removals.

A site assessment was performed by TVS personnel in accordance with NDJEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual*. Soils surrounding the USTs were screened visually and with air monitoring instruments. No holes in the USTs or impacted soils were observed following the tank removals. Groundwater was encountered approximately 5 feet below grade surface (BGS).

Post-excavation soil samples collected from the UST excavation associated with former UST Nos. 0081515-66, 0081515-67, and 0081515-68 contained VOCs at concentrations less than NJDEP RDCSCC. The analytical data confirmed that no discharge had occurred from any of the three excavated USTs. Given that no VOCs were detected at concentrations exceeding the NJDEP RDCSCC, no further action was proposed in regard to the closure and site assessment of UST Nos. 0081515-66, 0081515-67, and 0081515-68.

Presently, all UST areas have been evaluated in accordance with NJDEP *Technical Requirements for Site Remediation*. The remaining UST dispenser island areas have not been assessed. An environmental assessment in accordance with the most current NJDEP regulations will be conducted after the facility is closed. Presently, the gasoline distribution system is fully operational and utilizes above ground storage tanks. The facility is projected to close during the summer of 2011, as required under the Base Realignment and Closure (BRAC).

Since May 2007, TBA was the only organic COC detected in groundwater at monitoring well 2567MW01 at concentrations exceeding the GWQS (N.J.A.C. 7:9C, effective October 4, 2005) of 100 µg/L. The average TBA concentration detected in the last 12 groundwater sampling events (May 2007 through March 2010) is approximately 164 µg/L. Based on an evaluation of groundwater quality conditions on-site, it appears that TBA concentrations have been decreasing with time since 1991. Concentrations of TBA in groundwater samples collected from 2567MW01 since April 1997 are provided in **Attachment 1**. A graph showing TBA concentrations with time is presented as **Figure 2**.

Remedial Action Workplan

In an effort to reduce TBA concentrations in groundwater at monitoring well 2567MW01, the DPW proposes to inject RegenOx proximate into this monitoring well. RegenOx, a product manufactured by Regenesis, is an advanced chemical oxidation technology that chemically destroys contaminants *in-situ* through a powerful, but controlled chemical reaction. RegenOx product maximizes *in-situ* performance while using a solid alkaline oxidant that employs a sodium percarbonate complex with a multi-part catalytic formula. RegenOx directly oxidizes contaminants while its unique catalytic component generates a range of reactive oxidizing free radicals that rapidly and effectively destroy a range of target contaminants including chlorinated hydrocarbons (aliphatic ethenes and ethanes).

RegenOx is delivered as two parts that are combined prior to injection into the subsurface. Following injection into the subsurface, the RegenOx solution produces an effective oxidation reaction that is more effective than Fenton's reaction in treating chlorinated hydrocarbons without the dangers of forming a highly exothermic reaction. RegenOx injections will generally follow the ORC injection procedure as described in the RIR/RAWP. The RegenOx injections will be limited to the area which includes monitoring well 2567MW01 (Figure 1). DPW proposes to inject RegenOx to a maximum depth of 15 feet below grade surface (bgs) up to approximately 3.0 feet bgs, which coincides with the approximate depth to groundwater at 2567MW01. The assumed thickness of groundwater requiring treatment is approximately 10 feet. According to Regensis, the calculated rate of solution injection will be approximately 23 gallons/vertical foot.

DPW proposes to use RegenOx as the primary oxidant to treat COCs *in-situ*. After injection, the RegenOx solution forms an activator complex containing a highly-reactive catalytic surface. The contaminant and the oxidizer complex react with the activator complex via an oxidation pathway. The overall stoichiometric pathway for the reaction of RegenOx (hydrogen peroxide, H_2O_2) and *tert*-butyl alcohol (TBA) is:

$$C_4H_{10}O + 12H_2O_2 \rightarrow 4CO_2 + 17H_2O$$

Complete reaction of TBA yields of non-hazardous end products (carbon dioxide and water). These end products are both formed when RegenOx reacts with other COCs including substituted hydrocarbons (e.g., ethylbenzene, toluene, xylenes). Additional information on RegenOx can be found at the following website:
(http://www.clean.com.br/PDFs_Zips_Flashs/RegenOx%20Guide/Regensis_Content.pdf.)

DPW proposes to utilize RegenOx to treat the TBA detected in groundwater. After treatment with RegenOx, if TBA or volatile organic compound (VOC) COC concentrations exceed the applicable NJDEP GWQS, the DPW may opt to continue injections using RegenOx or ORC Advanced.

RegenOx and ORC Advanced Injection Technology Descriptions

RegenOx is an advanced chemical oxidation technology that destroys contaminants through controlled chemical reactions. RegenOx maximizes *in-situ* performance by using a solid alkaline oxidant containing a sodium percarbonate complex with a multi-part catalytic formula. RegenOx directly oxidizes contaminants while its unique catalytic component generates a range of highly-oxidizing free radicals that rapidly and effectively destroy a range of target contaminants including petroleum hydrocarbons, chlorinated compounds, and oxygenates.

ORC Advanced is a non-toxic, easy-to-handle, magnesium peroxide powder that causes a slow and controlled release of oxygen when it contacts soil moisture or groundwater. The increased aqueous oxygen concentration stimulates the growth of naturally-occurring aerobic microorganisms that

digest (degrade) hydrocarbons into harmless by-products such as carbon dioxide and water. Therefore, the application of ORC Advanced is an appropriate remedial technique to accelerate the natural, aerobic degradation of any potential hydrocarbon contaminants in groundwater.

The proposed RegenOx/ORC Advanced treatment program for the remediation of TBA at 2567MW1 is within the area shown on the attached figure. This area remains as the only location where TBA is present at concentrations exceeding the NJDEP GWQS. Injection is similar in process to air sparging, except the RegenOx solution or ORC Advanced is injected, either with or without atmospheric air (positive pressure) to enhance the radius of influence.

The preparation of RegenOx and ORC Advanced solutions to be injected will be prepared consistent with Regenesis Installation Instructions (**Attachment 2**). Additional information about RegenOx and ORC Advanced is provided as **Attachment 3**. The proposed injection will utilize 5–10 temporary injection points (direct push rig) within an area encompassing approximately 500 square feet. The exact locations of the temporary injection points will be based on access of the Geoprobe-equipped truck, overhead building obstructions, and locations of subsurface and overhead utilities.

In the proposed injection events, the RegenOx and ORC Advanced injection rates will not exceed 25 gallons/vertical foot and 5 pounds/vertical foot, respectively using direct push technology (e.g. Geoprobe Model 5400) beginning at a depth of approximately 15 feet bgs. At each injection point, a high-pressure pump will be used to inject the RegenOx/ORC Advanced solution to facilitate lateral distribution in groundwater. After the RegenOx/ORC Advanced solution is injected, the injection point will be raised one foot for the next injection. This process will be repeated until the target depth of 3.0 feet bgs is reached. Injection of RegenOx/ORC Advanced solution at this shallow depth interval will ensure that any dissolved COCs entrained at the vadose zone-water table interface, capillary fringe, and the unsaturated zone is targeted for this remedial effort.

The following conditions will be met during each RegenOx/ORC Advanced injection event:

- Surface run-off will be prevented;
- RegenOx and ORC Advanced applications will not result, directly or indirectly, in a discharge to surface water;
- Application(s) will not affect water supplies or cause vapor hazards in subsurface structures (e.g., utility lines) nor will it adversely impact the dissolved COCs, causing contaminant migration;
- All results from the RegenOx and ORC Advanced applications will be incorporated in an appropriate deliverable to the NJDEP (e.g., *Remedial Action Progress Report*); and
- Injection(s) will be completed no sooner than two weeks prior to each quarterly groundwater monitoring and sampling event.

Performance Monitoring

In order to monitor the injection activities and subsurface response, groundwater monitoring wells hydraulically downgradient of the injection area (2567MW01, 2567MW03) will be monitored prior to, during, and after injection for the media and parameters indicated below:

- Water Column:
  - Depth from top of inner well casing
  - Analyze Immediately Parameters (AIP): Temperature, pH, Oxidation-Reduction Potential (ORP), Dissolved oxygen (DO), Specific conductance

- Headspace:
  - VOCs using a Photoionization Detector (PID)
  - Oxygen

Performance Sampling

In order to evaluate the performance of the injection event(s), four groundwater sampling events will be performed after each injection event. DPW proposes to collect groundwater samples from monitoring wells 2567MW01, 2567MW05, and 2567MW06 prior to injection and approximately 72 hours, one, two, and three weeks following each injection event to evaluate the concentrations of dissolved-phase VOC+15 in the treatment area and to determine the effectiveness of the injection. All groundwater samples collected will be analyzed at the DPW's NJDEP certified laboratory (NJDEP Certification Number 13461). A summary of the performance monitoring and sampling is provided as follows:

Table A. Summary of Performance Monitoring and Sampling Parameters and Frequencies*

Elapsed Time After RegenOx or ORC Advanced Injection	Comments
0	Measure AIPs at monitoring wells 2567MW01, 2567MW05 and 2567MW06 and headspaces for VOCs and oxygen. Collect groundwater samples from 2567MW01 and 2567MW05 for VOC+15.
3 days	Measure AIPs at 2567MW01, 2567MW05 and 2567MW06 and headspaces for VOCs and oxygen. Collect groundwater samples from 2567MW01 for VOC+15.
1 week	Measure AIPs at 2567MW01, 2567MW05 and 2567MW06 and headspaces for VOCs and oxygen. Collect groundwater samples from 2567MW01 for VOC+15.
2 weeks	Measure AIPs at 2567MW01, 2567MW05 and 2567MW06 and headspaces for VOCs and oxygen. Collect groundwater samples from 2567MW01 for VOC+15.
3 weeks	Measure AIPs at 2567MW01, 2567MW05 and 2567MW06 and headspaces for VOCs and oxygen. Collect groundwater samples from 2567MW01 and 2567MW05 for VOC+15.

* If RegenOx is injected, the following parameters will also be determined in groundwater per the above recommended schedule: iron, manganese, and hydrogen peroxide alkalinity. Prior to injection, alkalinity (as calcium carbonate), major anions, major cations, and hexavalent chromium will be determined via U.S. Environmental Protection Agency approved test methods.

Groundwater Sampling Procedures

The DPW will measure AIPs and depth to water at the monitoring wells as noted in **Table A.** Groundwater samples will be collected from the monitoring wells in accordance with NJDEP *Field Sampling Procedures Manual.*

All groundwater samples will be stored in an insulated cooler at approximately 4 °C (wet ice) and submitted under chain-of-custody to Fort Monmouth's Environmental Testing Laboratory (NJDEP Certified Laboratory Identification Number 13461) for laboratory analysis. The groundwater samples will be analyzed for Priority Pollutant List VOCs plus the qualification and quantification of 15 associated peaks via U.S. Environmental Protection Agency (USEPA) approved test method 8260.

Applicable protocols regarding sampling, handling, storage, preservation, reporting, decontamination of field equipment and other procedures will comply with NJDEP *Field Sampling Procedures Manual* dated August 2005.

Public Notification Requirement

In accordance with N.J.A.C. 7:26E-7.29(c), the DPW has attached a draft Public Notice for NJDEP approval (**Attachment 4**). Upon receiving NJDEP approval of the draft Public Notice and prior to publishing the Public Notice, the DPW will provide a copy of:

- the approved Public Notice to the clerk for each municipality in which the contaminated site is located, and to the designated local health official;
- the DGW proposal to the clerk for each municipality in which the contaminated site is located and to the designated local health official, if requested; and
- publish the approved public notice of the DGW in two (2) daily or weekly newspapers of general circulation in the vicinity of the contaminated site, at least 35 days prior to the proposed startup date of the groundwater discharge; and
- submit to NJDEP proof of publication for the public notice within 15 days after the notice is published, and provide the names and addresses of everyone that was sent a copy of the public notice and DGW proposal.

DPW respectfully requests the NJDEP issue a NJPDES – Class V Underground Injection Control Permit-by-Rule to authorize the RegenOx and ORC Advanced injection as described herein. DPW also requests that the Permit-by-Rule be issued without an expiration date. This will allow the DPW to conduct additional RegenOx and ORC Advanced injections without the requirement to request additional written approvals from the NJDEP, thus avoiding time delays. Please note that DPW will conduct the injections in accordance with the requirements set forth in the applicable Permit-by-Rule issued by the NJDEP.

As part of this Permit-by-Rule request, DPW will provide the minimum two-week written notification to the NJDEP prior to initiating the RegenOx or ORC Advanced injection event.

As part of this Permit-by-Rule request, DPW will provide the minimum two-week written notification to the NJDEP prior to initiating the RegenOx and ORC Advanced injection event.

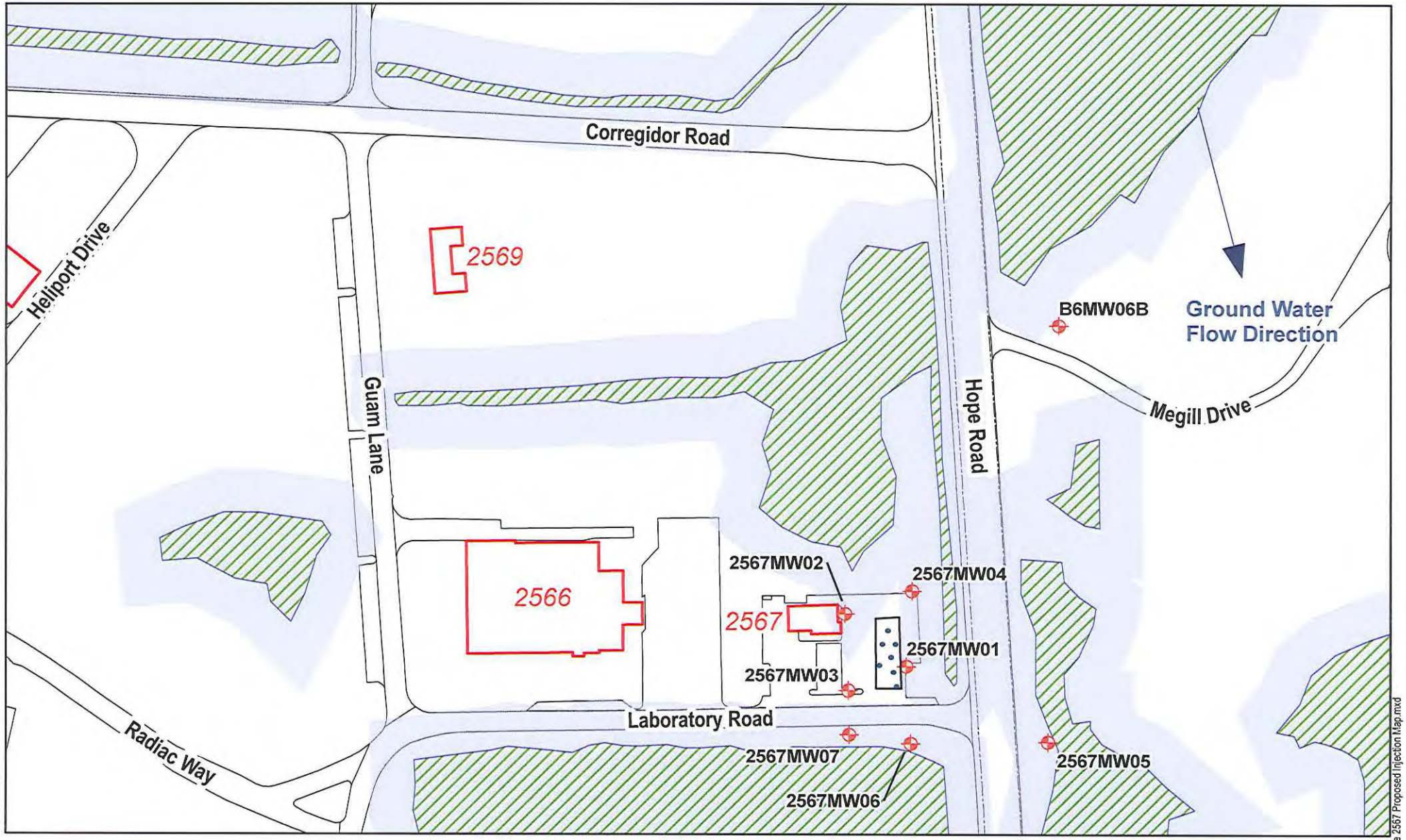
Thank you for your favorable response to this request. DPW will await issuance of the Permit-by-Rule prior to implementation of the injection(s). If you have any questions or require additional information, please contact me Ms. Wanda Green, BRAC Environmental Coordinator, at 732-532-8341.

Sincerely,

Joseph M. Fallon

Joseph M. Fallon, CHMM
Chief, Environmental Division

c: file
enclosure



0 75 150 300 Feet

Figure 1
Bldg 2567 Proposed Injection Area
FTMM-58 - Charles Wood Area
Fort Monmouth, New Jersey
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W E
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Legend

- Proposed Injection Locations
- Proposed Injection Area
- Monitoring Well
- Existing Structure
- Wetland Area
- Wetland Buffer Area
- Roadway & Parking
- Post Boundary

Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: August 13, 2010
New Jersey State Plane Feet, NAD83
All drawings must be field verified.

ugust 13, 2010 X:\GIS\GIS Maps\MTPR33\Site 2567 Proposed Injection Map.mxd

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION, PUBLICLY FUNDED REMEDIATION ELEMENT
P.O. BOX 413
TRENTON, NEW JERSEY 08625-0413

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

October 28, 2010

Mr. Joseph Fallon, CHMM
Directorate of Public Works
ATTN: IMNE-MON-PWE
167 Riverside Ave.
Fort Monmouth, NJ 07703

RE: **Approval of Discharge to Ground Water (DGW) Permit-by-Rule**
Site 2567 - Injection of RegenOx®/ ORC Advanced®
Fort Monmouth, NJ

Dear Mr. Fallon:

The NJDEP Site Remediation Program (SRP) has completed its review of Fort Monmouth's September 2, 2010 request for a permit-by-rule (PBR) for the referenced proposed discharges to ground water (DGW). A permit-by-rule was requested in accordance with N.J.A.C. 7:14A-7.

Fort Monmouth proposes to inject RegenOx® and possibly ORC Advanced® to ground water at Site 2567. Fort Monmouth's PBR request included a remedial action workplan (RAW), which was reviewed and approved by NJDEP. Fort Monmouth has complied with the public notice requirements of N.J.A.C. 7:14A-7. NJDEP received no public comments during the designated 30-day public comment period, which ended on October 8, 2010.

A DGW permit-by-rule is hereby granted, with the following conditions:

1. Fort Monmouth will notify the NJDEP site manager prior to performing applications of RegenOx® or ORC Advanced® at Site 2567.
2. Fort Monmouth will perform any injections of RegenOx® or ORC Advanced®, and conduct performance monitoring, in accordance with the approved RAW.
3. Remedial action progress reports (RAPRs) shall later be submitted in accordance with New Jersey's Technical Requirements for Site Remediation (N.J.A.C. 7:26C).
4. The DGW permit-by-rule shall have no time limit.

You or your staff may contact me at 609-633-0766 with any questions on this matter, or any other site remediation matters at Fort Monmouth.

Sincerely,

Larry Quinn

Larry Quinn, P.E., Site Manager
Bureau of Investigation, Design and Construction

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
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BOB MARTIN
Commissioner

June 16, 2015

John Occhipinti
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 dated February 2015*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Occhipinti:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received March 2, 2015, prepared by Parsons Government Services Inc. (Parsons), on behalf of the U.S. Army Engineering and Support Center, Huntsville (USAESCH). As indicated in the report, activities are to be performed with the goal of Decision Document acceptance in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), 40 CFR Part 300, and "to the extent possible to meet the requirements of New Jersey Administrative Code (NJAC) 7:26E Technical Requirements for Site Remediation", as well as support closure of environmental sites to facilitate transfer of real property.

The workplan describes Site Investigation activities to be performed at the ECP Parcels referenced above. Comments and questions are as follows:

Tables 3.1 and 3.2 also will require revision based upon the following comments.

Parcel 34/Building 2567/FTMM-58

Section 2.4.1, Page B4-line 2 – Although this office agrees with the statement "post excavation soil samples were collected…and analyzed for TPHCs, VOCs, and lead", review of historic

information appears to indicate elevated levels of benzene remain in the soil in the area of the dispenser island south of Building 2567. See additional detail under Section 3.2, below.

Section 2.5, Page B-7, line 21 – This statement regarding the removal of piping was amended via email to Wanda Green (copy to Rob Youhas and Joe Pearson) on June 18, 2013 1519 hrs. The report documenting the investigation of the piping, however, as you likely are aware, has not been received by this office.

Section 3.2 Sampling Plan – Although it is agreed the proposal is appropriate for the TBA in ground water, the referenced submittal considers only the issue of TBA in ground water (the proposal for two annual sampling events of monitor wells 2567MW01 and 2567MW03 was approved on July 3, 2014). However, as briefly discussed in a conference call on June 12, 2015, a review of historic information appears to indicate levels of benzene above both the residential and non-residential criteria/standard remain in numerous locations in the vicinity of the dispenser area south of Building 2567. The information was obtained from the October 28, 2005 RIR/RAW, including Figure 2-1 dated 6/9/94, which indicates levels of benzene remain up to 85 ppm. The June 2010 RAPR appears to omit reference to analytical results from the post excavation soil sampling performed in 1993 during removal of USTs 42 through 45, stating only the samples were analyzed for TPHC, VOCs, and lead, however, a copy of the September 2, 2010 PBR Request contained within the submittal's Appendix B referenced benzene remaining to 45 ppm. Pages i, 3-5 and 6-1 of the June 2010 RAPR also indicate the "remaining original UST dispenser island areas" would undergo assessment upon BRAC closure. It is understood available information is currently being evaluated to determine the status of the soils in this area. At this time, however, this office considers the soil in the area an unaddressed area of concern in need of additional delineation.

Parcel 50

Section 2.2.1 - FTMM-54 - Page C-2 lines 39 & 42 reference the year of the eleven tank removals as 2003, while page C-3, line 17 indicates removal of the eleven tanks was 1993, which appears correct.

Section 2.2.2 – FTMM-55 - Page C-5, line 11 – Waste oil UST No. 91533-193 is indicated as being NFAed in a January 10, 2003 letter. Although the tanks referenced on line 15 were found on the January 10, 2003 NJDEP NFA letter, that letter does not appear to reference UST No. 91533-193; no record of a letter of no further action for that tank could be located.

Section 3.2 Sampling Plan – As noted on page C-6, line 37, levels of TPHC remained in soil at the former location of UST No. 81533-64 at 16,200 and 11,900 ppm, at samples A and B, both at a depth of 5.5-6'. The proposal indicates horizontal delineation sampling is to be performed at locations A (16,200 ppm) and F (9,670 ppm), which is acceptable. Vertical delineation is also required. It is unclear, however, why sampling is not proposed at sample location B, as it does not appear to be vertically delineated.

The Department's EPH Protocol, http://www.nj.gov/dep/srp/guidance/srra/eph_protocol.pdf, is to be followed, with contingency samples collected/analyzed as required. As per EPH Methodology Version 3.0, the non-fractionation option is appropriate only if the EPH level is anticipated to be below 1,700 ppm. As this cannot be presumed, the "unfractionated EPH" does not appear to be the appropriate option.

Parcel 51

Section 2.5, Page D-5, line 40 and Page D-6, line 4 - The submittal indicates the UST questions contained in this office's July 10, 2012 letter are to be addressed under the UHOT program. This office looks forward to submittal of same.

Section 3.0 – With receipt of the additional clarification provided on page D-4, as well as the figure received on June 15, 2015, the questions noted in the Department's July 2012 letter relative to USTs 1123B and 1123C have been answered. It is agreed no additional action is necessary for UST 1123B. However, it is not agreed there are no COCs at Parcel 51. As indicated on line 11, 2-methylnaphthalene was found in the ground water at P51-G12 above the Ground Water Quality Standards (GWQS), as reported in the July 2008 SI. TPHC (collected due to elevated field screening readings) was also found in soil at that location at 6-6.5' at 7,487 ppm. Additional sampling is necessary.

Motor Pool Area – Although information regarding the 750 Motor Pool is not contained within this submittal, concerns regarding the area include, but are not limited to, adequate investigation of;

- Building 750 – UST 191 (15,000 gallon diesel) & UST192 (8000 gallon unleaded gasoline)
- two outdoor service pits for draining vehicle oil, the pipes from which discharged to a former oil water separator (OWS), north of garage bays
- current wash rack previously connected to former OWS, then to new OWS
- Building 753 – three hydraulic lifts and floor drain
- Building 754 – floor drain

Is FTMM 68/Building 700 not considered within Parcel 51?

Parcel 52/FTMM-53/Building 699 Gas Station

Section 1.0, Page E-1, line 8 – As many of the parcel narratives include, a listing of NJDEP correspondence by year is provided, which refers the reader back to *Section 5 References* to ascertain which document is being referenced. It does not include, however, this office's January 8, 2014 response to the September 2013 RI/FS Workplan, nor the May 6, 2014 response to the Army's April 22, 2014 response to same, in which delineation sampling was discussed and

the revised proposal accepted. Results of the investigation have not yet been received by this office.

Section 2.4, Previous Investigation and Historical Data – No mention is made of the 2000 gallon #2 fuel UST, 0081533-112, given an NFA designation in January of 2003, nor more particularly, of waste oil UST 0081533-197, a 1000 gallon waste oil UST removed in January of 1992 from east of UST-112, at which analytical results indicate TPHC to 11,600 ppm remains in soil. As acceptably indicated in the Army's April 22, 2014 response letter, Response C4, additional sampling was to be performed.

Section 2.4, Page E-5, lines 21-27 – It appears "IASL" (indoor air screening levels) may have been inadvertently used in the narrative, on lines 22, 26 and 27. These lines reference sub-slab results, the measure of which is against the SGSLs (Soil Gas Screening Levels), accurately referenced on lines 18, 20, 23, 25 and 25.

Section 2.5 Synthesis of Results, Correspondence and Data Gaps – As indicated above, the submittal does not appear to include the activities proposed in the September 2013 RI/FS Workplan, nor the followup communications.

Section 3.2 Sampling Plan – As indicated, above and through previous correspondence, additional delineation sampling is necessary.

Parcel 66

Section 1.0 & Section 2.5, Page F-3, line 15 – No mention appears to be made among the listed correspondence between NJDEP and FTMM of the *August 1, 2012 Proposed Soil Sampling and Delineation Plan for Electrical Substations at Building 2700 (Charles Wood Area) and Building 978 (Main Post)*, nor the September 10, 2012 NJDEP approval letter for delineation of the PCBs.

Section 2.2, Page F-1, line 20 – typo - It is believed FTMM-56 should read FTMM-66.

Section 2.2, Page F-2, lines 2-4 & Section 2.5 – The submittal references the ECP Report's Appendix A, stating, "no release or disposal of hazardous substances or petroleum products has occurred at Parcel 66…", and that Parcel 66 was assigned an ECP Category of 1. This office does not agree with same, as PCBs are noted present up to 0.84 ppm.

Section 3.2 Sampling Plan – The sampling as proposed on pages F-3 and F-4 is acceptable.

Parcel 80

Section 1.0, line 14 – For clarification, per the 2008 ECP Main Post map (Figure 19), FTMM-56 is also known as Parcel 84 (Building 80), a small ¼+ acre area designated within the larger Parcel 83.

Section 2.4 Previous Investigations and Historical Data – As previously indicated, the Weston report was not accepted by the Department as representative of background conditions at Fort Monmouth.

The section also references the July 10, 2012 letter, in which the NJDEP requested additional information regarding the basis for determination of the sample locations, i.e., were as-builts or other plans for the demolished buildings used to assist in locating former floor drains, septic systems, discharge points, etc, and therefore the boring locations. No rationale for sample location selection has been received; therefore a determination remains unavailable regarding the adequacy of the soil sampling performed.

Section 3.2 Sampling Plan – The proposal to further evaluate beryllium in ground water reported in the 2008 SI as indicated is acceptable.

Parcel 83

In October of 2008, the NJDEP requested depiction of all areas of concern (AOCs) on a site figure. Although a structures figure was submitted, no figure designating AOCs has been received.

Section 2.4, Page H-4 - As previously indicated, the Weston "background" report was not accepted by the Department. As regarding the elevated levels of arsenic (SB10A, SB9A), as acknowledged in Section 3.1, this office at this time does not agree these levels of arsenic are representative of naturally occurring conditions. Arsenic is currently considered a contaminant of concern, based on analytical findings at P83-SB9&10. As the NJDEP July 10, 2012 correspondence stated, although Fort Monmouth site soils are often associated with elevated levels of naturally occurring arsenic, the parcel specific soil analytical results, the lead to arsenic ratio, and the decrease of arsenic with depth at those locations exhibiting an elevated level do not appear to indicate the exceedences are naturally occurring, and must be investigated and included in a remedy.

Section 2.5, line 35 – The submittal indicates further information on the various USTs referenced in the July 10, 2012 letter are to be referred to the "UHOT Program". Although not familiar with same, this office looks forward to receipt of additional information regarding the USTs.

Section 3.2 Sampling Plan – Sampling at the former Building 72 area to better define PAH exceedances, as proposed, is acceptable.

Section 3.2, lines 15, 16 – PCBs - Please ensure these delineation samples, include PCBs analyses, for delineation of the 0.8 ppm PCBs noted at P83-B5, 1-1.5'.

Section 3.2 – Building 279 – Although the proposed sampling locations are acceptable, they are inadequate to complete delineation. Arsenic remains undelineated at P83SB10. It is anticipated elevated levels of lead may be present west of P83SB9; what efforts for delineation

are planned? If location FTMM-83-SS-13 is considered a resample of P83SB9, it should be located within 10' feet of the original sample location.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: Joe Pearson, Calibre
James Moore, USACE
Rick Harrison, FMERA
Joe Fallon, FMERA
Frank Barricelli, RAB

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

July 7, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

SUBJECT: Letter Work Plan Addendum for Parcel 34, Building 2567
Fort Monmouth, New Jersey

Dear Ms. Range:

The purpose of this Letter Work Plan Addendum (LWPA) is to propose additional borings to support the supplemental environmental investigation of Parcel 34, Building 2567, located within Charles Wood Area (CWA) of Fort Monmouth (FTMM). Additional soil sampling as described in this LWPA will be performed to supplement previous samples collected under the November 2015 Rev.1 Environmental Condition of Property (ECP) Work Plan Addendum (and approved by NJDEP in Dec. 2015 letter) around the area of the excavation of the former dispenser area at Building 2567.

The ECP Work Plan Addendum (WPA) included four soil borings, PAR-34-SB-01, -SB-02, -SB-03, and -SB-04 collected at four of the highest soil benzene concentrations detected by Weston for a 1994 UST excavation as shown on **Figure B1**. Soil borings were advanced as described in the ECP-WPA. Based on the results of the sampling program, contaminants around the excavation area have been delineated both horizontally and vertically to the residential direct contact soil remediation standard (RDCSRS) with the exception of the northwestern corner near PAR-34-SB-01. PAR-34-SB-01 had a detection of benzene exceeding the RDCSRS at 6-6.5 feet below ground surface (bgs). In order to provide horizontal delineation of benzene two primary soil borings (PAR-34-SB-05 and PAR-34-SB06) and two contingency borings (PAR-34-SB-07 and PAR-34-SB08) are proposed and are shown on **Figure B1**. Up to 2 to 3 samples will be collected within each boring as described in **Table 1**. Primary samples will be run for VOC+TICs, and contingency samples will be extracted, held, and run for VOC+TICs pending results of the primary samples.

We look forward to your review of this proposed LWPA, and approval or additional comments. The technical Point of Contact (POC) for this matter is Cris Grill at (617) 449-1583 or by email at cris.grill@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

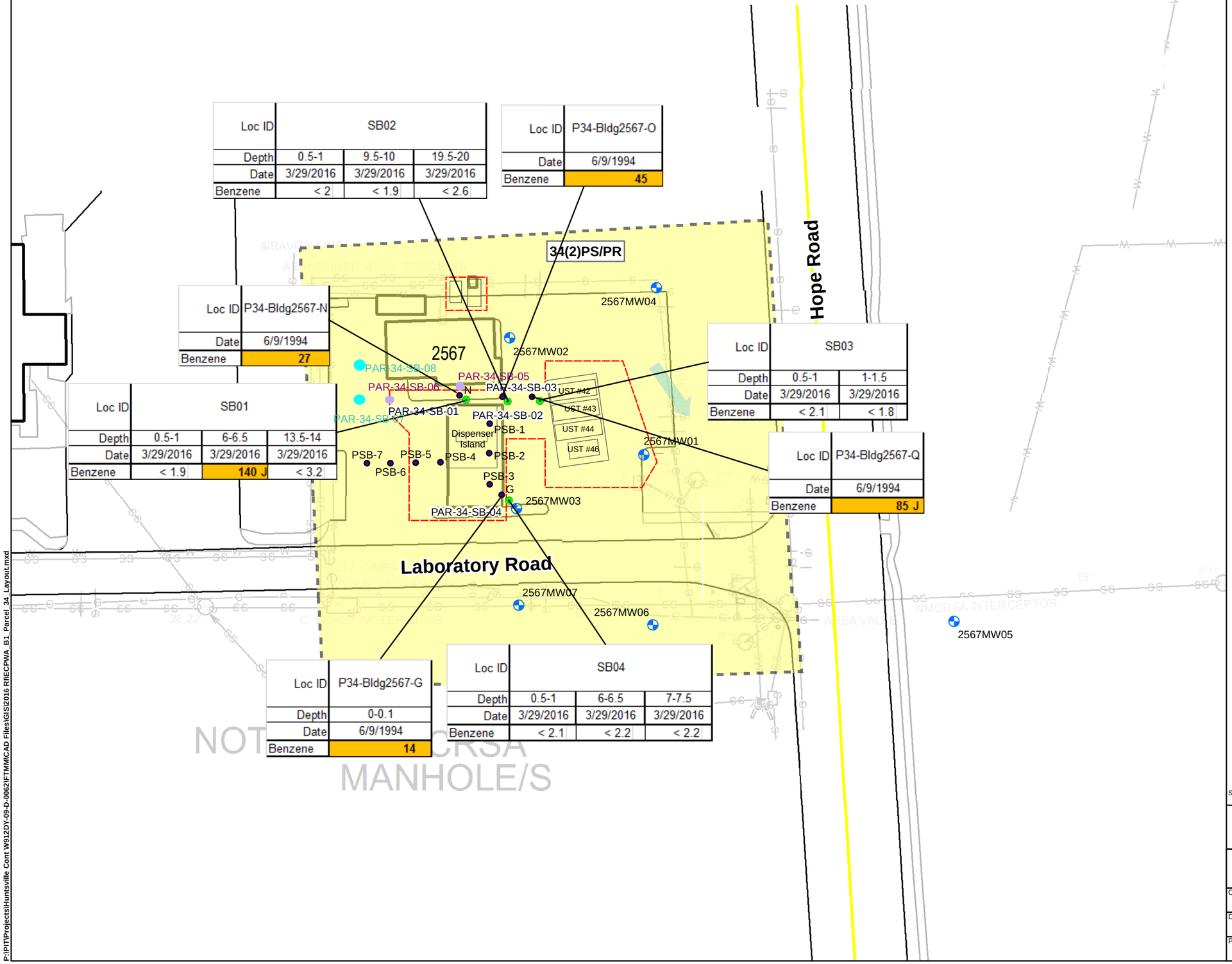
William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

Attachments:

Figure B1 Layout of Parcel 34 (Building 2567) and Sampling Locations
Table 1 Sampling Summary for Parcel 34 Letter Work Plan Addendum

cc: Linda Range, NJDEP (3 hard copies)
Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

FIGURE 1
Layout of Parcel 34 (Building 2567) and Sampling Locations



Loc ID	SB02		
Depth	0.5-1	9.5-10	19.5-20
Date	3/29/2016	3/29/2016	3/29/2016
Benzene	< 2	< 1.9	< 2.6

Loc ID	P34-Bldg2567-O
Date	6/9/1994
Benzene	45

Loc ID	P34-Bldg2567-N
Date	6/9/1994
Benzene	27

Loc ID	SB03	
Depth	0.5-1	1-1.5
Date	3/29/2016	3/29/2016
Benzene	< 2.1	< 1.8

Loc ID	SB01		
Depth	0.5-1	6-6.5	13.5-14
Date	3/29/2016	3/29/2016	3/29/2016
Benzene	< 1.9	140 J	< 3.2

Loc ID	P34-Bldg2567-Q
Date	6/9/1994
Benzene	85 J

Loc ID	P34-Bldg2567-G
Depth	0-0.1
Date	6/9/1994
Benzene	14

Loc ID	SB04		
Depth	0.5-1	6-6.5	7-7.5
Date	3/29/2016	3/29/2016	3/29/2016
Benzene	< 2.1	< 2.2	< 2.2

LEGEND:

- Surface/Subsurface Soil Sample Location (for analysis of VOCs) (2016)
- Historical Soil Sample (1993, 2013)
- Parcel 34 Boundary
- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation
- Generalized Groundwater Flow Direction
- Proposed primary subsurface sampling location
- Proposed contingency subsurface sampling location

	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS
Benzene	2	5

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description: HS – Hazardous Substance Storage; HR – Hazardous Substance Release; PS – Petroleum Storage; PR – Petroleum Release; (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

LAYOUT OF PARCEL 34 (BUILDING 2567) AND SAMPLING LOCATIONS

CREATED BY:	REVIEWED BY:
RR	ME
DATE: MAY. 2016	FIGURE NUMBER: FIGURE B1
PROJECT NUMBER: 748810-01000	FILE: ECPWA_B1_Parcel_34_Layout.mxd

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TABLE 1
Sampling Summary for Parcel 34 Letter Work Plan Addendum

TABLE 1
SAMPLING SUMMARY FOR PARCEL 34 LETTER WORK PLAN ADDENDUM
FORT MONMOUTH, NEW JERSEY

Site	Location	Field Meter Readings [a/]	VOC+TICs by EPA Method 8260C (including TBA)	Rationale
Soil				
Parcel 34	Primary Borings (Figure B1): 2 soil borings, 2 samples each.	2 borings	4-6	Samples will be collected at 6-6.5 feet from the 2 borings advanced outside of the excavation at locations PAR-34-SB-05 and PAR-34-SB06 (near borings PAR-34-SB-01 and Weston boring M respectively). Additionally, other samples in boring will be collected if evidence of contamination is observed when: a.) a sample will be collected at the most contaminated interval based on field observations/PID, and below any evidence of contamination; b.) if no contamination is observed in boring then sample will be collected at 6-6.5 feet and an additional sample will be collected above the water table.
Parcel 34	Contingency Borings (Figure B1): 2 soil borings, 2 samples each.	2 borings	4-6	Samples will be collected at 6-6.5 feet from the 2 contingency borings advanced outside of the excavation at locations PAR-34-SB-07 and PAR-34-SB08. Additionally, other samples in boring will be collected if evidence of contamination is observed when: a.) a sample will be collected at the most contaminated interval based on field observations/PID, and below any evidence of contamination; b.) if no contamination is observed in boring then sample will be collected at 6-6.5 feet and an additional sample will be collected above the water table.
QA/QC samples (see SAP for additional details) [b/]				
Field Duplicates (5% Sampling Frequency per media)		NA	1	
Matrix Spike (5% Sampling Frequency per media)		NA	1	
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	
Trip Blank (1 per cooler of VOCs per media)		NA	1	
QA Split (5% per media)		NA	1	
Equipment Blank (5% Sampling Frequency per media)		NA	1	
TOTAL		**NA**	**13-17**	

Notes:

NA = not applicable.

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspace, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

[b/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan. The requirement for QA/QC samples may be fulfilled with samples from other parcels.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

July 28, 2016

William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Work Plan Addendum for Parcel 34, Building 2567*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced submittal, received on July 12, 2016, as well the supplemental information received on July 25, 2016.

Elevated levels of volatiles in the soil, particularly benzene, were determined to remain of potential concern in the vicinity of the former gasoline dispenser islands to the south of Building 2567. To determine current conditions of the soil in this area, soil sampling was performed in March of 2016, biased to those locations previously noted as exhibiting the highest levels of benzene. As the more recent analytical results indicate further delineation is necessary, additional sampling is proposed.

Delineation of the benzene, etheylbenzene and xylenes in the *unsaturated zone* must be performed to the impact to ground water soil remediation standard (the Default Impact to Ground Water Soil Screening Level unless a site specific standard is generated). Delineation of soil in the saturated zone must be completed to the direct contact soil cleanup standards (DCSRS).

Although it is agreed the collection of samples as proposed will likely complete vertical soils delineation within the saturated zone, it is possible the proposed method will result in inadequate characterization of the unsaturated zone. As per the above delineation requirements, additional sampling intervals are likely necessary, within the unsaturated zone, at location PAR-34-05 as well as those locations proposed to the west of same. Efforts should be made to ensure these sample locations are placed beyond the boundaries of the original excavation to ensure fill material is not being sampled. The most contaminated interval of the unsaturated zone, as well

as either immediately beneath it, or 0-6" above the ground water, whichever is encountered first, should also be sampled. Exceedances of IGW standards in the unsaturated zone will trigger the requirement for evaluation of the ground water in that area, as it is located sufficiently west of the existing monitoring wells to warrant an additional point of evaluation.

The proposed analytical parameters are acceptable.

Please contact this office with any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: Joe Pearson, Calibre
James Moore, USACE
Rick Harrison, FMERA
Joe Fallon, FMERA

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

August 4, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

SUBJECT: Revised Letter Work Plan Addendum for Parcel 34, Building 2567
Fort Monmouth, New Jersey

Dear Ms. Range:

The purpose of this Revised Letter Work Plan Addendum (RLWPA) is to address the NJDEP comments provided in your letter dated July 28, 2016 and to provide an overview of the revised LWPA for Parcel 34, Building 2567. As proposed in our July 7, 2016 LWPA, 4 additional borings (2 primary and 2 contingent) will be installed to support the supplemental environmental investigation of Parcel 34, Building 2567, located within Charles Wood Area (CWA) of Fort Monmouth (FTMM). Additional soil sampling as described in this LWPA will be performed to augment previous samples collected under the November 2015 Rev.1 Environmental Condition of Property (ECP) Work Plan Addendum (approved by NJDEP in Dec. 2015 letter). Additionally, grab groundwater samples will be collected to assess the groundwater condition in the western portion of the site if vadose zone soil samples indicate the need for groundwater sampling, as requested in your July 28, 2016 comment letter.

The ECP Work Plan Addendum (WPA) included four soil borings, PAR-34-SB-01, -SB-02, -SB-03, and -SB-04 collected at four of the highest soil benzene concentrations detected by Weston for a 1994 UST excavation as shown on **Figure B1**. Soil borings were advanced as described in the ECP-WPA. Based on the results, contaminants around the excavation area have been delineated both horizontally and vertically to the residential direct contact soil remediation standard (RDCSRS) with the exception of the northwestern corner near PAR-34-SB-01. PAR-34-SB-01 had a detection of benzene exceeding the RDCSRS at 6-6.5 feet below ground surface (bgs) (which is below the water table at this boring, as shown on the boring log provided in **Attachment 1**). In response to the NJDEP July 28, 2016 comments and to provide delineation of benzene, two primary soil borings (PAR-34-SB-05 and PAR-34-SB06) and three contingency borings (PAR-34-SB-07, PAR-34-SB08, and PAR-34-SB-09) are proposed and are shown on **Figure B1**. Up to 2 to 4 samples will be collected within each boring as described in **Table 1**. Primary samples will be run for VOC+TICs, and contingency samples will be extracted, held, and run for VOC+TICs pending results of the primary samples. Additionally, at borings PAR-34-SB-05 and PAR-34-SB06, grab groundwater samples will be collected using temporary wells.

Groundwater samples will be extracted, held, and run for VOCs+TICs pending results of the vadose zone soil samples.

We look forward to your review of this proposed RLWPA, and approval or additional comments. The technical Point of Contact (POC) for this matter is Cris Grill at (617) 449-1583 or by email at cris.grill@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

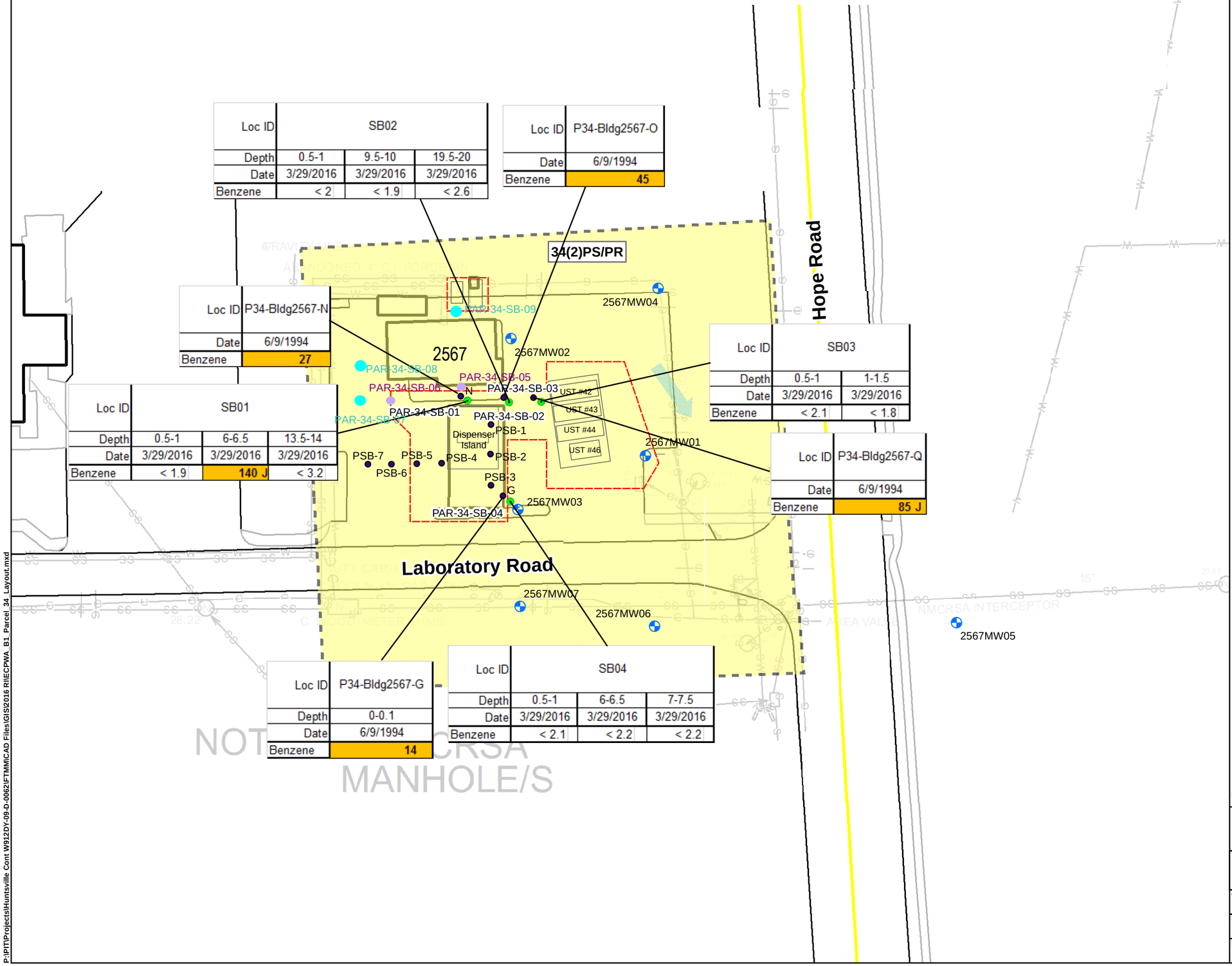
William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

Attachments:

Figure B1 Layout of Parcel 34 (Building 2567) and Sampling Locations
Table 1 Sampling Summary for Parcel 34 Revised Letter Work Plan Addendum
Attachment 1 Boring Logs

cc: Linda Range, NJDEP (3 hard copies)
Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

FIGURE 1
Layout of Parcel 34 (Building 2567) and Sampling Locations



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PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

LAYOUT OF PARCEL 34 (BUILDING 2567) AND SAMPLING LOCATIONS

CREATED BY: RR	REVIEWED BY: ME
DATE: MAY. 2016	FIGURE NUMBER: FIGURE B1
PROJECT NUMBER: 748810-01000	FILE: ECPWA_B1_Parcel_34_Layout.mxd

TABLE 1
Sampling Summary for Parcel 34 Revised Letter Work Plan Addendum

TABLE 1
SAMPLING SUMMARY FOR PARCEL 34 REVISED LETTER WORK PLAN ADDENDUM
FORT MONMOUTH, NEW JERSEY

Site	Location	Field Meter Readings [a/]	VOC+TICs by EPA Method 8260C (including TBA)	Rationale
Soil				
Parcel 34	Primary Borings (Figure B1): 2 soil borings, 2-4 samples each.	2 borings	4-8	In borings PAR-34-SB-05 and PAR-34-SB06 (near borings PAR-34-SB-01 and Weston boring M respectively), samples will be collected at 1) the 6-6.5 feet interval (to correspond with contamination detected in PAR-34-SB-01), 2) the 6 inch interval above the water table, and if evidence of contamination is observed 3) at the most contaminated interval based on field observations/PID and 4) below any evidence of contamination
Parcel 34	Contingency Borings (Figure B1): 3 soil borings, 2-4 samples each.	3 borings	6-12	Samples will be collected from 1) the 6 inch interval above the water table, and 2) at 6-6.5 feet from the 3 contingency borings advanced outside of the excavation at locations PAR-34-SB-07 and PAR-34-SB08. Additionally, if evidence of contamination is observed when: 3) a sample will be collected at the most contaminated interval based on field observations/PID, and 4) a sample will be collected below any evidence of contamination.
Groundwater				
Parcel 34	Primary Borings (Figure B1): 2 temporary wells, 1 sample each.	2 borings/temporary wells	2	In borings PAR-34-SB-05 and PAR-34-SB06 (near borings PAR-34-SB-01 and Weston boring M respectively), grab groundwater samples will be collected.
QA/QC samples (see SAP for additional details) [b/]				
Field Duplicates (5% Sampling Frequency per media)		NA	1	
Matrix Spike (5% Sampling Frequency per media)		NA	1	
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	
Trip Blank (1 per cooler of VOCs per media)		NA	1	
QA Split (5% per media)		NA	1	
Equipment Blank (5% Sampling Frequency per media)		NA	1	
	TOTAL	**NA**	**18-28**	

Notes:

NA = not applicable.

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspace, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

[b/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan. The requirement for QA/QC samples may be fulfilled with samples from other parcels.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

August 9, 2016

William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Revised Letter Work Plan Addendum for Parcel 34, Building 2567*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced submittal, received on August 5, 2016, submitted in response to the Department's letter dated July 28, 2016. Sampling as proposed (at two primary and 3 contingent locations) in the above referenced submittal, dated August 4, 2016, is acceptable.

Please contact this office with any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: Joe Pearson, Calibre
James Moore, USACE
Rick Harrison, FMERA
Joe Fallon, FMERA

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

December 28, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

SUBJECT: December 2016 Letter Work Plan Addendum for Parcel 34 (Building 2567), Fort Monmouth, New Jersey

Dear Ms. Range:

The purpose of this December 2016 Letter Work Plan Addendum (LWPA) is to address VOC groundwater exceedances encountered during the August 2016 sampling event. This December 2016 LWPA proposes additional monitoring wells to augment previous environmental investigations conducted at Parcel 34, Former Squire Laboratory and other facilities, located within the Main Post (MP) of Fort Monmouth (FTMM).

Work performed under the Revised Letter Work Plan Addendum for Parcel 34, Building 2567, Fort Monmouth, New Jersey submitted August 4, 2016 (August RLWPA) included soil borings and grab groundwater samples as shown on **Figure 1**. Soil samples were collected as described in the August RLWPA and analyzed for volatile organic compounds and tentatively identified compounds (VOCs+TICs). Sample results were compared to NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS), Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS), and Impact to Ground Water Soil Screening Levels (IGWSSLs), as shown in **Table 1**. Based on the results of the soil sampling, all exceedances of NJDEP soil remediation standards were delineated both vertically and horizontally.

Groundwater results from the grab samples collected at TMW-34-SB-05 and TMW-34-SB-06 exceeded the NJDEP Ground Water Quality Standard (GWQS) for several petroleum related VOCs (**Table 2**). Downgradient wells 2567MW03, 2567MW06, and 2567MW07 were evaluated as part of FTMM-58 and the results have been reported in the Annual Groundwater Reports. These compounds have not been detected in the downgradient wells. Two new permanent monitoring wells (2567MW08 and 2567MW10) are proposed near TMW-34-SB-05 and TMW-34-SB-06 to confirm the results of the 2016 grab groundwater sampling, in addition to an upgradient well (2567MW09) to confirm the absence of an upgradient source. The proposedmonitoring wells are shown on **Figure 2**.

The proposed new monitoring wells will be installed with 10-foot-long screens that extends two feet above the water table. The monitoring wells will be developed and, following a stabilization period of at least 14 days, groundwater samples from the new monitoring wells will be collected using the NJDEP low flow purge and sample method (to obtain a low turbidity sample) and analyzed for VOCs+TICs (**Table 3**). Two samples will be collected from each new well including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's *Field Sampling Procedures Manual* (August 2005). In addition, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity will be measured during well purging.

We look forward to your review of this proposed sampling plan, and approval or additional comments. The technical Point of Contact (POC) for this matter is Cris Grill at (617) 449-1583 or by email at cris.grill@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

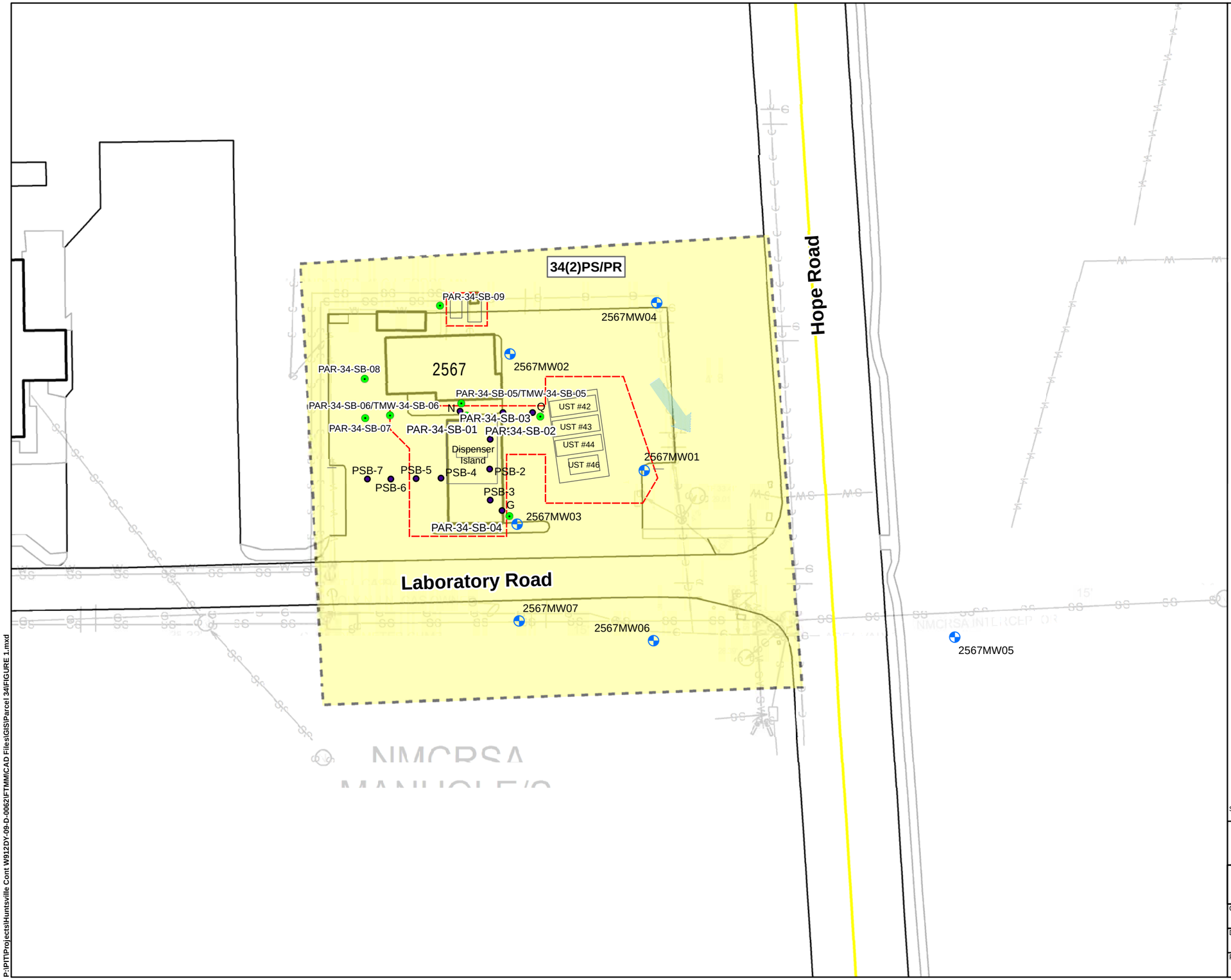
William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

Attachments:

Figure 1 Parcel 34 (Building 2567) Layout and Sampling Locations
Figure 2 Parcel 34 Proposed Groundwater Monitoring Wells
Table 1 Detected Soil Sampling Results – Comparison to NJDEP Standards
Table 2 Detected Groundwater Sampling Results – Comparison to NJDEP Ground Water Quality Standards
Table 3 Sampling Summary for Parcel 34 Letter Work Plan Addendum

cc: Linda Range, NJDEP (3 hard copies)
Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

Figure 1
Parcel 34 (Building 2567) Layout and Sampling Locations



LEGEND:

- Surface/Subsurface Soil Sample Location (for analysis of VOCs) (2016)
- Historical Soil Sample (1993, 2013)
- Parcel 34 Boundary
- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation
- Generalized Groundwater Flow Direction

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description
  - HS – Hazardous Substance Storage
  - HR – Hazardous Substance Release
  - PS – Petroleum Storage
  - PR – Petroleum Release
  - (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

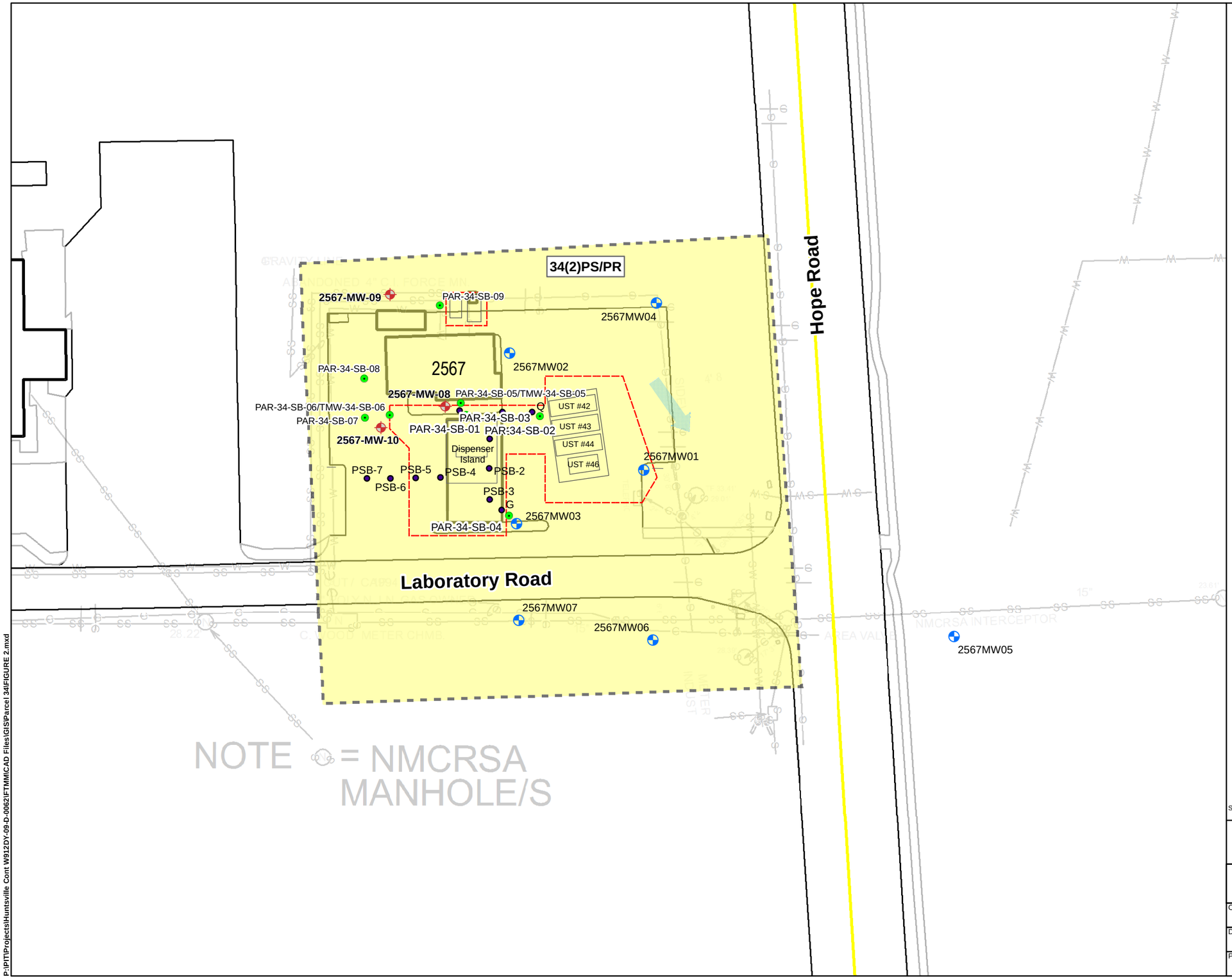
PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**

LAYOUT OF PARCEL 34 (BUILDING 2567) AND SAMPLING LOCATIONS

CREATED BY: RR	REVIEWED BY: RF
DATE: DEC. 2016	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06014	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 34\FIGURE 1.mxd

Figure 2
Parcel 34 Proposed Groundwater Monitoring Wells



LEGEND:

- Proposed Groundwater Monitoring Well
- Surface/Subsurface Soil Sample Location (for analysis of VOCs) (2016)
- Historical Soil Sample (1993, 2013)
- Parcel 34 Boundary
- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation
- Generalized Groundwater Flow Direction

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N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

PARCEL 34 (BUILDING 2567) PROPOSED GROUNDWATER MONITORING WELLS

CREATED BY: RR	REVIEWED BY: CM
DATE: DEC. 2016	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06014	FILE: FIGURE 2.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 34\FIGURE 2.mxd

Table 1
Detected Soil Sampling Results – Comparison to NJDEP Standards

TABLE 1
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP STANDARDS
PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-01			PAR-34-SB-02		
Sample ID				PAR-34-SS-SB01-0.5-1	PAR-34-SS-SB01-6-6.5	PAR-34-SS-SB01-13.5-14	PAR-34-SS-SB02-0.5-1	PAR-34-SS-SB02-9.5-10.0	PAR-34-SS-SB02-19.5-20
Sample Date				3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016
Volatile Organic Compounds (mg/kg)									
1,2,4-Trimethylbenzene	NLE	NLE	NLE	< 0.0037	**5.7**	< 0.0064	< 0.004	< 0.0039	< 0.0052
1,3,5-Trimethylbenzene	NLE	NLE	NLE	< 0.0037	**1.3**	< 0.0064	< 0.004	< 0.0039	< 0.0052
4-Bromofluorobenzene	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Acetone	70,000	NLE	19	< 0.0037	< 0.25	**0.011**	< 0.004	**0.0025 J**	< 0.0052
Benzene	2	5	0.005	< 0.0037	**0.078 J**	< 0.0064	< 0.004	< 0.0039	< 0.0052
Cymene	NLE	NLE	NLE	< 0.0037	**0.12 J**	< 0.0064	< 0.004	< 0.0039	< 0.0052
Ethyl benzene	7,800	110,000	13	**0.00019 J**	**2.2**	< 0.0064	**0.00048 J**	< 0.0039	< 0.0052
Isopropylbenzene	NLE	NLE	NLE	< 0.0037	**1.3**	< 0.0064	< 0.004	< 0.0039	< 0.0052
Meta/Para Xylene	NLE	170,000	NLE	< 0.0075	**1.6**	< 0.013	< 0.0079	< 0.0077	< 0.01
Methyl ethyl ketone	3,100	44,000	0.9	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
Methyl Tertbutyl Ether	110	320	0.2	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
Methylene chloride	34	97	0.01	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
Naphthalene	6	17	25	< 0.0037	**0.75**	< 0.0064	< 0.004	< 0.0039	< 0.0052
n-Butylbenzene	NLE	NLE	NLE	< 0.0037	**1.1**	< 0.0064	< 0.004	< 0.0039	< 0.0052
Ortho Xylene	NLE	170,000	NLE	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
Propylbenzene	NLE	NLE	NLE	< 0.0037	**4**	< 0.0064	< 0.004	< 0.0039	< 0.0052
sec-Butylbenzene	NLE	NLE	NLE	< 0.0037	**0.37**	< 0.0064	< 0.004	< 0.0039	< 0.0052
Toluene	6,300	91,000	7	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
Trichlorofluoromethane	23,000	340,000	34	< 0.0037	< 0.25	< 0.0064	< 0.004	< 0.0039	< 0.0052
TIC VOCs (mg/kg)									
Total TIC VOCs	NLE	NLE	NLE	**0.0086 JN**	**79.9 JN**	**0.0388 JN**	**0.0324 JN**	**0.0961 JN**	**0.0203 JN**

Footnotes:

NLE = no limit established.

Chemical dectections are bolded

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TABLE 1
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PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-03		P34-SS-SB-04			
Sample ID				PAR-34-SS-SB03-0.5-1	PAR-34-SS-SB03-1.0-1.5	PAR-34-SS-SB04-0.5-1.0	PAR-34-SSSB04-6.0-6.5	PAR34-SS-SB104-6-6.5	PAR-34-SS-SB-04-7-7.5
Sample Date				3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016	3/29/2016
Volatile Organic Compounds (mg/kg)									
1,2,4-Trimethylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
1,3,5-Trimethylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
4-Bromofluorobenzene	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Acetone	70,000	NLE	19	< 0.0041	**0.0052**	**0.015**	< 0.0046	< 0.0045	**0.0071**
Benzene	2	5	0.005	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Cymene	NLE	NLE	NLE	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Ethyl benzene	7,800	110,000	13	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Isopropylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	**0.00099 J**	< 0.0046	< 0.0045	< 0.0043
Meta/Para Xylene	NLE	170,000	NLE	< 0.0083	< 0.0073	< 0.0084	< 0.0092	< 0.009	< 0.0087
Methyl ethyl ketone	3,100	44,000	0.9	< 0.0041	< 0.0037	**0.0026 J**	< 0.0046	< 0.0045	< 0.0043
Methyl Tertbutyl Ether	110	320	0.2	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Methylene chloride	34	97	0.01	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Naphthalene	6	17	25	< 0.0041	< 0.0037	**0.00077 J**	< 0.0046	< 0.0045	< 0.0043
n-Butylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Ortho Xylene	NLE	170,000	NLE	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Propylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	**0.0012 J**	< 0.0046	< 0.0045	< 0.0043
sec-Butylbenzene	NLE	NLE	NLE	< 0.0041	< 0.0037	**0.00073 J**	< 0.0046	< 0.0045	< 0.0043
Toluene	6,300	91,000	7	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
Trichlorofluoromethane	23,000	340,000	34	< 0.0041	< 0.0037	< 0.0042	< 0.0046	< 0.0045	< 0.0043
TIC VOCs (mg/kg)									
Total TIC VOCs	NLE	NLE	NLE	**0.012 JN**	**0.0057 JN**	**0.1556 JN**	**0.1211 JN**	**0.1313 JN**	**0.0815 JN**

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TABLE 1
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PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-05				PAR-34-SB-06		
Sample ID				PAR-34-SB-05-6.0-6.5	PAR-34-SB-105-6.0-6.5	PAR-34-SB-05-7.5-8	PAR-34-SB-05-12.0-12.5	PAR-34-SB-06-3-3.5	PAR-34-SB-06-6-6.5	PAR-34-SB-06-7.5-8
Sample Date				8/11/2016	8/11/2016	8/11/2016	8/11/2016	8/12/2016	8/12/2016	8/12/2016
Volatile Organic Compounds (mg/kg)										
1,2,4-Trimethylbenzene	NLE	NLE	NLE	**96**	**75.1**	**0.028 J**	< 0.0013	< 0.0009	**214 J**	< 0.0014
1,3,5-Trimethylbenzene	NLE	NLE	NLE	**26.4**	**20.8**	**0.002 J**	< 0.0013	< 0.0009	**57.7**	< 0.0014
4-Bromofluorobenzene	NLE	NLE	NLE	**1.2**	**1**	**0.022**	**0.026**	**0.022**	**1.5**	**0.025**
Acetone	70,000	NLE	19	< 2.2	< 1.9	**0.24**	**0.041**	**0.065**	**0.28 J**	**0.12**
Benzene	2	5	0.005	**3.2**	**2.5**	**0.0081 J**	< 0.0013	< 0.0009	**0.033 J**	< 0.0014
Cymene	NLE	NLE	NLE	< 0.45	< 0.37	**0.001 J**	< 0.0013	< 0.0009	**0.11 J**	< 0.0014
Ethyl benzene	7,800	110,000	13	**38.4**	**29.4**	**0.0029**	< 0.0013	< 0.0009	**7.6**	< 0.0014
Isopropylbenzene	NLE	NLE	NLE	**6.7**	**5.2**	**0.035 J**	< 0.0013	< 0.0009	**15**	**0.0012 J**
Meta/Para Xylene	NLE	170,000	NLE	**177**	**134**	**0.014**	< 0.0026	< 0.0018	**193**	< 0.0028
Methyl ethyl ketone	3,100	44,000	0.9	< 2.2	< 1.9	**0.028**	< 0.0065	< 0.0044	< 0.0083 UJ	**0.0097 J**
Methyl Tertbutyl Ether	110	320	0.2	< 0.45	< 0.37	< 0.001	< 0.0013	< 0.0009	**0.0035 J**	< 0.0014
Methylene chloride	34	97	0.01	< 0.45	< 0.37	**0.0021**	< 0.0013	< 0.0009	**0.007 J**	< 0.0014
Naphthalene	6	17	25	**7**	**5.1**	**0.0017 J**	**0.0011 J**	< 0.0009	**0.3 J**	< 0.0014
n-Butylbenzene	NLE	NLE	NLE	**3.4**	< 0.37	< 0.001 UJ	< 0.0013	< 0.0009	**0.28 J**	< 0.0014
Ortho Xylene	NLE	170,000	NLE	**33.7**	**22.6**	**0.0017 J**	< 0.0013	< 0.0009	< 0.73 UJ	< 0.0014
Propylbenzene	NLE	NLE	NLE	**16**	**12.6**	**0.066 J**	< 0.0013	< 0.0009	**40.2**	**0.0016 J**
sec-Butylbenzene	NLE	NLE	NLE	< 0.45	< 0.37	**0.0029 J**	< 0.0013	< 0.0009	**0.22 J**	< 0.0014
Toluene	6,300	91,000	7	**0.75**	**0.55**	**0.0043**	**0.0024 J**	**0.003**	**0.017 J**	**0.0032**
Trichlorofluoromethane	23,000	340,000	34	< 0.45	< 0.37	< 0.001	< 0.0013	< 0.0009	< 0.0017 UJ	< 0.0014
TIC VOCs (mg/kg)										
Total TIC VOCs	NLE	NLE	NLE	**1.1887 JN**	**0.091 JN**	**1.04 JN**	ND	ND	**0.636 JN**	**0.0529 JN**

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TABLE 1
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PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-34-SB-06	PAR-34-SB-07	PAR-34-SB-08		PAR-34-SB-09	
Sample ID				PAR-34-SB-06-8.5-9	PAR-34-SB-07-3-3.5	PAR-34-SB-08-1.5-2.0	PAR-34-SB-08-6-6.5	PAR-34-SB-09-1.5-2	PAR-34-SB-09-6-6.5
Sample Date				8/12/2016	8/12/2016	8/12/2016	8/12/2016	8/12/2016	8/12/2016
Volatile Organic Compounds (mg/kg)									
1,2,4-Trimethylbenzene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
1,3,5-Trimethylbenzene	NLE	NLE	NLE	< 0.0012	**0.0008 J**	< 0.0013	< 0.0012	< 0.0012	< 0.0011
4-Bromofluorobenzene	NLE	NLE	NLE	**0.027**	**0.027**	**0.032**	**0.025**	**0.025**	**0.021**
Acetone	70,000	NLE	19	**0.038**	**0.06 J**	**0.062**	**0.092**	**0.073**	**0.039**
Benzene	2	5	0.005	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Cymene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Ethyl benzene	7,800	110,000	13	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Isopropylbenzene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Meta/Para Xylene	NLE	170,000	NLE	< 0.0023	< 0.0021 UJ	< 0.0025	< 0.0024	< 0.0023	< 0.0022
Methyl ethyl ketone	3,100	44,000	0.9	< 0.0058	< 0.0053 UJ	< 0.0063	**0.0061 J**	< 0.0058	**0.0038 J**
Methyl Tertbutyl Ether	110	320	0.2	**0.001 J**	< 0.0011 UJ	< 0.0013	**0.0013 J**	< 0.0012	< 0.0011
Methylene chloride	34	97	0.01	**0.009**	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Naphthalene	6	17	25	< 0.0012	**0.0007 J**	< 0.0013	< 0.0012	< 0.0012	< 0.0011
n-Butylbenzene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Ortho Xylene	NLE	170,000	NLE	< 0.0012	**0.0013 J**	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Propylbenzene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
sec-Butylbenzene	NLE	NLE	NLE	< 0.0012	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
Toluene	6,300	91,000	7	**0.0016 J**	**0.0021 J**	**0.0046**	**0.0032**	**0.0027**	**0.0029**
Trichlorofluoromethane	23,000	340,000	34	**0.0013 J**	< 0.0011 UJ	< 0.0013	< 0.0012	< 0.0012	< 0.0011
TIC VOCs (mg/kg)									
Total TIC VOCs	NLE	NLE	NLE	ND	**0.003 JN**	ND	ND	ND	ND

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The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised, http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

Table 2
Detected Groundwater Sampling Results – Comparison to NJDEP Ground Water Quality Standards

TABLE 2
DETECTED GROUNDWATER SAMPLING RESULTS - COMPARISON TO NJDEP GROUND WATER QUALITY STANDARDS
PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	P34-TMW-05	P34-TMW-06
Sample ID		PAR-34-TMW-05	PAR-34-TMW-06
Sample Date		8/12/2016	8/12/2016
Filtered		Total	Total
Volatile Organic Compounds (µg/l)			
1,2,4-Trimethylbenzene	100	**2,440**	**344**
1,3,5-Trimethylbenzene	100	**560**	**109**
Benzene	1	**441**	< 1.7
Ethyl benzene	700	**1,290**	**28**
Isopropylbenzene	700	NA	**35.1**
Meta/Para Xylene	1,000	**4,810**	**167**
Methyl Tertbutyl Ether	70	**4.5 J**	< 1.7
Naphthalene	300	**145**	**23**
n-Butylbenzene	100	**33.5**	< 1.7
Ortho Xylene	1,000	**310**	< 1.7
Propylbenzene	100	**446**	**80.2**
Toluene	600	**30.3**	< 1.7
TIC VOCs (µg/l)			
Total TICs	500	**834.9 JN**	**990 JN**

Footnotes:

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- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria

NJDEP Interim Specific or Interim Generic GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010

Table 3
Sampling Summary for Parcel 34 Letter Work Plan Addendum

TABLE 3
SAMPLING SUMMARY FOR PARCEL 34 LETTER WORK PLAN ADDENDUM
FORT MONMOUTH, NEW JERSEY

Site	Location	Field Meter Readings [a/]	VOCs+TICs by Method 8260C [b/] Including TBA	Rationale
Groundwater				
Parcel 34 (Building 2567)	Confirmation groundwater samples (Figure 2): 2 monitoring wells, up to 2 samples each.	2 monitoring wells	4	Monitoring wells 2567-MW-08 and 2567-MW-10 are to be installed adjacent to TMW-34-SB-05 and TMW-34-SB-06, respectively, to confirm the exceedances at these locations, and monitor groundwater on the edges of the excavation area. Two samples will be collected from each well, including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's Field Sampling Procedures Manual (August 2005).
Parcel 34 (Building 2567)	Upgradient groundwater samples (Figure 2): 1 monitoring wells, up to 2 samples.	1 monitoring well	2	Monitoring well 2567-MW-09 is to be installed upgradient of TMW-34-SB-05 to monitor for groundwater contaminants that may be entering the site. Two samples will be collected from the well, including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's Field Sampling Procedures Manual (August 2005).
QA/QC samples (see SAP for additional details) [c/]				
Field Duplicates (5% Sampling Frequency per media)		NA	1	
Matrix Spike (5% Sampling Frequency per media)		NA	1	
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	
Trip Blank (1 per cooler of VOCs per media)		NA	1	
QA Split (5% per media)		NA	1	
Equipment Blank (5% Sampling Frequency per media)		NA	1	
	TOTAL	**NA**	**10**	

Notes:

NA = not applicable.

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspace, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

[b/] VOCs = volatile organic compounds.

[c/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan. The requirement for QA/QC samples may be fulfilled with samples from other parcels.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

January 10, 2017

William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *December 2016 Letter Work Plan Addendum for Parcel 34 (Building 2567)*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced submittal, received December 30, 2016, prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management. The submittal contained analytical results of soil and ground sampling performed in March and August of 2016, respectively.

As previously indicated, all analytical results above any standard are to be plotted on a map, including sample location, constituent name, result, and sample depth. Submittal of the report without the properly completed figure is non-compliant, and has added additional time to the DEP review. Please ensure the followup report/s contains a map exhibiting all exceedances, including NJ Impact to GW Soil Screening Levels (e.g. PSB-7 – 2.5-3' – benzene at 0.011).

The submittal states delineation of all soils exceedances has been completed. Although this appears to be accurate, analytical results from March 29, 2016 provided in Table 1 of the Addendum for soil sample locations PAR-34-SS-SB01 through SB04 do not appear to correspond to those provided in Figure 1B of the *July 7, 2016 Letter Work Plan Addendum for Parcel 34, Building 2567*. For example, Figure 1B indicates benzene in SB01 at 6-6.5' is 140 ppm (J), while Table 1 of this submittal indicates the results is 0.078 ppm (J). Clarification is necessary.

The Addendum proposes the installation of permanent monitor wells, and an upgradient well. Again, analytical exceedances should have been plotted. The locations of the proposed wells are acceptable.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: James Moore, USACE
Rich Harrison, FMERA
Joe Fallon, FMERA
Joe Pearson, Calibre

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

3 August 2017

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Northern Bureau of Field Operations
7 Ridgedale Avenue 2nd Floor
Cedar Knolls, NJ 07927

SUBJECT: Letter Work Plan Addendum for Parcel 34 (Building 2567)
Fort Monmouth, New Jersey
PI G000000032

References:

1. Army letter to NJDEP dated 4 August 2016, re: *Revised Letter Work Plan Addendum (LWPA) for Parcel 34, Building 2567, Fort Monmouth, New Jersey* (August 2016 Revised LWPA)
2. Army letter to NJDEP dated 28 December 2016, re: *LWPA for Parcel 34, Building 2567, Fort Monmouth, New Jersey* (December 2016 LWPA)

Dear Mr. Joshi:

The purpose of this August 2017 Letter Work Plan Addendum (LWPA) is to address volatile organic compound (VOC) exceedances in groundwater encountered during the work described in previous LWPAs at Parcel 34 (References 1 and 2). This LWPA proposes the installation of one additional monitoring well to horizontally delineate groundwater VOC exceedances at the former Gasoline Underground Storage Tank (UST) at Building 2567, located within the Charles Wood Area (CWA) of Fort Monmouth (FTMM). This site is also known as Installation Restoration Program (IRP) Site FTMM-58. This LWPA addresses petroleum-related VOCs in groundwater only; soil VOC exceedances have been previously delineated (Reference 2), and a separate tert-butyl alcohol (TBA) plume in FTMM-58 groundwater has been and is being addressed in separate annual groundwater monitoring reports.

Work performed under the August 2016 Revised LWPA (Reference 1) included soil borings and groundwater sampling from temporary wells. Based on the results of the soil sampling, exceedances of NJDEP soil remediation standards were delineated both vertically and horizontally. Analytical results from the groundwater samples collected from temporary wells TMW-34-SB-05 and TMW-34-SB-06 exceeded the NJDEP Ground Water Quality Criteria (GWQC) for several petroleum-related VOCs including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethyl benzene, propylbenzene and xylenes; see **Table 1**, attached.

Work performed under the December 2016 LWPA (Reference 2) included installing two permanent monitoring wells (2567-MW-08 and 2567-MW-10) near TMW-34-SB-05 and TMW-34-SB-06 to confirm the results of the August 2016 groundwater sampling, in addition to an

upgradient permanent monitoring well (2567-MW-09) to confirm the absence of an upgradient source. Groundwater results from samples collected at 2567-MW-10 exceeded the NJDEP GWQC for several petroleum-related VOCs including 1,2,4-trimethylbenzene, benzene, and xylenes (**Table 1**). No exceedances were observed at the other permanent well locations (2567-MW-08 and 2567-MW-09). The locations of petroleum-related VOC exceedances in groundwater are shown on **Figure 1**, attached. Based on the previous monitoring results, the groundwater exceedances have not been horizontally delineated in the southwest (cross-gradient) direction, which is the focus of this LWPA.

One new permanent monitoring well is proposed to be installed to complete the horizontal delineation of petroleum-related VOCs in the southwest direction. New well 2567-MW-11 is proposed to be installed approximately forty feet southwest of 2567-MW-10 at the location shown on **Figure 1**. New monitoring well 2567-MW-11 will be installed with a 10-foot screen that will extend two feet above the water table. The new monitoring well will be developed and, following a stabilization period of at least 14 days, sampled as described below.

To support delineation of the petroleum-related VOC exceedances, groundwater samples will be collected from one upgradient well (2567-MW-09), two monitoring locations within the plume (2567-MW-08 and 2567-MW-10), two side gradient locations (2567-MW-02 and the newly installed wells 2567-MW-11), and one downgradient location (2567-MW-03; see **Figure 1**). Groundwater samples from each monitoring well will be collected using the NJDEP low flow purge and sample method (to obtain a low turbidity sample) and analyzed for VOCs plus tentatively identified compounds (VOCs+TICs; **Table 2**, attached). Two samples will be collected from each well including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's *Field Sampling Procedures Manual* (August 2005). In addition, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity will be measured during well purging. Water level measurements will be collected from all eleven FTMM-58 site permanent wells during the same field event as the proposed groundwater sampling.

We look forward to your review of this proposed sampling plan, and approval or additional comments. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or by email at kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

William R Colvin

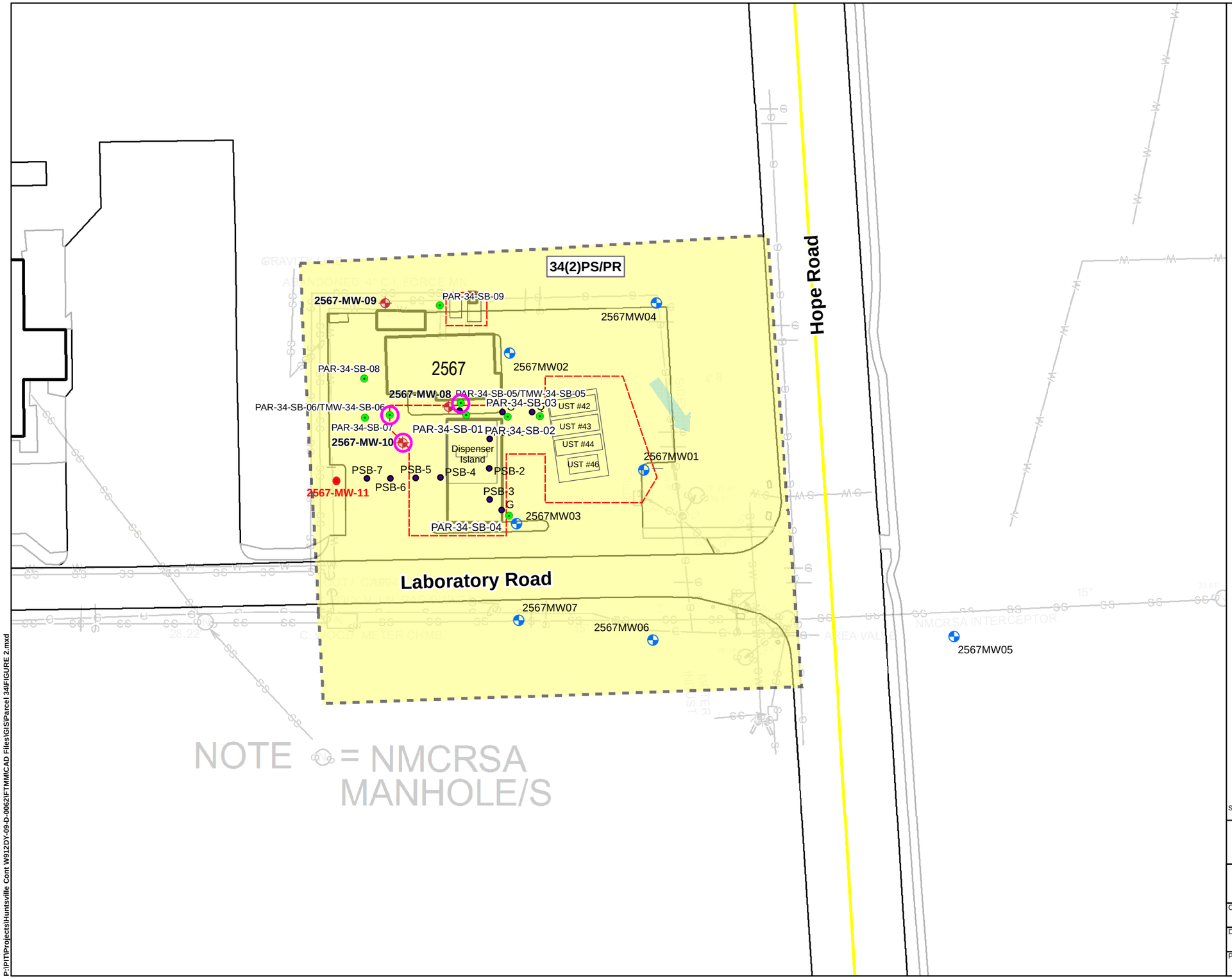
William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

Attachments:

Figure 1 Parcel 34 Layout and Proposed Groundwater Monitoring Well
Table 1 Detected Groundwater Sampling Summary Results
Table 2 Sampling Summary for Parcel 34

cc: Mr. Ashish Joshi, NJDEP (e-mail and 2 hard copies)
William Colvin, FTMM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

Figure 1
Parcel 34 (Building 2567) Layout and
Proposed Groundwater Monitoring Well



LEGEND:

- Groundwater Monitoring Wells (2017)
- Surface/Subsurface Soil Sample Location (for analysis of VOCs) (2016)
- Historical Soil Sample (1993, 2013)
- Parcel 34 Boundary
- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Excavation Area
- Generalized Groundwater Flow Direction
- 2567-MW-11 Proposed Monitoring Well Location
- New Jersey Ground Water Quality Criteria (GWQC) petroleum related VOCs exceedances.

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description: HS – Hazardous Substance Storage; HR – Hazardous Substance Release; PS – Petroleum Storage; PR – Petroleum Release; (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 34\FIGURE 2.mxd

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

PARCEL 34 LAYOUT AND PROPOSED GROUNDWATER MONITORING WELL

CREATED BY:	REVIEWED BY:
RR	CM
DATE: MAR. 2017	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06014	FILE: FIGURE 2.mxd

Table 1
Detected Groundwater Sampling Summary Results – Comparison to NJDEP Ground Water Quality Standards

TABLE 1
DETECTED GROUNDWATER SAMPLING SUMMARY RESULTS
PARCEL 34
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	P34-TMW-05	P34-TMW-06	P34-GW-2567MW08			P34-GW-2567MW09	P34-GW-2567MW10	
Sample ID		PAR-34-TMW-05	PAR-34-TMW-06	PAR-34-GW-2567MW08-10.5	PAR-34-GW-2567MW08-5.5	PAR-34-GW-2567MW108-5.5	PAR-34-GW-2567MW09-8.52	PAR-34-GW-2567MW10-10.5	PAR-34-GW-2567MW10-5.5
Sample Date		8/12/2016	8/12/2016	4/5/2017	4/5/2017	4/5/2017	4/5/2017	4/5/2017	4/5/2017
Filtered		Total	Total	Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)									
1,2,4-Trimethylbenzene	100	**2,440**	**344**	**0.99 J**	**1.2**	**1.1**	< 0.33	**58.7**	**197**
1,3,5-Trimethylbenzene	100	**560**	**109**	< 0.33	< 0.33	< 0.33	< 0.33	**15.3**	**54.3**
Benzene	1	**441**	< 1.7	< 0.33	< 0.33	< 0.33	< 0.33	**18.1**	**63.5**
Ethyl benzene	700	**1,290**	**28**	< 0.33	**0.44 J**	**0.39 J**	< 0.33	**72.9**	**296**
Meta/Para Xylene	1,000	**4,810**	**167**	< 0.66	< 0.66	< 0.66	< 0.66	**231**	**1,020**
Propylbenzene	100	**446**	**80.2**	**0.38 J**	**0.59 J**	**0.47 J**	< 0.33	**23**	**48.1**
Total Xylenes	1,000	NA	NA	< 1	< 1	< 1	< 1	**304**	**1,330**

Footnotes:

- Chemical results collected in April 2017 did not go through the data validation process.

- Bold = chemical dectection

- J = estimated detected value due to a concentration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria.

- NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria.

A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010

Table 2
Sampling Summary for Parcel 34 Letter Work Plan Addendum

TABLE 2
SAMPLING SUMMARY FOR PARCEL 34
FORT MONMOUTH, NEW JERSEY

Site	Location	Field Meter Readings [a/]	VOCs+TICs by Method 8260C b/ Including TBA	Rationale
Groundwater				
Parcel 34 (Building 2567)	VOCs Groundwater Horizontal Delineation (Figure 1): 1 monitoring well, up to 2 samples each.	1 monitoring well	2	Monitoring wells 2567-MW-11 is to be installed southwest of 2567-MW-10 to delineate horizontal extent of petroleum related VOCs groundwater exceedances. Two samples will be collected from 2567-MW-11, including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's Field Sampling Procedures Manual (August 2005).
Parcel 34 (Building 2567)	VOCs Groundwater Plume Delineation (Figure 1): 5 monitoring wells, up to 2 samples each.	5 monitoring wells	10	Monitoring wels 2567-MW-02, 2567-MW-03, 2567-MW-08, 2567-MW-09, and 2567-MW-10 will be sampled to delineate the horizontal extent of petroleum related VOCs groundwater exceedances at Parcel 34. Two samples will be collected from each well, including one sample with the pump intake positioned at the midpoint of the top 5 feet of saturated screen and one sample with the pump intake positioned at the midpoint of the bottom 5 feet of saturated screen, in accordance with NJDEP's Field Sampling Procedures Manual (August 2005).
QA/QC samples (see SAP for additional details) [c/]				
Field Duplicates (5% Sampling Frequency per media)		NA	1	
Matrix Spike (5% Sampling Frequency per media)		NA	1	
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	
Trip Blank (1 per cooler of VOCs per media)		NA	1	
QA Split (5% per media)		NA	1	
Equipment Blank (5% Sampling Frequency per media)		NA	1	
	TOTAL	**NA**	**18**	

Notes:

NA = not applicable.

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspace, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

[b/] VOCs = volatile organic compounds.

[c/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan. The requirement for QA/QC samples may be fulfilled with samples from other parcels.

APPENDIX B
Historical Information

1. Underground Storage Tank Closure and Site Assessment Report for Tank 33 and 46. October 1993
2. Underground Storage Tank Closure and Site Assessment Report for UST Nos 42, 43, 44, and 45, and Spill Case No 89-12-12-1442 and 97-8-27-1414. January 1995
3. Historical Soil Analytical Results, FTMM-58, ECP Addendum Report.
4. Final Remedial Investigation Report and Remedial Action Work Plan Site 2567. October 2005
5. Excerpts from U.S. Army BRAC. 2008. *Site Investigation Report Fort Monmouth*. Final. July 2008
6. Analytical Data Report. 14 October 2008
7. Bedrock Geology of the Long Branch Quadrangle Monmouth County, New Jersey
8. Injection Point Location Maps (First, Second and Third Injection Events)
9. Parsons, 2016. Appendix A from: *Annual (Fourth Quarter) 2016 Groundwater Sampling Report, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. October.

UNDERGROUND STORAGE TANK CLOSURE AND SITE ASSESSMENT REPORT BUILDING 2567 TANKS 33 AND 46

October 1, 1993

W.O. No.: 03886-088-001

Prepared For:

UNITED STATES ARMY, FORT MONMOUTH NEW JERSEY
DIRECTORATE OF ENGINEERING AND
HOUSING ENVIRONMENTAL OFFICE
BUILDING 167
FORT MONMOUTH, NJ 07703

Prepared by:

ROY F. WESTON, INC.
Raritan Plaza I, 4th Floor
Edison, New Jersey 08837

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WESTON
MANAGERS DESIGNERS/CONSULTANTS

EXECUTIVE SUMMARY

On 31 December 1991, two single wall, steel underground storage tanks (USTs) were closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. The USTs, identified as Tanks 33 and 46, were located adjacent to Building 2567 in the Charles Wood section of Fort Monmouth. Tank 33 was a 1,000-gallon capacity, No.2 fuel oil tank. Tank 46 was a 500-gallon capacity, waste oil tank. The tanks were located immediately adjacent to one another and were closed simultaneously. Fabiano and Son, Inc. performed the tank closures.

Soils surrounding the tanks were screened visually and with air monitoring instruments for evidence of contamination. The tanks were inspected following removal for corrosion holes for indications of historical leakage from the tanks. No holes were noted in the tanks and no potentially contaminated soils were identified surrounding the tanks. It should be noted, however that U.S. Army Directorate of Engineering and Housing Environmental office (DEH) records indicated that Tank 46 was never in use. This was confirmed during closure and inspection of Tank 46.

Following removal of the tanks, eight post-excavation soil samples were collected and analyzed for total petroleum hydrocarbons (TPHC). Those samples which contained a concentration of TPHC exceeding 100 milligrams per kilogram (mg/kg) were also analyzed for base neutral compounds with a forward library search for 15 tentatively identified compounds (BN+15). Only one sample (sample C91-675) contained a concentration (190 mg/kg) of TPHC exceeding 100 mg/kg. All samples contained either non-detectable concentrations of contaminants or concentrations below proposed New Jersey Department of Environmental Protection and Energy (NJDEPE) subsurface cleanup criteria.

This site is currently undergoing a groundwater investigation to address groundwater contamination identified during closure of four(4) gasoline USTs in February 1993 (NJDEPE case #89-12-12-1442). Approximately 1,000 cubic yards of potentially contaminated soils and four(4) groundwater monitoring wells were installed as part of closure of Tanks 42, 43, 44, and 45. The closure of Tanks 33 and 46 are being conducted separately from these tanks.

No further action is proposed at this site in reference to Tanks 33 and 46 since no soils were identified during closure of these tanks with concentrations of contaminants exceeding proposed NJDEPE subsurface cleanup criteria.

SECTION 1.0

UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 Overview:

Two underground storage tanks (USTs), identified as Tanks 33 and 46, were closed at Building 2567 at Fort Monmouth, New Jersey on 31 December 1991. This Underground Storage Tank (UST) Closure and Site Assessment Report was prepared by Roy F. Weston Inc., (WESTON®) to assist the United State Army Directorate of Engineering and Housing (DEH) in complying with the New Jersey Department of Environmental Protection and Energy - Bureau of Underground Storage Tanks (NJDEPE-BUST) regulations. The applicable NJDEPE-BUST regulations at the date of closure were the "Interim Closure Requirements for Underground Storage Tank Systems" (NJAC 7:14B-1 et seq. September 1990). This report presents the results of the DEH's implementation of the UST Decommissioning/Closure Plans submitted to the NJDEPE on 12 July 1991. Tank 33 was a 1,000 gallon capacity No.2 heating oil UST and Tank 46 was a 500-gallon capacity waste oil tank.

All activities associated with the decommissioning of Tanks 33 and 46 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to: NJAC 7:14B-1 et seq., NJAC 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 &1910.120. All permits including but not limited to the NJDEPE-approved Decommissioning/Closure Plans were posted on site for inspection. Fabiano and Sons Inc., the contractors that conducted the decommissioning activities, are registered and certified by the NJDEPE for performing UST closure activities. The UST Decommissioning/Closure Plans and the UST Site Assessment Summary Forms for Tanks 33 and 46 have been included in Appendices A and B, respectively.

Based on an inspection of the USTs, field screening of subsurface soils and analytical results of soil samples collected, DEH concluded that no discharges historically occurred from the USTs. This UST Closure and Site Assessment Report provides a summary of the tank closure activities, including the results of the soil sampling investigation. Conclusions and recommendations are included in the final section of this report.

1.2 Site Description

Building 2567 is located on Hope Road in the Charles Wood section of Fort Monmouth. A site location map is provided in Figure 1-1. Building 2567 is an active gasoline service station. Four additional USTs (identified as Tanks 42-45) containing gasoline were closed at Building 2567 in February 1993 (Closure Approval No.C-92-3355/56). Approximately 1,000 cubic yard of potentially contaminated soils were removed and four groundwater monitoring wells were installed as part of closure of these tanks. The closure of these tanks and subsequent groundwater investigation is being conducted separately (NJDEPE case #89-12-12-1442) from the closure of Tanks 33 and 46.

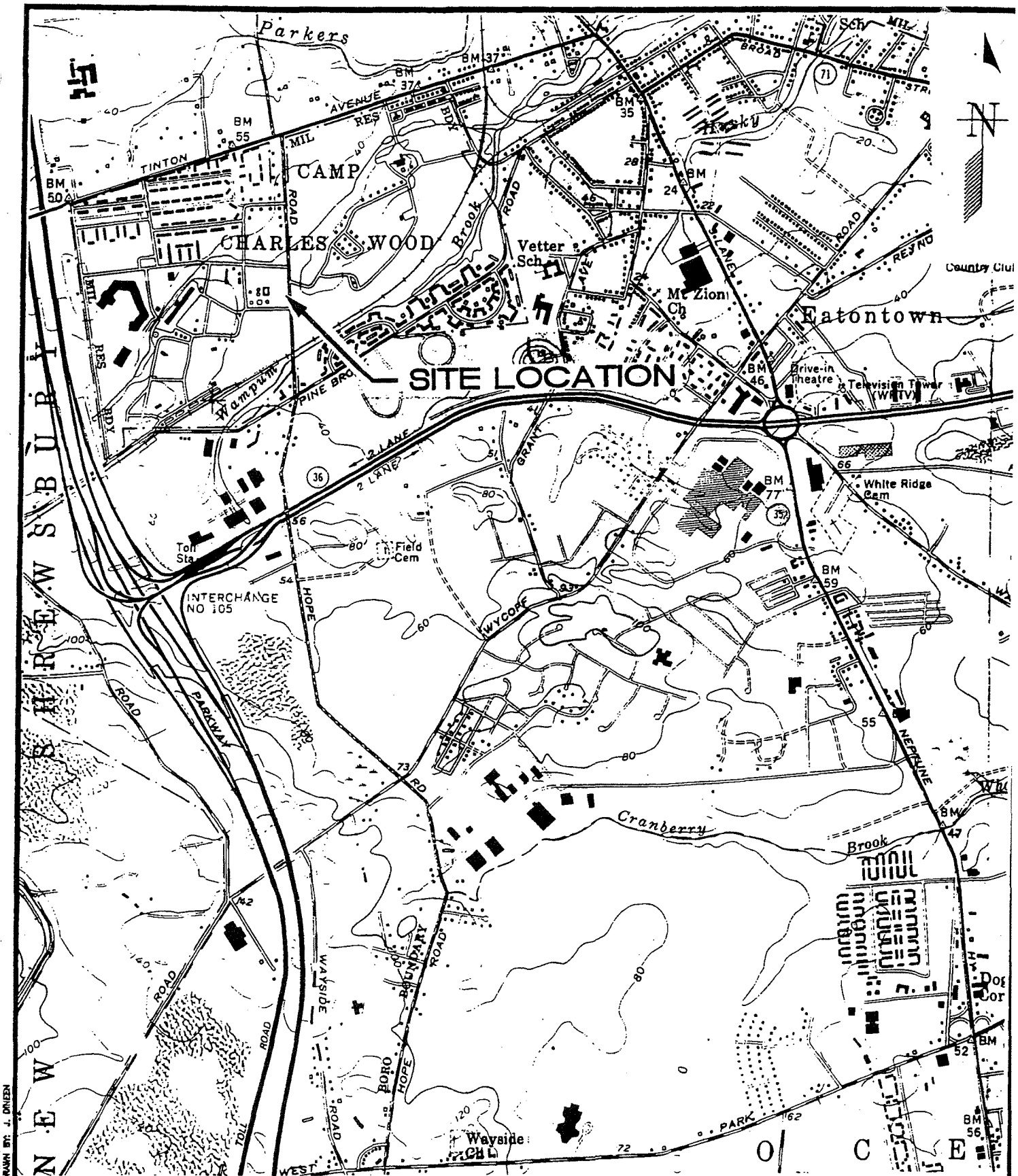
1.3 Health and Safety

Before, during, and after all activities, hazards at the work site which may have posed a threat to the health and safety of all personnel who were involved with, or were affected by, the decommissioning of the UST systems were minimized. All areas which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing approved equipment. The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.4 Removal of Underground Storage Tanks

1.4.1 General Procedures

- All underground obstructions (utilities,... etc.) were marked out by the contractor performing the closure prior to excavation activities.
- All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.
- All excavated soils were screened visually and with air monitoring instruments for evidence of contamination. No potentially contaminated soils were identified during closure activities.
- Surface materials (i.e, asphalt, concrete, etc...) were excavated and staged separate from all soils.
- A Sub-Surface Evaluator from the DEH was present during all closure activities.



SOURCE: U.S.G.S. LONG BRANCH NJ, QUADRANGLE, MONMOUTH COUNTY, 1954 (PHOTOREVISED 1981) SCALE: 1" =

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURE AND SITE ASSESSMENT REPORT
BUILDING 2567
FORT MONMOUTH, NEW JERSEY

CLIENT NAME: U.S. ARMY-DEH FORT MONMOUTH

SITE LOCATION MAP

DATE: 09/27/93

FIGURE #: 1-1

REVISION #: 0000 Lo... 09/27/93 PLOT NAME: FORTSITE
FILE NAME: SITE_LOC.DWG DRAWN BY: J. DINEEN

1.4.2 Underground Storage Tank Excavation

Soil was excavated to expose the USTs and associated piping. The piping was not removed/disturbed until all free product was drained into the USTs. The USTs were rendered vapor free by purging prior to any cutting or access. After the removal of the associated piping, manways were made in the USTs to allow for the proper cleaning of the USTs. The USTs were completely emptied of all liquids prior to removal of the USTs from the ground. Liquids were transported and disposed of by L and L Oil Co. All of the openings in the tanks were plugged except for one hole (manway).

After each UST was removed from the excavation, it was staged on polyethylene sheeting and examined for corrosion holes. The presence or absence of corrosion holes was documented by the Sub-Surface Evaluator. No corrosion holes were observed upon the inspection of each of the USTs. Soils surrounding the USTs were screened visually and with a Flame Ionization Detector (FID) for evidence of contamination. No evidence of contamination was noted. During removal of Tank 46, the 550 gallon waste oil tank, it was determined that this tank had never been in use. This was consistent with observations made by the NJDEPE representative present during removal of the tanks.

1.5 Underground Storage Tank Transportation and Disposal:

The tanks were transported by Fabiano and Sons and recycled by Mazza and Sons Inc., in compliance with all applicable regulations and laws.

The Subsurface Evaluator labelled each tank prior to transport with the following information:

- site of origin,
- contact person,
- NJDEPE UST Facility ID number,
- name of transporter/contact person, and
- destination site/contact person.

1.6 Management of Excavated Soils:

No potentially contaminated soils were excavated as part of the removal of Tanks 33 and 46. All soils were free of evidence of contamination and were backfilled into the excavation following removal of the USTs.

SECTION 2.0

SITE ASSESSMENT ACTIVITIES

2.1 Overview:

The Site Assessment was managed and carried out by U.S ARMY DEH personnel. All analyses were performed and reported by Environmental Profile Laboratories, a NJDEPE-certified testing laboratory. All sampling was performed under the direct supervision of a NJDEPE Certified Sub-Surface Evaluator according to the methods described in the NJDEPE Field Sampling Procedures Manual (1988). Sampling frequency and parameters analyzed complied with the NJDEPE-BUST document "Interim Closure Requirements for Underground Storage Tank Systems " (September 1990) which was the applicable regulation at the time of the closure. All records of the Site Assessment activities are maintained by Fort Monmouth DEH: Environmental Office.

The following Parties participated in Closure and Site Assessment activities.

- Subsurface Evaluator: DINKERRAI DESAI
  Employer: U.S. Army, Fort Monmouth
  Phone Number: (908) 532-1475

- Analytical Laboratory: Environmental Profile Laboratories
  Contact Person: DANIEL WRIGHT
  Phone Number: (908) 244-6278

- NJDEPE Representative: DOUG GREENFIELD
  DIVISION OF HAZARDOUS WASTE MANAGEMENT
  Phone Number: (609) 584-4200

- Closure Contractor: FABIANO AND SONS.
  Contact Person: Mr. Fabiano

2.2 Field Screening/Monitoring

All soils that were excavated as part of the removal of the USTs were screened using a FID, for evidence of contamination. Soils were also visually screened for evidence of contamination (staining, free product, etc..). No evidence of contamination was noted during excavation of soils.

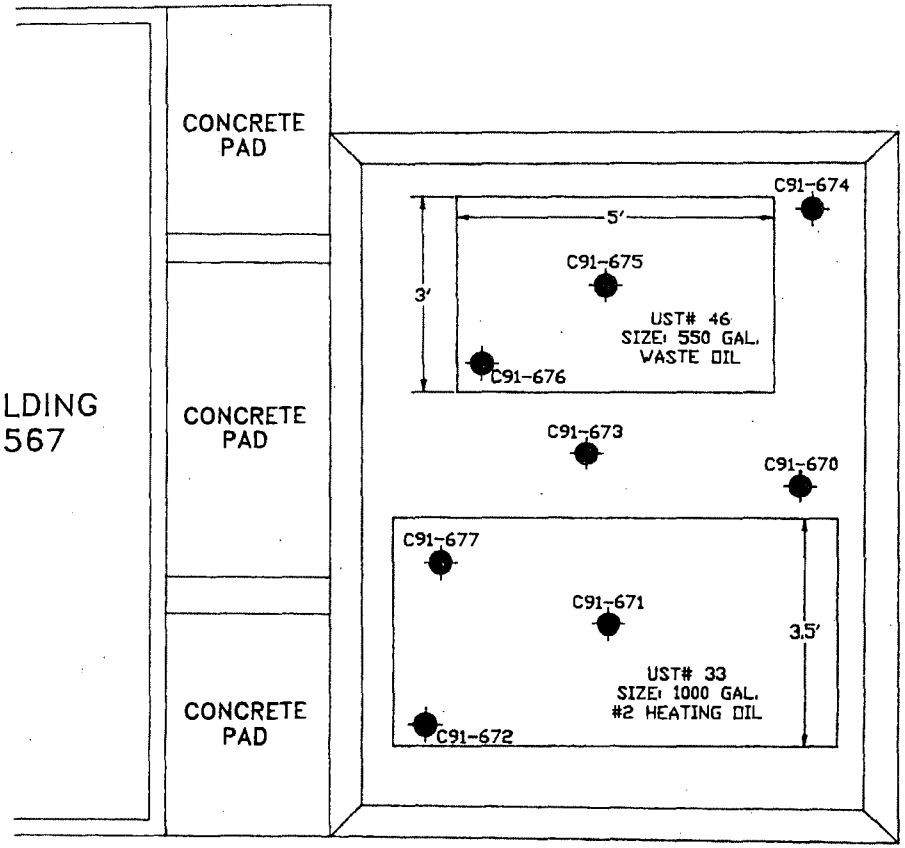
Soils on the sides and base of the excavation were screened with a FID by an individual under the direct supervision of a NJDEPE Certified Sub-Surface Evaluator. No evidence of contamination was noted within soils on the sidewalls or base of the excavation.

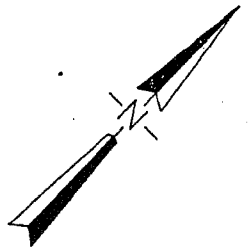
2.3 Soil Sampling

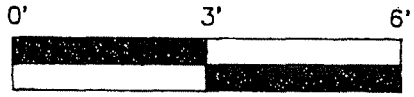
Following removal of Tanks 33 and 46, eight post-excavation soil samples were collected in accordance with NJDEPE procedure and the approved closure plan. A summary of sampling activities including parameters analyzed is provided in Table 2-1. Figure 2-1 depicts the location of the post-excavation samples. The samples were typically collected along the base and sidewalls of the excavation using decontaminated stainless steel scoops. Following soil sampling activities, the samples were chilled and delivered to Environmental Profile laboratories located in Toms River, New Jersey.

All samples were analyzed for total petroleum hydrocarbons (TPHC), and in accordance with NJDEPE requirements, samples containing a concentration exceeding 100 milligrams per kilograms (mg/kg) of TPHC were also analyzed for base neutral compounds with a forward library search for fifteen tentatively identified compounds (BN+15). Based on the TPHC analytical results, one sample (C91-675) was analyzed for BN+15.

Analytical parameters for post-excavation samples associated with Tank 46, the 550 gallon waste oil tank, were reduced from a priority pollutant scan plus 40 tentatively identified compounds (PP+40) based on the determination that the tank was never in use. This revised approach was verbally approved by the NJDEPE representative present onsite during closure of Tanks 33 and 46.







SCALE 1" = 3'

C91-670 – POST-EXCAVATION SAMPLE LOCATION

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PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURE
AND SITE ASSESSMENT REPORT
BUILDING 2567
FORT MONMOUTH NEW JERSEY
CLIENT NAME: U.S. ARMY-DEH
FORT MONMOUTH

POST-EXCAVATION SAMPLE LOCATIONS UST#'s 33 & 46

DATE:

FIGURE #:

REVISION #: 0001 DATE: 09/22/93
FILE NAME: FORT-NON.DWG DRAWN BY: J. DINEEN

WESTON
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TABLE 2-1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
TANK NOS. 33 AND 46
BUILDING NO. 2567
FORT MONMOUTH, NEW JERSEY

Sample I.D No.	Matrix	Sample Type	Analytical Parameters	Sampling Method
C91-670	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-671	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-672	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-673	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-674	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-675	Soil	Post-Excavation	TPHC* BN+15	Stainless Steel Scoop
C91-676	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop
C91-677	Soil	Post-Excavation	TPHC*	Stainless Steel Scoop

TPHC - Total Petroleum Hydrocarbons. Those samples which contained concentrations of TPHC exceeding 100 mg/kg were also analyzed for BN+15.

BN+15 - Base neutral compounds with a forward library search for 15 tentatively identified compounds.

SECTION 3.0

CONCLUSIONS AND RECOMMENDATIONS

3.1 Soil Sampling Results

To evaluate soils conditions following removal of the USTs and associated soils, the post-excavation sample results were compared to proposed NJDEPE subsurface cleanup criteria (NJAC 7:26D and revisions dated 8 March 1993). A summary of the analytical results and applicable subsurface cleanup criteria are provided in Table 3-1. The analytical data package is provided in Appendix C.

TPHC was detected in samples C91-675 and C91-676 at concentrations of 190 mg/kg and 20 mg/kg, respectively. All other samples contained non-detectable concentrations of TPHC. Sample C91-675 contained TPHC at a concentration (190 mg/kg) exceeding 100 mg/kg and as required by NJDEPE, this sample was analyzed for BN+15. Di-n-butylphthalate, butylbenzylphthalate and bis(2-Ethylhexyl) phthalate were detected in sample C91-675; however, at concentrations well below proposed NJDEPE subsurface cleanup criteria. Several tentatively identified base neutral compounds were identified in sample C91-675; however, at concentrations well below proposed NJDEPE subsurface cleanup criteria.

3.2 Conclusions and Recommendations:

DEH successfully removed two USTs at Building 2567 in the Charles Wood section of Fort Monmouth. Based on visual inspection of the USTs and field screening of the soils adjacent to the USTs, it was determined that no discharges had occurred from the USTs. Analytical results of the post-excavation samples confirm that no soils are present with concentrations of contaminants exceeding proposed NJDEPE subsurface cleanup criteria.

No further action is proposed at building 2567 in reference to Tanks 33 and 46.

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TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS
TANK NOS. 33 AND 46
BUILDING NO. 2567,
FORT MONMOUTH, NEW JERSEY

Sample ID No.		C91-670	C91-671	C91-672	C91-673	NJDEPE Proposed Subsurface Cleanup Criteria
Lab ID No.		7013.1	7013.2	7013.3	7013.4	
Matrix		Soil	Soil	Soil	Soil	
Sample Type		PE	PE	PE	PE	
Analytical Parameter	Units					
TPHC	mg/kg	ND	ND	ND	ND	NC

Sample ID No.		C91-674	C91-675	C91-676	C91-677	NJDEPE Proposed Subsurface Cleanup Criteria
Lab ID No.		7013.5	7013.6	7013.7	7013.8	
Matrix		Soil	Soil	Soil	Soil	
Sample Type		PE	PE	PE	PE	
Analytical Parameter	Units					
TPHC	mg/kg	ND	190	20	ND	NC
Base Neutral Compounds						
Di-n-butylphthalate	mg/kg	NA	1.6	NA	NA	100
Butylbenzylphthalate	mg/kg	NA	.68	NA	NA	100
Bis(2-Ethylhexyl) phthalate	mg/kg	NA	.51	NA	NA	100

TPHC - Total Petroleum Hydrocarbons
PE - Post-Excavation.
ND - Non-Detected.
NC - No cleanup criterion has been proposed for TPHC by NJDEPE; however, the proposed NJDEPE subsurface cleanup criterion for total organic compounds is 10,000 mg/kg.
NA - Not analyzed.
mg/kg - Milligrams per Kilogram

APPENDIX A

UST CLOSURE PLANS

The following UST Closure Plans for Tanks 33 and 46 were submitted by DEH to the NJDEPE in July 1991. Written Closure approvals were not received by DEH for Tanks 33 and 46; however, closure of these tanks proceeded under verbal approval by the NJDEPE Division of Hazardous Waste Management.

UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2567 NJDEP FACILITY UST NO. 081515 UST NOS. 42, 43, 44 AND 45 TMS NO. C-92-2950 SPILL CASE NOS. 89-12-12-1442 AND 91-8-27-1414

Volume 1 of 2

January 1995

Work Order No.: 03886-088-001

Prepared For:

UNITED STATES ARMY
Directorate of Public Works
Building 167
Fort Monmouth, New Jersey 07703

Prepared by:

ROY F. WESTON, INC.
Raritan Plaza I
4th Floor
Raritan Center
Edison, New Jersey 08837

WESTON
MANAGERS DESIGNERS/CONSULTANTS

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VOLUME 2

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EXECUTIVE SUMMARY

On 12 December 1989, the Directorate of Public Works (DPW) notified the New Jersey Department of Environmental Protection and Energy (NJDEP) of a suspected fuel leak at the Charles Wood gas station, Building 2567. Spill Case No. 89-12-12-1442 was assigned by the NJDEP. The U.S. Army-DPW investigated the suspected release by performing a tightness test of the premium gas line which was suspected of leaking. On 30 January 1990, this line passed the tightness test.

On 15 and 16 January 1991, routine tightness tests were performed of three underground storage tanks (USTs), identified as Nos. 42, 43, and 44. UST Nos. 42 and 44 passed the tank system tightness test, however UST No. 43 failed. In response to the failed tightness test, the DPW issued a purchase order for the removal of USTs of Building 2567 gas station and notified the NJDEP of the failed tightness test. NJDEP issued Spill Case No. 91-8-27-1414.

In response to the suspected discharges, four groundwater monitor wells were installed at the Building 2567 gas station on 9 October 1991. These wells were sampled on 10 December 1991 and sample results indicated lead and all volatile organic compounds were less than the NJDEP's Ground Water Quality Criteria, except for benzene, 1,2-dichloroethene, total xylene, and methylene chloride.

The groundwater monitor wells were resampled on 26 October 1992, 21 April 1993, 3 February and 31 March 1994. In general, the detected concentrations of volatile organic compounds declined during the subsequent samplings. However, lead was detected in groundwater samples at greater levels with each sampling. Results from 31 March 1994 indicated that all detected volatile organic compounds were less than the NJDEP's Class IIA Ground Water Quality Criteria, except for benzene, total xylene, and methylene chloride. Lead was detected only in monitor well MW-3 above the NJDEP's Class II A Ground Water Quality Criteria.

Concurrent with the groundwater sampling investigation program, the DPW pursued the closure of UST Nos. 42 through 45. On 26 June 1992, a UST Decommissioning/Closure Plan was submitted to the NJDEP, followed by submittal of an UST Closure Plan Approval Application on 5 August 1992. The NJDEP issued Closure Approval, TMS No. C-92-2950 on 14 September 1992.

During 2 to 5 February 1993, the four USTs were closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. UST Nos. 42 to 45 were located adjacent to Building 2567 in the Charles Wood area of Fort Monmouth. UST Nos. 42 to 44 were single walled steel, 10,000-gallon capacity, unleaded gasoline tanks. UST No. 45 was a single walled steel, 6,000-gallon capacity, leaded gasoline tank. UST Nos. 42 to 45 were located adjacent to each other. Cycle Construction Incorporated (CCI) performed the tank closure. The tanks were inspected

following removal for cracks, corrosion holes and puncture holes for indications of historical leakage from the tanks. UST Nos. 42 to 45 were found to be in good condition with no corrosion holes.

Soils surrounding the tanks were screened visually and with air monitoring instruments for evidence of contamination. Based on visual observations and screening approximately 936 cubic yards of soil were removed from the area surrounding the USTs and pump island. In both areas excavation was continued until either no evidence of contamination was found, based on field observations, or until further removal of soil would have endangered the integrity of structures, and roadways adjacent to the areas of investigation. Despite the groundwater levels in the monitoring wells, groundwater was not encountered until the excavation reached 7 feet BGS. The excavations were therefore extended to 7 feet BGS when necessary. When the excavation was completed the area was backfilled with clean soil and the surface paved.

Post excavation soil sample were collected on 2 February 1993 and 24 February 1993. Soil samples were analyzed for total petroleum hydrocarbons (TPHC), volatile organic compounds, and lead. Analytical results were compared to both the Impact to Ground Water (ITGW) and Residential Direct Contact (RDC) Soil Cleanup Criteria established by NJDEP. TPHC and lead were detected in post-excavation samples, however, the results were below both the ITGW and RDC soil cleanup criteria. Thirteen of 23 samples analyzed for volatile organics exceeded the ITGW and/or RDC soil cleanup criteria for xylenes, benzene, or ethylbenzene.

Based on the reduction in groundwater contaminant levels, future impact on the environment is not anticipated. The reduction in groundwater contaminant levels is attributable to the following:

- The contaminant sources, tank Nos. 42 to 45, 936 cubic yards of soil and the pump island piping were successfully removed. The analytical testing of soil had indicated that limited residual contamination exists in the soil below the surface.

- The site was backfilled with clean material and paved. The asphalt pavement caps the site and precludes the infiltration of precipitation and other surface water to the ground, which reduces the potential for residual soil contaminants leaching from the soil into the groundwater.

On 23 September 1994 one additional monitoring well (MW-5) was installed to determine if contaminants were present downgradient from the site. Well MW-5 is located southeast of the site on the eastern side of Hope Road. The well was placed downgradient of the site based on previous groundwater level measurements. Well MW-5 will be used for future sampling events and to confirm groundwater flow patterns on the site. An addendum to this report will be provided to the NJDEP when groundwater sample analysis is complete.

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SECTION 1.0

UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

On 5 February 1993, four underground storage tanks (USTs), UST Nos. 42 to 45, were closed at Building 2567 at U.S. Army Fort Monmouth, New Jersey. UST Nos. 42 to 44 were single wall steel, 10,000-gallon capacity, unleaded gasoline tanks. UST. No. 45 was a single wall steel, 6,000-gallon capacity, leaded fuel tank. UST Nos. 42 to 45 were located immediately adjacent to each other. This report presents the results of the DPW's implementation of the UST Decommissioning/Closure Plan submitted to the NJDEP-DHWM on 26 June 1992 and approved 14 September 1992 (Closure approval No. C-92-2950).

All activities associated with the decommissioning of UST Nos. 42 to 45 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to: N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., N.J.A.C. 7:26E-1 et seq. and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.146 & 29 CFR 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. Cycle Construction, Inc. (CCI), the contractors that conducted the decommissioning activities, are currently registered and certified by the NJDEP for performing UST closure activities.

The NJDEP Closure Approval and correspondence with the NJDEP have been included in Appendix A. The UST Site Assessment Summary Form for UST Nos. 42 to 45 has been included in Appendix B. The UST Site Assessment Summary Form has been signed and sealed by Mr. James Ott, Acting Director of DPW, U.S. Army Fort Monmouth.

This UST Closure and Site Investigation Report was prepared by Roy F. Weston Inc. (WESTON®), to assist the United State Army Directorate of Public Works (DPW) in complying with the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST) regulations.

Section 1 of this UST Closure and Site Investigation Report provides a summary of the tank decommissioning activities. Section 2 of this report describes the site investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in the final section of this report.

The applicable NJDEP-BUST regulations at the date of closure were the "Technical Requirements for Site Remediation" (N.J.A.C. 7:26E-1 et seq., dated May 1992).

1.2 SITE DESCRIPTION AND UST HISTORY

Building 2567 is located off Laboratory Road in the Charles Wood area of U.S. Army, Fort Monmouth. A facility location map is provided in Figure 1-1. Building 2567 is used as the installation gas station and is situated on level ground. The gasoline dispenser area was located approximately 50 feet west of the UST field. A pipe chase approximately 60 feet in length connected the dispenser area to the UST field. Figure 1-2 provides a site map of the former UST location and dispenser area.

On 12 December 1989, the Directorate of Public Works (DPW) notified the New Jersey Department of Environmental Protection and Energy (NJDEP) of a fuel leak at the Charles Wood gas station, Building 2567 (Case No. 89-12-12-1442).

On 30 January 1990, a tightness test was conducted on the premium gasoline line by Herbert Lutz and Company located in Linden, New Jersey. The line tested tight.

On 15 and 16 January 1991, three underground storage tanks (USTs) identified by Nos. 42, 43, 44 and 45 were tightness tested by Tank Test Inc. (TTI). UST Nos. 42 and 44 passed the tank system tightness test, although UST No. 43 failed.

On 1 August 1991, a purchase order to obtain permits for the removal of USTs at Buildings 2567, 8003, 8005 and 8006 was sent to the NJDEP by E-Systems Inc./Serv-Air (SAI).

On 27 August 1991, the NJDEP was notified of the UST which failed the tank system tightness test on 15 and 16 January 1991 (Case No. 91-8-27-1414). In response, the UST was placed out of service and the closure, remediation and construction of a new facility at that location was planned and coordinated by the DPW.

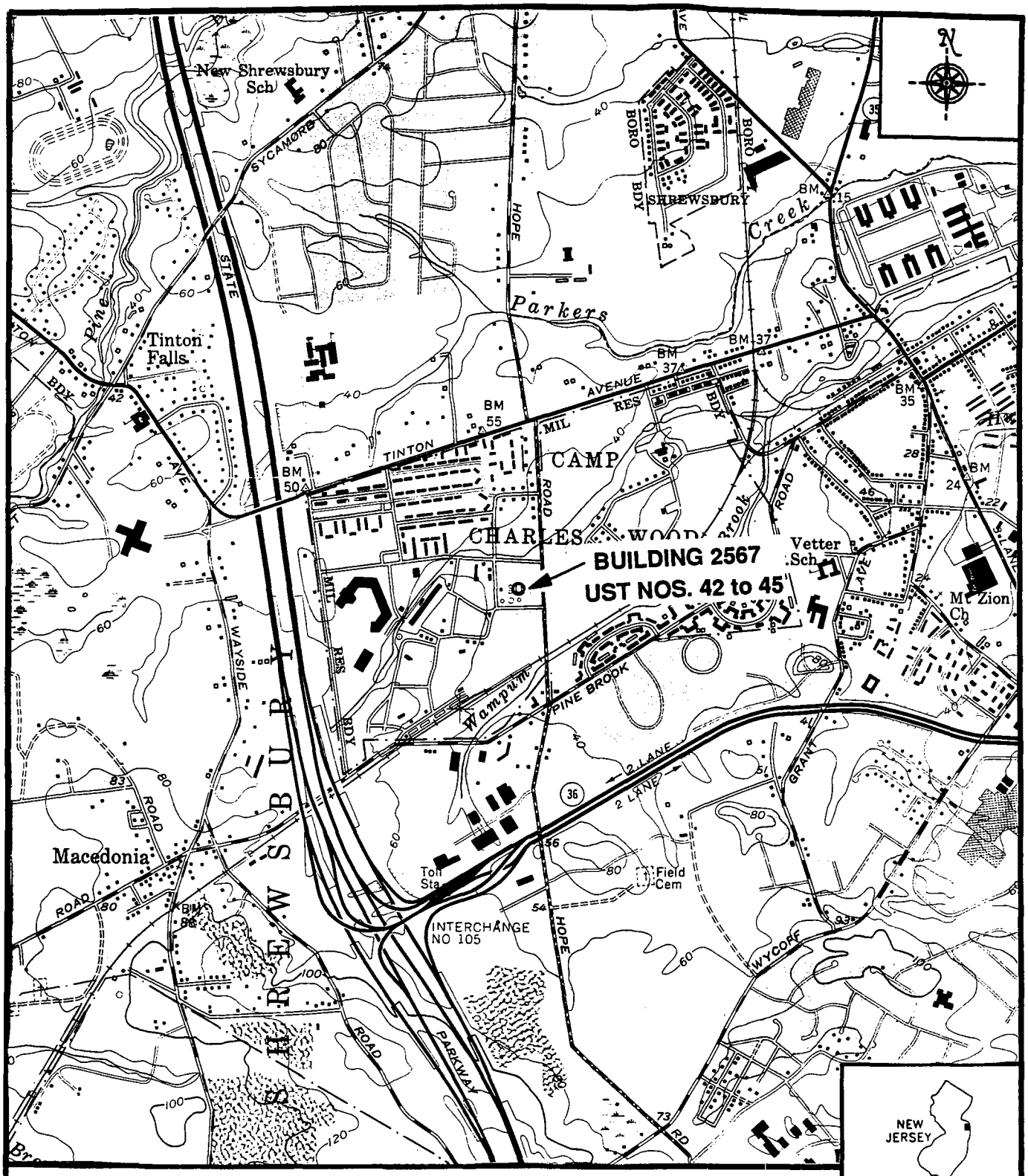
On 26 June 1992, a UST Decommissioning/Closure Plan was submitted to NJDEP.

On 5 August 1992, a UST Closure Plan Approval Application was submitted to NJDEP. The state responded on 14 September 1992 with a Closure Approval (TMS No. C-92-2950).

On 29 October 1992, a pre-construction conference was conducted between CCI and DPW.

On 24 November 1992, DPW sent a correspondence to NJDEP requesting a one year extension for the existing closure permits.

Between 2 and 5 February 1993, four USTs were closed at U.S. Army Fort Monmouth, in Fort Monmouth, New Jersey. UST Nos. 42 to 45 were located adjacent to Building 2567 in the Charles Wood area of Fort Monmouth. UST Nos. 42 to 44 were single walled steel, 10,000-



REFERENCE: U.S.G.S. QUADRANGLE LONG BRANCH, NJ: PHOTOREVISED 1981
CONTOUR INTERVAL 20 FEET SCALE 1 INCH = 2000 FEET

UST LATITUDE: N 40 Deg. 17 Min. 44 Sec.
UST LONGITUDE: W 74 Deg. 4 Min. 48 Sec.

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 1-1
FACILITY LOCATION MAP
U.S. ARMY - DIRECTORATE OF PUBLIC WORKS
FORT MONMOUTH, NEW JERSEY

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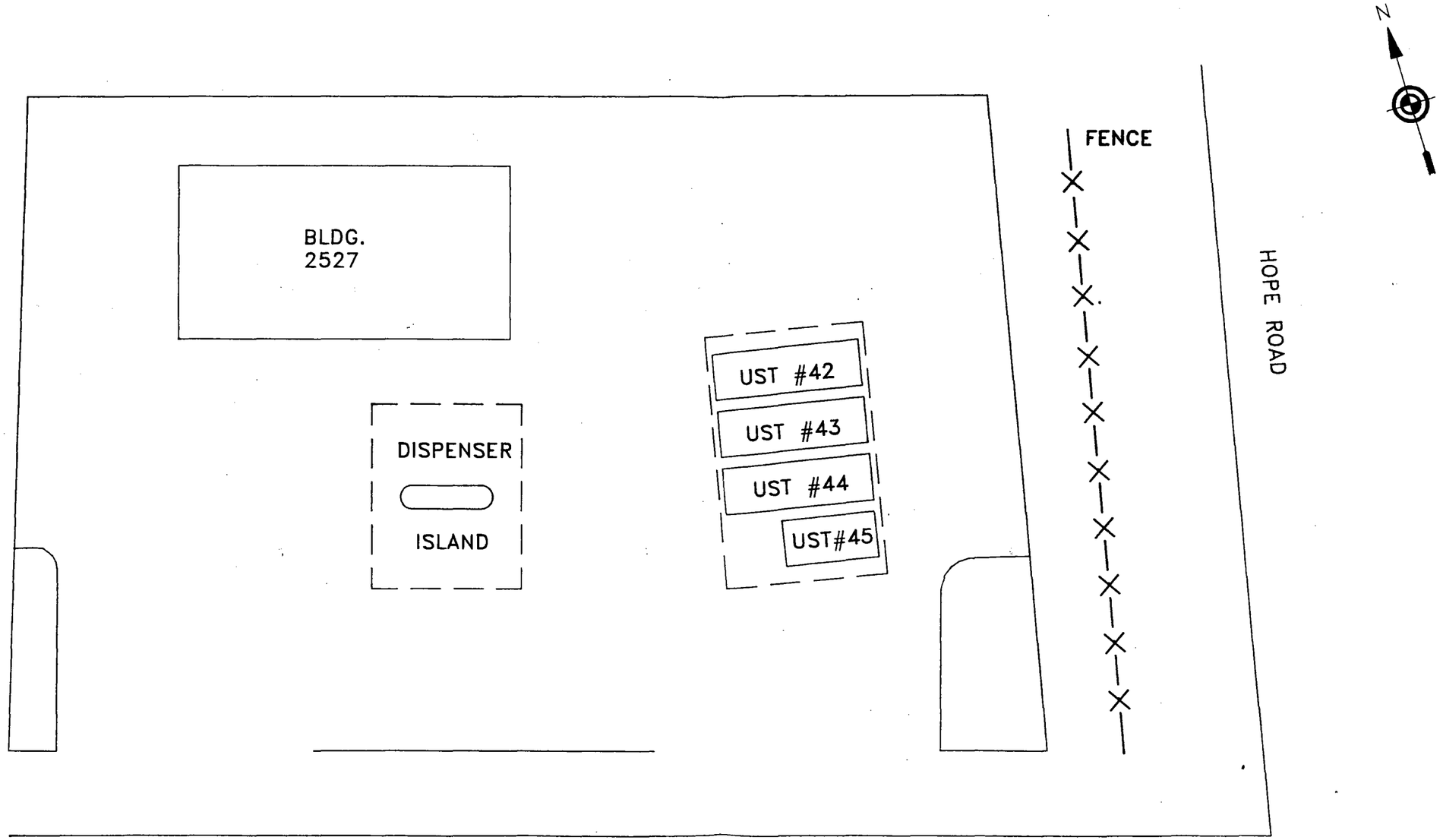


REVISION #: 000 DATE: 7/1/94
FILE NAME: B2567.DWG DRAWN BY: B. MAC

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT
BUILDING 2567 - UST NOS. 42-45
FORT MONMOUTH, NEW JERSEY

CLIENT NAME:
U.S. ARMY - FORT MONMOUTH
DIRECTORATE OF PUBLIC WORKS

SITE MAP

DATE: 7/1/94

FIGURE #: 1-2

gallon capacity, unleaded gasoline tanks. UST No. 45 was a single walled steel, 6,000-gallon capacity, leaded gasoline tank. UST Nos. 42 to 45 were located adjacent to each other. CCI performed the tank closure.

1.3 GEOLOGICAL/HYDROGEOLOGICAL SETTING

The following is a description of the geological/hydrogeological setting of the area surrounding Building 2567. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Charles Wood area.

1.3.1 Geological Setting

Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey, Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, sand, and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapecza, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward-coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapecza, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Charles wood area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish-brown clayey, medium-to-course-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark grey to black, medium-to-fine grained sand with abundant clay,mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey, medium-to-very coarse grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish-orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron-oxide encrusted (Minard).

Over the last 80 years, the natural topography of Fort Monmouth has been altered by excavation and filling activities by the military. Topographic elevations for the Charles Wood area range from five feet above mean sea level (MSL) to 31 feet above MSL.

A Subsurface Profile of the USTs located at Building 2567 is provided in Figure 1-3.

1.3.2 Hydrogeological Setting

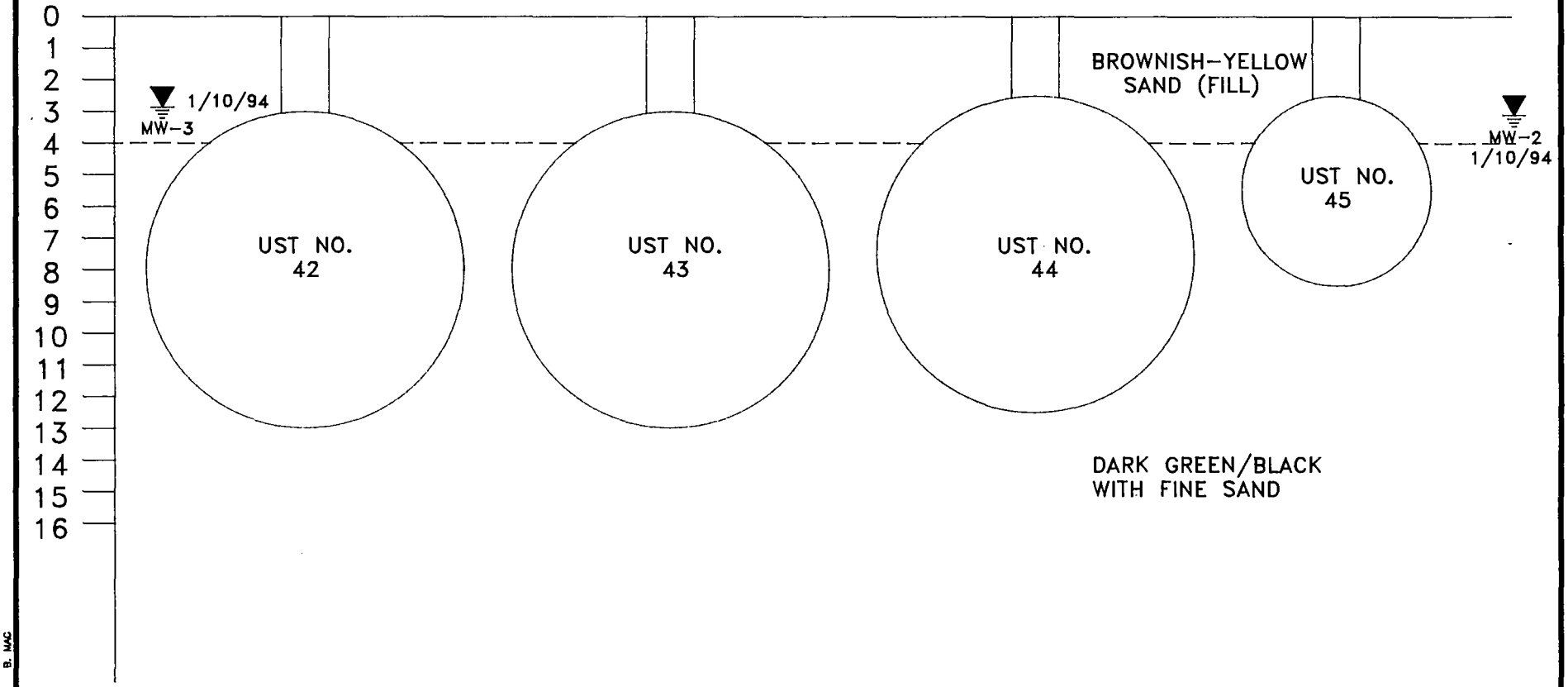
Hydrogeology

The water table aquifer at the Charles Wood area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

Based on records from wells drilled at the Charles Wood area, ground water is typically encountered at depths of two to nine feet below ground surface (BGS). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce from 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Shallow groundwater is locally influenced within the Charles Wood area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries),
- topography,



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0' 5'

SCALE

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT
BUILDING 2567 – UST NOS. 42–45
FORT MONMOUTH, NEW JERSEY

CLIENT NAME: U.S. ARMY – FORT MONMOUTH
DIRECTORATE OF PUBLIC WORKS

SUBSURFACE PROFILE

DATE: 06/29/94

FIGURE #: 1–3

REVISION #: 0000 DATE: 5/16/94
FILE NAME: B2567X.DWG DRAWN BY: B. MAC

- nature of the fill material within the Main Post area,
- presence of clay and silt lenses in the natural overburden deposits, and
- local groundwater recharge areas (i.e. stream, lakes).

Due to the fluvial nature of the overburden deposits (i.e. sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Charles Wood area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of silt and/or clay.

On 9 October 1991, four monitoring wells were placed in the area surrounding UST Nos. 42 to 45. The monitoring well permit, monitoring well records, and Form B for each well are provided in Appendix C. A fifth monitoring well (MW-5) was installed downgradient, southeast of the site, on 23 September 1994. Well MW-5 had not been surveyed or sampled when this report was completed. Information provided by the well will be included in future submittals. The monitoring well permit and well records are included in Appendix C.

Building 2567 is less than 1/2 mile north of Mill Brook, the nearest water body. The groundwater flow in the area of Building 2567 has been determined to be in a southeastern direction. A table of water level elevations collected from the four monitoring wells located in the area of Building 2567 is provided in Table 1-1. The Atlantic Ocean is located approximately 15 miles east of the site.

1.3.3 Offsite Groundwater Usage

In compliance with the NJDEP regulations, WESTON conducted a well search to identify all irrigation, monitoring, domestic, industrial and public supply wells within one half mile of U.S. Army Fort Monmouth, Charles Wood area. The file search produced records for 68 wells. The well search summary table includes the following information on surrounding wells: well identification number; well owner; well address; total depth (feet BGS); casing length (feet); static water level elevation (feet BGS); use code; and NJDEP permit number. In addition, a summary table of all U.S. Army wells located at Fort Monmouth is provided which includes the following information: well number; NJDEP permit number; New Jersey State Plane Coordinates; casing elevation and; elevation of the ground surface; and well records for the nearest identified offsite well have been included, if available. This information is included in Appendix D.

A review of the well records indicated that the majority of the wells within the area of concern are used for monitoring purposes. There are 52 monitoring wells. A domestic well (Permit Number 29-16207), owned by Joseph Stella is the closest to the site in the downgradient flow direction. The well is located at 144 Grant Avenue, approximately 6,500 feet southeast of the site.

TABLE 1-1

WATER LEVEL ELEVATIONS FOR MONITORING WELLS MW-1, MW-2, MW-3 AND MW-4 LOCATED AT BUILDING 2567

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	12/10/91	11:05 am	33.93	4.45	29.48
29-26926 (MW-2)	12/10/91	10:55 am	35.26	3.65	31.61
29-26927 (MW-3)	12/10/91	11:00 am	33.88	4.25	29.63
29-26928 (MW-4)	12/10/91	10:50 am	33.51	2.20	31.31

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	10/26/92	3:55 pm	33.93	5.17	28.76
29-26926 (MW-2)	10/26/92	4:05 pm	35.26	3.16	32.10
29-26927 (MW-3)	10/26/92	4:10 pm	33.88	4.52	29.36
29-26928 (MW-4)	10/26/92	4:13 pm	33.51	4.38	29.13

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	1/28/93	9:10 to 9:40 am	33.93	4.05	29.88
29-26926 (MW-2)	1/29/93	9:10 to 9:40 am	35.26	3.65	31.61
29-26927 (MW-3)	1/29/93	9:10 to 9:40 am	33.88	4.15	29.73
29-26928 (MW-4)	1/29/93	9:10 to 9:40 am	33.51	2.50	31.01

TABLE 1-1 (CONTINUED)

WATER LEVEL ELEVATIONS FOR MONITORING WELLS MW-1, MW-2, MW-3 AND MW-4 LOCATED AT BUILDING 2567

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	2/25/93	10:45 to 11:15 am	33.93	4.65	29.28
29-26926 (MW-2)	2/25/93	10:45 to 11:15 am	35.26	4.25	31.01
29-26927 (MW-3)	2/25/93	10:45 to 11:15 am	33.88	4.20	29.68
29-26928 (MW-4)	2/26/93	10:45 to 11:15 am	33.51	2.75	30.76

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	4/21/93	9:53 am	33.93	4.60	29.33
29-26926 (MW-2)	4/21/93	10:58 am	35.26	4.30	30.96
29-26927 (MW-3)	4/21/93	11:02 am	33.88	4.00	29.88
29-26928 (MW-4)	4/21/93	9:45 am	33.51	2.90	30.61

Monitoring Well Permit Number	Date	Time of Collection	Ground Surface Elevation (feet)	Depth to Water (feet)	Groundwater Surface Elevation (feet)
29-26925 (MW-1)	1/10/94	8:15 am	33.93	3.70	30.23
29-26926 (MW-2)	1/10/94	8:05 am	35.26	3.18	32.08
29-26927 (MW-3)	1/10/94	8:20 am	33.88	2.85	31.03
29-26928 (MW-4)	1/10/94	8:10 am	33.51	2.16	31.35

1.4 HEALTH AND SAFETY

Before, during, and after all activities, hazards at the work site which may have posed a threat to the health and safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing approved equipment. The trained individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.5 REMOVAL OF UNDERGROUND STORAGE TANK

1.5.1 General Procedures

Between 2 and 5 February 1993, UST No. 42 to 45 were closed by removal at Building 2567 on the Charles Wood area of Fort Monmouth. Tank closure activities were conducted as follows:

- All underground obstructions (utilities,... etc.) were marked out by the contractor performing the closure prior to excavation activities.
- Surface materials (i.e, asphalt, concrete, etc...) were excavated and staged separate from all soils. These materials were later recycled in accordance with all applicable laws and regulations.
- Each tank's atmosphere was inerted.
- Access ways on top of the tank's were opened.
- Licensed tank closure contractor personnel entered the tanks to visually inspect and manually clean the insides of the tanks.
- All wastes (tank bottom sludge and tank rinsate) generated during cleaning were collected and disposed.
- The tanks were removed from the excavation and staged on plastic sheeting.
- Soil was excavated until field screening no longer indicated the presence of contamination or the structural integrity of buildings and road ways were threatened.
- Soil excavated during the tank closure was transported to Soil Remediation of Philadelphia for characterization and disposal/reuse.

- Post closure soil samples were collected for laboratory analysis.
- The excavation was backfilled with clean fill material to the original surface grade, and the area paved.
- A Sub-Surface Evaluator from the DPW was present during all closure activities.

1.5.2 Underground Storage Tank Excavation

Soil was excavated to expose the USTs and the associated piping. The piping was not removed/disturbed until all free product was drained into the USTs. The USTs were rendered vapor free by purging prior to any cutting or access. After removal of the associated piping, a manway from each UST was made to allow for proper cleaning. The USTs were completely emptied of all liquids prior to removal. Liquids were transported and disposed of by L & L Oil Service, Inc. L & L is a licensed hazardous waste transporter (USEPA ID# NJD01427895). Approximately 180 gallons of hazardous liquid was transported by L & L Oil Service, Inc. to S & W Wastes, Inc. in South Kearny, New Jersey. Hazardous waste manifests were completed and can be found in Appendix C. All of the openings in the tanks were plugged except for one hole (manway).

After the USTs were removed from the excavation, they were staged on polyethylene sheeting and examined for cracks, corrosion or puncture holes. The presence or absence of holes was documented by the Sub-Surface Evaluator. UST Nos. 42 to 45 were found to be in good condition with no corrosion holes. Groundwater was present in the excavation at approximately four feet BGS.

Soils surrounding the UST were screened visually and with a Photoionization Detector (PID) for evidence of contamination. Based on visual observations and screening approximately 936 cubic yards of soil were removed from the area surrounding the USTs and pump island. In both areas excavation was continued until either no evidence of contamination was found, based on field observations, or until further removal of soil would endanger their integrity of structures and roadways adjacent to the area of investigation. Groundwater noted in the wells at 4 feet BGS was not encountered in the excavation above the 7 feet BGS. Therefore, the excavations were extended to 7 feet BGS when necessary. When excavation was completed, the area was backfilled and the site paved. The potentially contaminated soil was manifested and transported to Soil Remediation of Philadelphia for recycling. A certificate of soil remediation is provided in Appendix E.

1.6 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tanks were transported by Cycle Construction, Inc. to Mazza and Sons, Inc., for recycling in compliance with all applicable regulations and laws. The Tank Reclamation Certificates are provided in Appendix F.

The contractor labelled the UST prior to transport with the following information:

- site of origin,
- contact person,
- NJDEP UST Facility ID number,
- name of transporter/contact person, and
- destination site/contact person.

1.7 MANAGEMENT OF EXCAVATED SOIL

Approximately 936 cubic yards of contaminated soil were removed from the area surrounding UST Nos. 42 to 45 and the pump island. Soil was placed on and covered with polyethylene sheets. Potentially contaminated soils were stockpiled separately from other excavated material. Potentially contaminated soils were transported to Soil Remediation of Philadelphia. A certificate of soil remediation is provided in Appendix F. All soils free of evidence of contamination were backfilled into the excavation following removal of the USTs.

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SECTION 2.0

SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed and carried out by U.S ARMY DPW personnel. All analyses were performed and reported by U.S. Army Fort Monmouth Environmental Laboratory, Environmental Profile Laboratories and 21st Century Environmental, which are NJDEP-certified testing laboratories. All sampling was performed under the direct supervision of a NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (May 1992). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document "Technical Requirements for Site Remediation-Proposed New Rules" (May 1992) which was the applicable regulation at the date of closure. All records of the Site Investigation activities are maintained by Fort Monmouth DPW: Environmental Office.

The following Parties participated in Closure and Site Investigation activities.

- Closure Contractor #1: Cycle Construction, Inc.
  Contact Person: Peter P. Maglow
  Phone Number: (908) 264-7177
  NJDEP Company Certification No.: G0000592

- Hazardous Waste Hauler: L & L Oil Service, Inc.
  Contact Person: Frank Labella
  Phone Number: (908) 566-2785
  USEPA ID No.: NJD01427895

- Subsurface Evaluator: Charles Appleby
  Employer: U.S. Army, Fort Monmouth
  Phone Number: (908) 532-6224
  NJDEP Certification No.: 2056

- Analytical Laboratory: Environmental Profile Laboratories
  Contact Person: Daniel Wright
  Phone Number: (908) 244-6278
  NJDEP Laboratory Certification No.: 15526

- Analytical Laboratory: 21st Century Environmental, Inc.
  Contact Person: Richard W. Lynch
  Phone Number: (609) 467-9521
  NJDEP Laboratory Certification No.: 08031

- Analytical Laboratory: U.S. Army Fort Monmouth Environmental Testing Laboratory
  Contact Person: Brian McKee
  Phone Number: (609) 532-4359
  NJDEP Laboratory Certification No.: 13461

2.2 FIELD SCREENING/MONITORING

All soils that were excavated as part of the removal of the UST were screened using a PID, for evidence of contamination. Soils were also inspected visually for evidence of contamination (staining, free product, etc..). Soils on the sidewalls and base of the excavation were screened with a PID by an individual under the direct supervision of the NJDEP Certified Sub-Surface Evaluator. Evidence of contamination was noted during excavation of soils surrounding the UST and soils were subsequently removed.

2.3 SOIL AND GROUNDWATER SAMPLING

On 10 December 1991, one groundwater sample was collected from each monitoring well and analyzed by Environmental Profile Laboratories for volatile organic compounds plus 15 tentatively identified compounds (VO+15) and lead.

On 26 October 1992, one groundwater sample was collected from each monitoring well and analyzed by Environmental Profile Laboratories for VO+15 and lead.

On 2 February 1993, four post excavation soil samples were collected from the bottom and north side wall of the excavation and analyzed by U.S. Army Fort Monmouth Laboratory (FML) for total petroleum hydrocarbons (TPHC). In addition, on 8 February 1993, two post excavation soil samples were collected from the east side wall of the excavation and analyzed by FML for TPHC.

On 24 February 1993, 23 post-excavation soil samples were collected from the side walls of the excavation and analyzed by FML for TPHC and 21st Century Laboratories for VO+15 and lead.

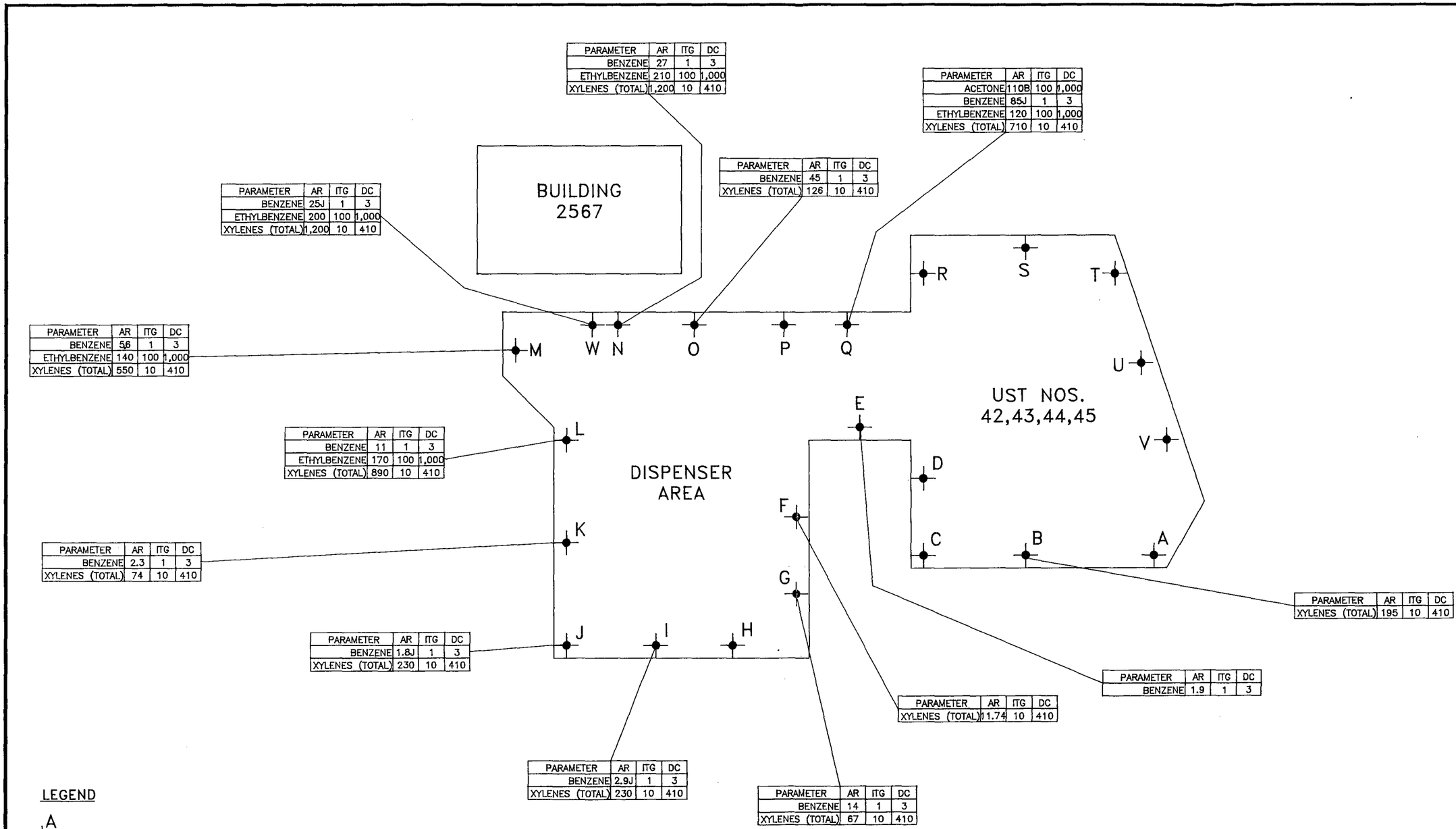
On 21 April 1993, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15, base neutral compounds plus 15 tentatively identified compounds (BN+15) and lead.

On 3 February 1994, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15 and lead.

On 31 March 1994, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15 and lead.

A summary of sampling activities including parameters analyzed is provided in Table 2-1. Figure 2-1 depicts the location of the post-excavation soil samples. Figure 2-2 depicts the locations of the monitoring wells. The post-excavation soil samples were collected using decontaminated stainless steel scoops and groundwater samples were collected using decontaminated teflon bailers. Following soil and groundwater sampling activities, the samples were chilled and delivered to the applicable testing laboratory.

The frequency of sampling and parameters analyzed were consistent with the applicable NJDEP regulations at the date of closure, which were the "Technical Requirements for Site Remediation" (NJAC 7:26E-1 et seq., dated May 1992).



LEGEND

A — SOIL SAMPLING LOCATION

AR — ANALYTICAL RESULT (MG/KG)

ITG — NJDEP–IMPACT TO GROUNDWATER SOIL CLEANUP CRITERIA

DC — NJDEP–DIRECT CONTACT SOIL CLEANUP CRITERIA

J — INDICATES ESTIMATED VALUE

B — INDICATES ALSO PRESENT IN BLANK

0' 20'
SCALE

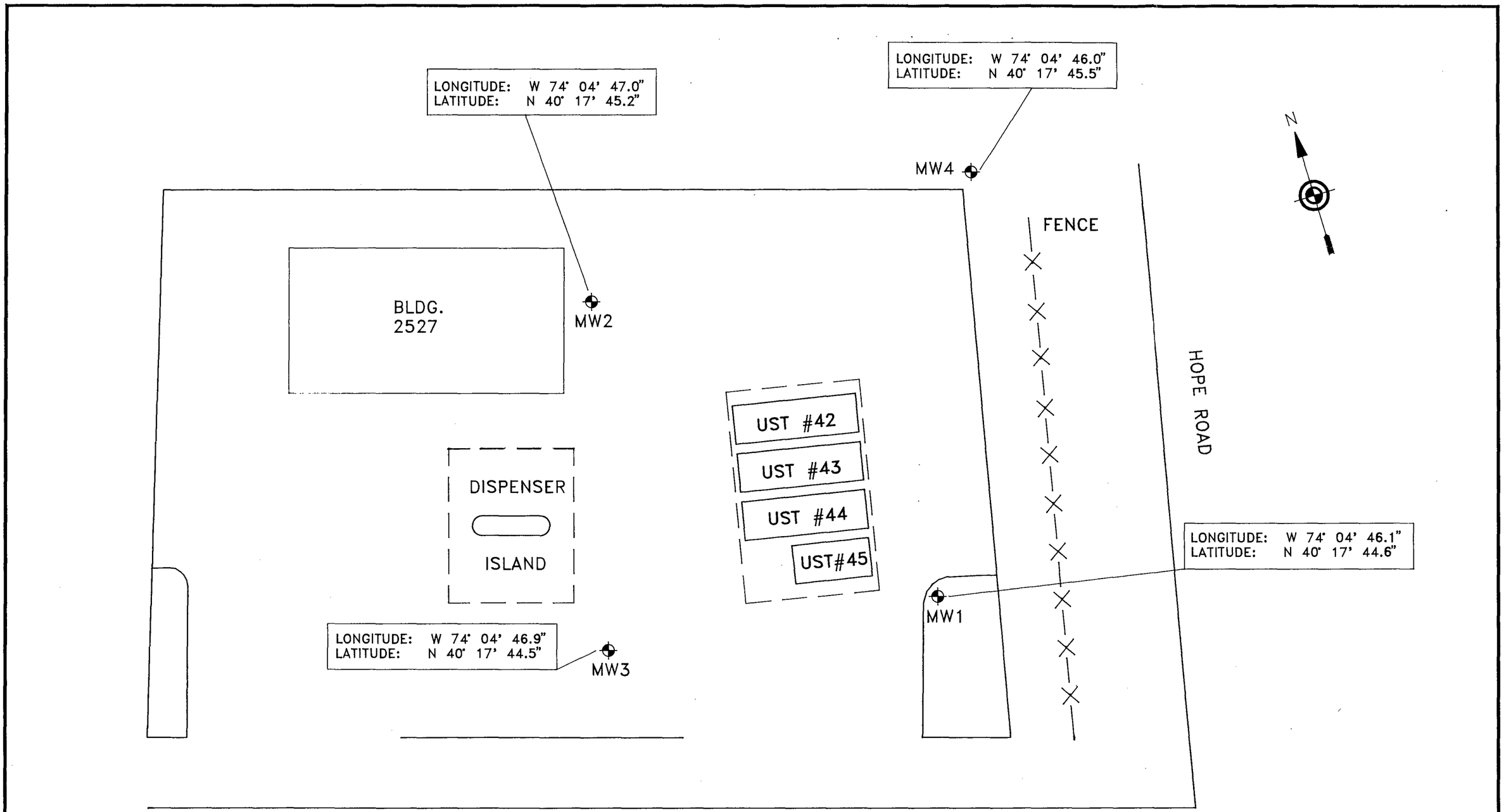
REVISION #: 000 DATE: 2/9/95
FILE NAME: B2567-S.DWG DRAWN BY: B. MAC

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2567 - UST NOS. 42-45
FORT MONMOUTH, NEW JERSEY
CLIENT NAME: U.S. ARMY - FORT MONMOUTH DIRECTORATE OF PUBLIC WORKS

POST–EXCAVATION SOIL SAMPLING LOCATIONS

DATE: 6/9/94
FIGURE #: 2–1



LEGEND

MW3 — MONITORING WELL

0' 20'
SCALE

WESTON MANAGERS DESIGNERS/CONSULTANTS

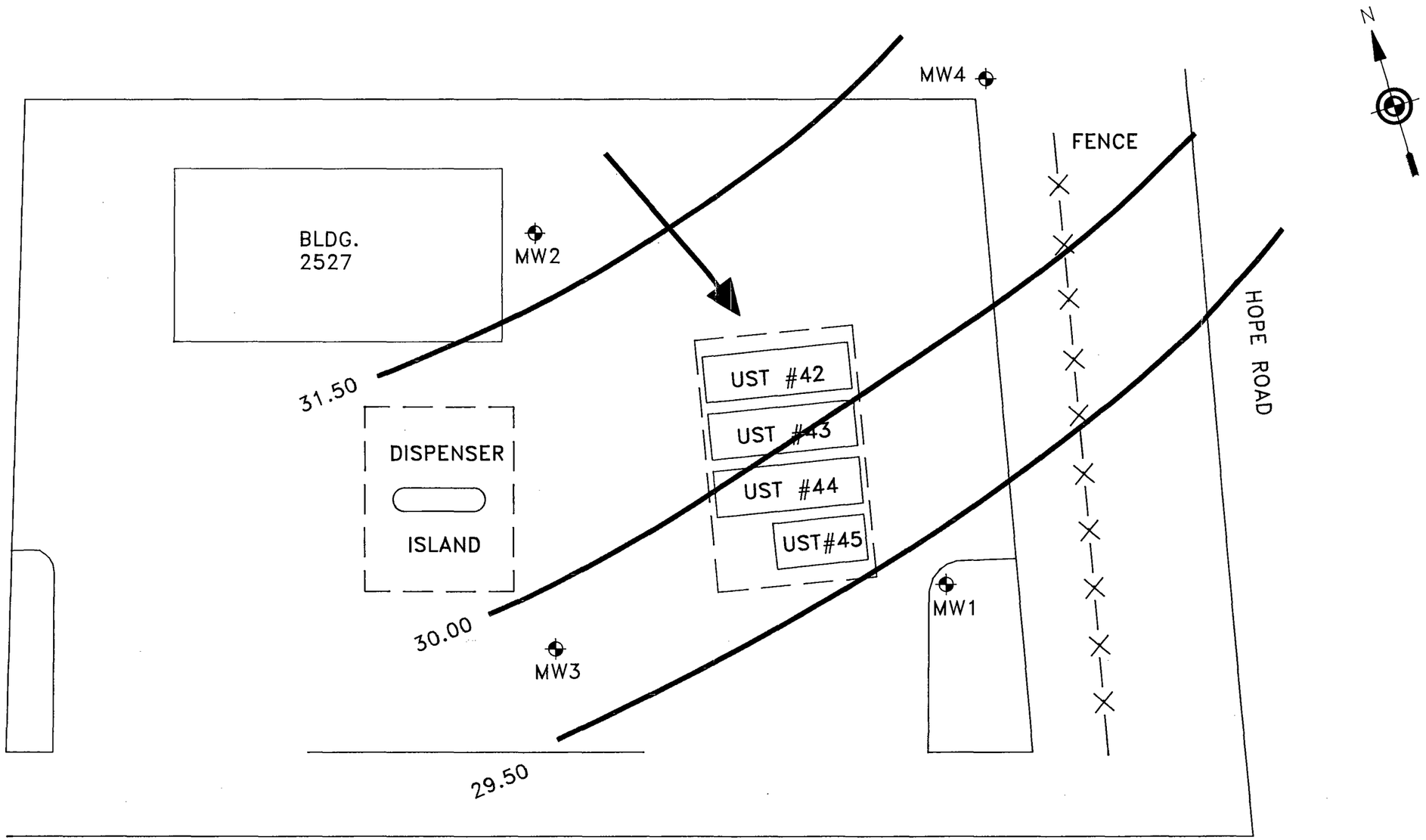
PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2567 - UST NOS. 42-45
FORT MONMOUTH, NEW JERSEY
CLIENT NAME: U.S. ARMY - FORT MONMOUTH DIRECTORATE OF PUBLIC WORKS

WELL LOCATION MAP

DATE: 7/1/94

FIGURE #: 2-2

REVISION # 000 DATE: 2/9/96
FILE NAME: 92567-SIT.MXD DRAWN BY: B. MAC



LEGEND

MW3 MONITORING WELL

0' 20'
SCALE

WESTON MANAGERS DESIGNERS/CONSULTANTS

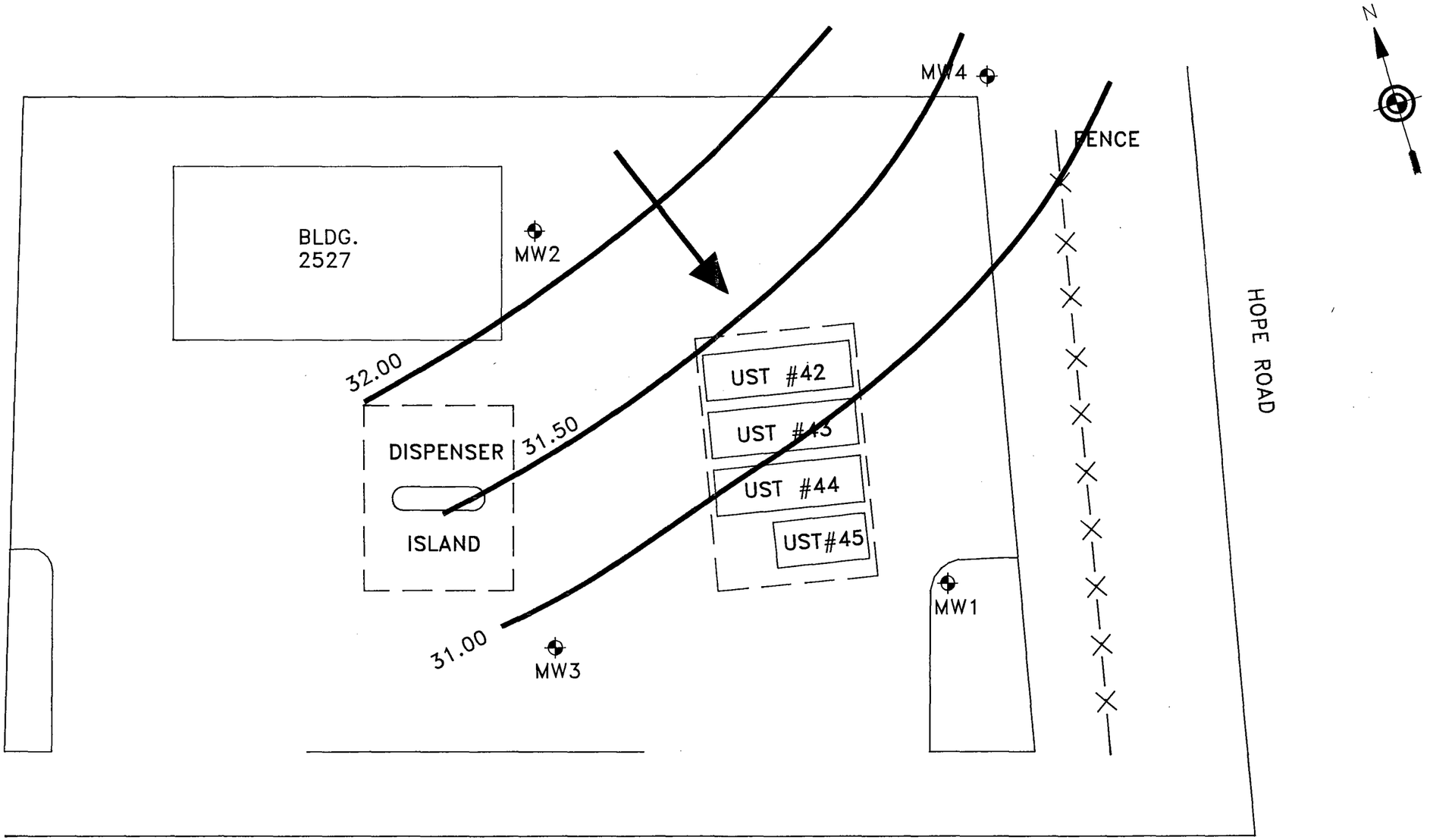
PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2567 - UST NOS. 42-45
FORT MONMOUTH, NEW JERSEY
CLIENT NAME: U.S. ARMY - FORT MONMOUTH DIRECTORATE OF PUBLIC WORKS

GROUNDWATER CONTOUR MAP (DATA COLLECTED 12/10/91)

DATE: 7/1/94

FIGURE #: 2-3

REVISION #: 000 DATE: 7/25/94
FILE NAME: B2567.DWG DRAWN BY: B. MAC



LEGEND

MW3 — MONITORING WELL

0' 20'
SCALE

WESTON MANAGERS DESIGNERS/CONSULTANTS

PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT BUILDING 2567 - UST NOS. 42-45
FORT MONMOUTH, NEW JERSEY
CLIENT NAME: U.S. ARMY - FORT MONMOUTH DIRECTORATE OF PUBLIC WORKS

GROUNDWATER CONTOUR MAP (DATA COLLECTED 1/10/94)

DATE: 7/1/94

FIGURE #: 2-4

REVISION #: 000 DATE: 7/25/94
FILE NAME: B2567.DWG DRAWN BY: B. MAC

TABLE 2-1

SUMMARY OF POST-EXCAVATION SOIL SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Depth (Feet BGS)	Sample Type	Analytical Parameters	Sampling Method
# 1	1140.1	2/2/93	Soil	3	Post Excavation	TPHC	Stainless Steel Scoop
# 2	1140.2	2/2/93	Soil	3	Post Excavation	TPHC	Stainless Steel Scoop
# 3	1140.3	2/2/93	Soil	12	Post Excavation	TPHC	Stainless Steel Scoop
# 4	1140.4	2/2/93	Soil	12	Post Excavation	TPHC	Stainless Steel Scoop

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Depth (Feet BGS)	Sample Type	Analytical Parameters	Sampling Method
S-1	1142.3	2/8/93	Soil	4	Post Excavation	TPHC	Stainless Steel Scoop
S-2	1142.4	2/8/93	Soil	2	Post Excavation	TPHC	Stainless Steel Scoop
S-3 Duplicate	1142.4	2/8/93	Soil	2	Post Excavation	TPHC	Stainless Steel Scoop
S-4 Spike	1142.4	2/8/93	Soil	2	Post Excavation	TPHC	Stainless Steel Scoop

Abbreviation:

TPHC: - Total Petroleum Hydrocarbons.

TABLE 2-1 (CONTINUED)

SUMMARY OF POST-EXCAVATION SOIL SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
A	1151.1	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
B	1151.2	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
C	1151.3	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
D	1151.4	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
E	1151.5	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
F	1151.6	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
G	1151.7	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
H	1151.8	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
I	1151.9	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
J	1151.10	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
K	1151.11	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
L	1151.12	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
M	1151.13	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
N	1151.14	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
O	1151.15	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop
P	1151.16	2/24/93	Soil	Post Excavation	TPHC	Stainless Steel Scoop

Abbreviation:

TPHC: - Total Petroleum Hydrocarbons.

TABLE 2-1 (CONTINUED)

SUMMARY OF POST-EXCAVATION SOIL SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
Q	1151.17	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
R	1151.18	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
S	1151.19	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
T	1151.20	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
U	1151.21	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
V	1151.22	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
W	1151.23	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Duplicate	1151.23 Dup	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
Spike	1151.23 Spike	2/24/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop

Abbreviation:

TPHC: - Total Petroleum Hydrocarbons.

TABLE 2-1 (CONTINUED)

SUMMARY OF POST-EXCAVATION SOIL SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
A	A0995	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
B	A0996	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
C	A0997	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
D	A0998	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
E	A0999	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
F	A1000	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
G	A1001	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
H	A1002	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
I	A1003	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
J	A1004	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
K	A1005	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
L	A1006	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
M	A1007	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
N	A1008	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
O	A1009	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
P	A1010	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
Q	A1011	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
R	A1012	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
S	A1013	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
T	A1014	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop

TABLE 2-1 (CONTINUED)

SUMMARY OF POST-EXCAVATION SOIL SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
U	A1015	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
V	A1016	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
W	A1017	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
Trip Blank	A1018	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop
Field Blank	A1019	2/24/93	Soil	Post-Excavation	VO+15, LEAD	Stainless Steel Scoop

Abbreviation:

VO+15: - Volatile Organic Analysis Plus 15 tentatively identified compounds.

TABLE 2-2

SUMMARY OF GROUNDWATER SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
MW-1	6944.8	12/10/91	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-2	6944.9	12/10/91	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-3	6944.10	12/10/91	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4	6944.11	12/10/91	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1	9173.15	10/26/92	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1 (Dup)	9173.16	10/26/92	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-2	9173.17	10/26/92	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-3	9173.18	10/26/92	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4	9173.19	10/26/92	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1	A1634	4/21/93	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1 (Dup)	A1635	4/21/93	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-2	A1636	4/21/93	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-3	A1637	4/21/93	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4	A1633	4/21/93	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1	A1745	4/28/93	Aqueous	Monitoring Well	BN+15	Decontaminated Teflon Bailer
MW-2	A1747	4/28/93	Aqueous	Monitoring Well	BN+15	Decontaminated Teflon Bailer
MW-3	A1746	4/28/93	Aqueous	Monitoring Well	BN+15	Decontaminated Teflon Bailer
MW-4	A1748	4/28/93	Aqueous	Monitoring Well	BN+15	Decontaminated Teflon Bailer
MW-1	B0244	2/3/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer

TABLE 2-2 (CONTINUED)

SUMMARY OF GROUNDWATER SAMPLING
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.	Lab ID No.	Date of Collection	Matrix	Sample Type	Analytical Parameters	Sampling Method
MW-2	B0243	2/3/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-3	B0245	2/3/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4	B0242	2/3/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-1	B0658	3/31/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-2	B0660	3/31/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-3	B0659	3/31/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4	B0656	3/31/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer
MW-4 (Dup)	B0657	3/31/94	Aqueous	Monitoring Well	Lead, VO+15	Decontaminated Teflon Bailer

Abbreviations:

VO+15: - Volatile organic analysis plus 15 tentatively identified compounds.
BN+15: - Base neutral analysis plus 15 tentatively identified compounds.
DUP: - Duplicate Sample.

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MANAGERS DESIGNERS/CONSULTANTS

SECTION 3.0

CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL AND GROUNDWATER SAMPLING RESULTS

To evaluate soil conditions following removal of the USTs and associated soils, the post-excavation sample results were compared to NJDEP ITGW and RDC Soil Cleanup Criteria (N.J.A.C. 7:26D and revisions dated 3 February 1994). Summaries of analytical results for soils are presented in Table No. 3-1.

To evaluate groundwater conditions following removal of the USTs and associated soils, analytical results from the groundwater samples were compared to NJDEP Class II-A Ground Water Quality Criteria (N.J.A.C. 7:9-6.4, 6.8 and Table 1). A summary of the analytical results and comparison to NJDEP Class II Groundwater Cleanup Standards is provided in Table No. 3-2.

A summary of the analytical methods used and quality assurance information is provided in Table 3-3. The analytical data package summary is provided in Appendix E. The full data package, including associated quality control and chromatograph data are on file at U.S. Army Fort Monmouth, DPW.

Soil

On 2 February 1993, four post excavation soil samples were collected from the bottom and north sidewall of the excavation and analyzed by U.S. Army Fort Monmouth Laboratory (FML) for total petroleum hydrocarbons (TPHC). In addition, on 8 February 1993, two post excavation soil samples were collected from the east sidewall of the excavation and analyzed by FML for TPHC. In accordance with NJDEP requirements, those samples which exhibited a concentration of TPHC exceeding 1,000 milligrams per kilogram (mg/kg) would have been also analyzed for VO+15. Based on the concentrations of TPHC detected in the post excavation samples, no samples were analyzed for VO+15.

On 24 February 1993, 23 post-excavation soil samples were collected from the sidewalls of the excavation and analyzed by FML for TPHC and 21st Century Laboratories for VO+15 and lead. TPHC was detected in all samples, although only sample L (4539.3 mg/kg) exceeded the 1,000 mg/kg requirement. Lead was detected in samples A (129 mg/kg), B (55.1 mg/kg), C (15 mg/kg), F (19.6 mg/kg), G (37.4 mg/kg), H (15.2 mg/kg), I (39 mg/kg), J (15.5 mg/kg), K (6.19 mg/kg), L (25.8 mg/kg), M (87.5 mg/kg), N (49.3 mg/kg), O (92.5 mg/kg), R (7.77 mg/kg), S (10.8 mg/kg), T (9.38 mg/kg), V (22.7 mg/kg) and W (47.2 mg/kg). Benzene was

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS FOR SOILS
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		#1	#2	#3	#4	S-1	S-2	S-3 Duplicate	S-4 Spike	A	B	C	D	E	F	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		1140.1	1140.2	1140.3	1140.4	1142.3	1142.4	1142.4	1142.4	1151.1	1151.2	1151.3	1151.4	1151.5	1151.6		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE		
Date of Collection		2/2/93	2/2/93	2/2/93	2/2/93	2/8/93	2/8/93	2/8/93	2/8/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93		
Analytical Parameter	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPHC		65.1	ND	ND	ND	141	7.9	2.0	382	9.1	31	31.4	37.4	41.5	44.1	NC*	NC*

Sample ID No.		G	H	I	J	K	L	M	N	O	P	Q	R	S	T	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		1511.7	1151.8	1151.9	1151.10	1151.11	1151.12	1151.13	1151.14	1151.15	1151.16	1151.17	1151.18	1151.19	1151.20		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE		
Date of Collection		2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/8/93	2/8/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93		
Analytical Parameter	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPHC		50.4	53.4	28.9	66.3	90.4	4539.3	290.5	246.3	279.6	151.2	362.7	147.8	59.2	120.5	NC*	NC*

Abbreviations:

NC*: - No cleanup criterion has been proposed by NJDEP; however, the proposed NJDEP subsurface cleanup criterion for total organic compounds is 10,000 mg/kg.
PE: - Post Excavation
TPHC: - Total petroleum hydrocarbons
mg/kg: - Milligrams per kilogram

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TABLE 3-1 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR SOILS
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		U	V	W	W-Duplicate	W-Spike	NJDEP Impact to Groundwater Soil Cleanup Criteria
Lab ID No.		1151.21	1151.22	1151.23	1151.23 Dup	1151.23 Spike	
Matrix		Soil	Soil	Soil	Soil	Soil	
Sample Type		PE	PE	PE	PE	PE	
Date of Collection		2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	
Analytical Parameter	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPHC		187.4	217.3	321.5	307	1043.1	NC*

Abbreviations:

NC*: - No cleanup criterion has been proposed by NJDEP; however, the proposed NJDEP subsurface cleanup criterion for total organic compounds is 10,000 mg/kg.
PE: - Post Excavation
TPHC: - Total petroleum hydrocarbons
mg/kg: - Milligrams per kilogram

TABLE 3-1 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR SOILS
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		A	B	C	D	E	F	G	H	I	J	K	L	M	N	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		A0995	A0996	A0997	A0998	A0999	A1000	A1001	A1002	A1003	A1004	A1005	A1006	A1007	A1008		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE		
Date of Collection		2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93		
Analytical Parameter	Units																
Volatile Organic Compounds																	
Acetone	mg/kg	0.014	ND B	0.35	0.020	0.14	ND	ND	ND	ND	ND	ND	ND	ND	39 JB	100	1,000
Methylene Chloride	mg/kg	ND	ND B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	49
2-Butanone	mg/kg	ND	ND	0.069	ND	ND	ND	ND	0.39J	2.4J	ND	ND	ND	ND	ND	50	1,000
Benzene	mg/kg	ND	ND	ND	ND	1.9	0.68J	14	0.25J	2.9 J	1.8J	2.3	11	5.6	27	1	3
Toluene	mg/kg	ND	ND	0.0036J	ND	0.044	1.0	14	1.2	30	68	32	320	110	460	500	1,000
Ethylbenzene	mg/kg	ND	44	ND	ND	0.02 J	0.78J	9.3	1.4	45	37	14	170	140	210	100	1,000
Xylenes (Total)	mg/kg	ND	195	0.024	0.019	0.116	11.74	67	8.6	230	229	74	890	550	1,200	10	410
Inorganics																	
Lead	mg/kg	129	55.1	15.0	ND	ND	19.6	37.4	15.2	39.0	15.5	6.19	25.8	87.5	49.3	NC	400

TABLE 3-1 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR SOILS
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		O	P	Q	R	S	T	U	V	W	Trip Blank	Field Blank	NJDEP Impact to Groundwater Soil Cleanup Criteria	Residential Direct Contact Soil Cleanup Criteria
Lab ID No.		A1009	A1010	A1011	A1012	A1013	A1014	A1015	A1016	A1017	A1018	A1019		
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
Sample Type		PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE		
Date of Collection		2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93	2/24/93		
Analytical Parameter	Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/kg	mg/kg
Volatile Organic Compounds														
Acetone		ND	ND	110B	0.059B	0.14B	0.068B	0.0073JB	0.12B	ND	0.0065JB	3.3B	100	1,000
Methylene Chloride		ND	ND	ND	ND	ND	ND	0.0033JB	0.007J	ND	ND	ND	1	49
2-Butanone		ND	0.018 J	ND	ND	0.037	ND	ND	0.031	ND	ND	ND	50	1,000
Benzene		45	0.032 J	85 J	ND	0.029	0.0023J	ND	0.026	25J	ND	0.038	1	3
Xylene (Total)		126	1.11	710	0.0087J	0.0099J	0.0046J	0.0052J	0.0099J	1200	ND	0.38	10	410
Toluene		11	0.29	220	0.0014J	0.0087	0.0021J	0.0038J	0.0097	450	ND	0.29	500	1,000
Ethylbenzene		29	0.14	120	ND	0.002J	ND	ND	0.002J	200	ND	0.074J	100	1,000
Inorganics														
Lead		92.5	ND	ND	7.77	10.8	9.38	ND	22.7	47.2	ND	ND	NC	400

TABLE 3-1 (CONTINUED)

ABBREVIATIONS, DATA QUALIFIERS AND NOTES
BUILDING NO. 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Abbreviations:

PE:	-	Post Excavation
NC:	-	No groundwater cleanup criterion has been proposed for this analyte by NJDEP.
ND:	-	Not detected.
mg/kg:	-	Milligrams per Kilogram.

Data Qualifiers:

J:	-	Indicates an estimated value.
B:	-	Indicates also present in blank.

TABLE 3-2

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45

Sample ID No.		MW-1	MW-2	MW-3	MW-4	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		6944.8	6944.9	6944.10	6944.11	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	
Date of Collection		12/10/91	12/10/91	12/10/91	12/10/91	
Analytical Parameter	Units					
Lead	ug/L	4	ND	ND	5	10
VOLATILE ORGANIC COMPOUNDS						
Methylene Chloride	ug/L	240	7	240	27	2
1,2-Dichloroethane	ug/L	55	ND	ND	ND	2
Benzene	ug/L	2400	3 J	110	ND	1
Xylenes (Total)	ug/L	42 J	ND	200	ND	40
tert-Butyl Alcohol	ug/L	4400	ND	ND	ND	NC
Methyl tert-Butyl Ether	ug/L	2200	ND	69	ND	NC

TABLE 3-2 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-1 (Dup)	MW-2	MW-3	MW-4	Field Blank	Trip Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		9173.15	9173.16	9173.17	9173.18	9173.19	9173.25	9173.26	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	MW	QA	QA	
Date of Collection		10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	
Analytical Parameter	Units								
Lead	ug/L	ND	ND	11	5	ND	NA	NA	10
VOLATILE ORGANIC COMPOUNDS									
Methylene Chloride	ug/L	420 B	130 B	23 B	24	27 B	66 B	5 JB	2
Bromodichloromethane	ug/L	77	ND	ND	ND	ND	ND	ND	NC
1,2-Dichloropropane	ug/L	62	ND	ND	ND	ND	ND	ND	1
Cis-1,3-Dichloropropene	ug/L	48 J	ND	ND	ND	ND	ND	ND	0.2
Trichloroethene	ug/L	32 J	ND	ND	ND	ND	ND	ND	1
Dibromochloromethane	ug/L	130	ND	ND	ND	ND	ND	ND	10
1,1,2-Trichloroethane	ug/L	140	ND	ND	ND	ND	ND	ND	3
Benzene	ug/L	2800	3200	ND	ND	ND	ND	ND	1
Trans-1,3-Dichloropropene	ug/L	220	ND	ND	ND	ND	ND	ND	0.2
Bromoform	ug/L	140	ND	ND	ND	ND	ND	ND	4
Tetrachloroethene	ug/L	51	ND	ND	ND	ND	ND	ND	1
1,1,2,2-Tetrachloroethane	ug/L	170	ND	ND	ND	ND	ND	ND	2
Toluene	ug/L	73	ND	ND	ND	ND	ND	ND	1,000
Chlorobenzene	ug/L	99	ND	ND	ND	ND	ND	ND	2

TABLE 3-2 (CONTINUED)
SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-1 (Dup)	MW-2	MW-3	MW-4	Field Blank	Trip Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		9173.15	9173.16	9173.17	9173.18	9173.19	9173.25	9173.26	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	MW	QA	QA	
Date of Collection		10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	10/26/92	
Analytical Parameter	Units								
Ethylbenzene	ug/L	90	ND	ND	ND	ND	ND	ND	700
Styrene	ug/L	84	ND	ND	ND	ND	ND	ND	100
Xylenes (Total)	ug/L	302	57	3 J	3 J	ND	ND	ND	40
1,3-Dichlorobenzene	ug/L	100	ND	ND	ND	ND	ND	ND	600
1,2-Dichlorobenzene	ug/L	120	ND	ND	ND	ND	ND	ND	600
1,4 - Dichlorobenzene	ug/L	120	ND	ND	ND	ND	ND	ND	75
Tert-butyl Alcohol	ug/L	5400	7000	ND	ND	ND	ND	ND	NC
Methyl Tert-butyl Ether	ug/L	1200	1500	ND	ND	ND	ND	ND	NC
Acetone	ug/L	ND	ND	ND	1 J	ND	84	ND	700

Abbreviations:

NC - No NJDEP Class II-A groundwater cleanup criterion has been proposed for this analyte by NJDEP.
ND - Not detected.
NR - Analysis not requested.
MW - Monitoring Well.
QA - Quality Assurance sample.
ug/L - Micrograms per liter.

Data Qualifiers:

B - Indicates also present in blank.
J - Indicates an estimated value.

TABLE 3-2 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-1 Dup	MW-2	MW-3	MW-4	Field Blank	Trip Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		A 1634	A 1635	A 1636	A 1637	A 1633	A 1638	A 1639	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	MW	MW	MW	
Date of Collection		4/21/93	4/21/93	4/21/93	4/21/93	4/21/93	4/21/93	4/21/93	
Analytical Parameter	Units								
Lead	ug/L	70	ND	ND	60	ND	ND	NA	10
VOLATILE ORGANIC COMPOUNDS									
Acetone	ug/L	ND	28 JB	2.5 JB	7.7 JB	2.4 JB	2.5 JB	ND	700
Methylene Chloride	ug/L	16 J	ND	ND	ND	ND	3.8 J	4.8 J	2
Benzene	ug/L	520	470	ND	180	ND	ND	ND	1
Toluene	ug/L	ND	ND	ND	15	ND	ND	ND	1,000
Methyl Tertiary Butyl Ether	ug/L	890	970	ND	27	ND	ND	ND	NC
Tert-butyl alcohol	ug/L	470 J	640	ND	ND	ND	ND	ND	NC
Xylenes (Total)	ug/L	ND	ND	2.0 J	74.2 J	ND	ND	ND	40

Abbreviations:

MW - Monitoring Well.
ND - Not detected.
J - Indicates an estimated value.
ug/L - Micrograms per liter.

TABLE 3-2 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-2	MW-3	MW-4	Field Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		A 1745	A 1747	A 1746	A 1748	A 1749	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	QA	
Date of Collection		4/28/93	4/28/93	4/28/93	4/28/93	4/28/93	
Analytical Parameter	Units						
BASE NEUTRAL COMPOUNDS							
Butylbenzylphthalate	ug/L	12	18	12	10	ND	NC
Naphthalene	ug/L	ND	ND	1.2 J	ND	ND	NC
Bis(2-Ethylhexyl)Phthalate	ug/L	ND	ND	2.8 J	ND	ND	30

Abbreviations:

MW - Monitoring Well.
NC - No NJDEP Class II-A groundwater criterion has been proposed for this analyte by NJDEP.
ug/L - Micrograms per liter.
QA - Quality Assurance

Data Qualifiers:

ND - Not detected.
J - Indicates an estimated value.

TABLE 3-2 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-2	MW-3	MW-4	Field Blank	Trip Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		B 0244	B 0243	B 0245	B 0242	B 0246	B 0241	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	QA	QA	
Date of Collection		2/3/94	2/3/94	2/3/94	2/3/94	2/3/94	2/3/94	
Analytical Parameter	Units							
INORGANIC								
Lead	ug/L	ND	260	41	ND	ND	NA	10
VOLATILE ORGANIC COMPOUNDS								
Methylene Chloride	ug/L	26 JB	4.0 J	4.4 J	5.0	7.3	5.2	2
Vinyl Acetate	ug/L	ND	ND	ND	1.3 J	ND	ND	NC
Benzene	ug/L	21 J	19	19	14	ND	ND	1
Toluene	ug/L	66	55	43	56	ND	ND	1000
Ethylbenzene	ug/L	16 J	7.4	7.0	8.9	ND	ND	700
Xylenes (Total)	ug/L	41	43	65	60	ND	ND	40
Tert-butyl alcohol	ug/L	28 J	ND	ND	ND	ND	ND	NC
Carbon Disulfide	ug/L	ND	3.1 J	ND	ND	ND	ND	NC
Acetone	ug/L	54 JB	ND	ND	ND	12	ND	700
Methyl tert-butyl ether	ug/L	650	7.0 J	9.1	ND	ND	ND	NC

Abbreviations:

MW - Monitoring Well.
NC - No NJDEP Class II-A groundwater cleanup criterion has been proposed for this analyte by NJDEP.
ND - Not detected.
J - Indicates an estimated value.
B - Indicates also present in blank.
ug/L - Micrograms per liter.

TABLE 3-2 (CONTINUED)

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
BUILDING 2567
UST NOS. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Sample ID No.		MW-1	MW-2	MW-3	MW-4	MW-4 (Dup)	Field Blank	Trip Blank	NJDEP Class II-A Groundwater Cleanup Criteria
Lab ID No.		B 0658	B 0660	B 0659	B 0656	B 0657	B 0661	B 0662	
Matrix		Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
Sample Type		MW	MW	MW	MW	MW	QA	QA	
Date of Collection		3/31/94	3/31/94	3/31/94	3/31/94	3/31/94	3/31/94	3/31/94	
Analytical Parameter	Units								
VOLATILE ORGANIC COMPOUNDS									
Xylene (Total)	ug/L	ND	2.5 J	ND	ND	ND	ND	ND	40
Methyl Tert-Butyl Ether (MTBE)	ug/L	10	11	ND	1.3 J	1.3 J	ND	ND	NC
Acetone	ug/L	6.9 J	140 B	ND	ND	4.4 JB	7.2 JB	11 B	700
Methylene Chloride	ug/L	ND	17	ND	2.3 J	2.9 J	2.3 J	3.1 J	2
Tertiary Butyl Alcohol	ug/L	22 J	ND	ND	ND	ND	ND	ND	NC
INORGANIC COMPOUNDS									
Lead	ug/L	ND	ND	25	ND	ND	ND	NA	100

Abbreviations:

NC - No NJDEP Class II-A groundwater cleanup criterion has been proposed for this analyte by NJDEP.
ND - Not detected.
NR - Analysis not requested.
MW - Monitoring Well.
QA - Quality Assurance sample.
ug/L - Micrograms per liter.

Data Qualifiers:

B - Indicates also present in blank.
J - Indicates an estimated value.

TABLE 3-3

ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE
UST NO. 2567
BUILDING NO. 42 TO 45
FORT MONMOUTH, NEW JERSEY

Analytical Parameter	No. of Samples Collected	Matrix	Date Collected	Date Analysis Completed	Preservation Method	USEPA SW-846 Analytical Method
TPHC	4	S	2/2/93	2/3/93	Cool to 4°C	418.1
TPHC	4	S	2/8/93	2/8/93	Cool to 4°C	418.1
TPHC	23	S	2/24/93	2/24/93	Cool to 4°C	418.1
VOCs	23	S	2/24/93	2/26/93	Cool to 4°C	USEPA-CLP-IFB
Lead	23	S	2/24/93	2/25/93	Cool to 4°C	6010
Lead	4	Aqueous	12/10/91	12/11/91	Cool to 4°C	418.1
VOCs	4	Aqueous	12/10/91	12/13/91	Cool to 4°C	USEPA-CLP-IFB
Lead	4	Aqueous	10/26/92	10/28/92	Cool to 4°C	418.1
VOCs	4	Aqueous	10/26/92	10/30/92	Cool to 4°C	USEPA-CLP-IFB
Lead	4	Aqueous	4/21/93	4/27/93	Cool to 4°C	418.1
VOCs	4	Aqueous	4/21/93	4/27/93	Cool to 4°C	USEPA-CLP-IFB
BNAs	4	Aqueous	4/28/93	5/12/93	Cool to 4°C	8270
Lead	4	Aqueous	2/3/94	2/7/94	Cool to 4°C	418.1
VOCs	4	Aqueous	2/3/94	2/7/94	Cool to 4°C	USEPA-CLP-IFB
Lead	4	Aqueous	3/31/94	4/5/94	Cool to 4°C	418.1
VOCs	4	Aqueous	3/31/94	4/5/94	Cool to 4°C	USEPA-CLP-IFB

Abbreviations:

USEPA-CLP-IFB - Volatile samples were analyzed using the method cited in the USEPA-CLP-IFB version 2/88. The CLP volatile method is based on USEPA Method 624 and SW-846.
TPHC - Total Petroleum Hydrocarbons.
VOCs - Volatile Organic Compounds.
BNAs - Base Neutral Acid Extractable Compounds.
C - Celsius.

detected in samples E (1.9 mg/kg), G (14 mg/kg), I (2.9 mg/kg), J (1.8 mg/kg), K (2.3 mg/kg), L (11 mg/kg), M (5.6 mg/kg), N (27 mg/kg), O (45 mg/kg), Q (8.5 mg/kg) and W (34 mg/kg). Total xylenes were detected in samples B (195 mg/kg), F (11.7 mg/kg), G (67 mg/kg), I (230 mg/kg), J (229 mg/kg), K (74 mg/kg), L (890 mg/kg), M (550 mg/kg), N (1200 mg/kg), O (126 mg/kg), Q (710 mg/kg) and W (1200 mg/kg). Ethyl benzene was detected in samples L (170 mg/kg), M (140 mg/kg), N (210 mg/kg), Q (120 mg/kg) and W (170 mg/kg). All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP ITGW or RDC Soil Cleanup Criteria.

Groundwater

On 10 December 1991, one groundwater sample was collected from each monitoring well and analyzed by Environmental Profile Laboratories for volatile organic compounds plus 15 tentatively identified compounds (VO+15) and lead. Benzene was detected in MW-1 (2400 ug/l), MW-2 (3 ug/l) and MW-3 (110 ug/l), 1,2-dichloroethane in MW-1 (55 ug/l), total xylene in MW-1 (42 ug/l) and MW-3 (200 ug/l), and methylene chloride in MW-1 (240 ug/l), MW-2 (7 ug/l), MW-3 (240 ug/l) and MW-4 (27 ug/l). These concentrations of contaminants exceed NJDEP Class II-A Ground Water Quality Criteria. All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP Class II-A Ground Water Quality Criteria.

On 26 October 1992, one groundwater sample was collected from each monitoring well and analyzed by Environmental Profile Laboratories for VO+15 and lead. Due to an unusual amount of contaminants present which exceeded NJDEP Class II-A ground water quality criteria in MW-1, a duplicate sample was analyzed. The MW-1 duplicate sample indicated concentrations of benzene (3200 ug/l), total xylene (57 ug/l) and methylene chloride (130 ug/l). In addition, methylene chloride was detected in MW-2 (23 ug/l), MW-3 (24 ug/l) and MW-4 (27 ug/l), and lead in MW-2 (11 ug/l) which exceed NJDEP Class II-a ground water quality criteria. All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP Class II-A ground water quality criteria.
Class II Groundwater Cleanup Standards.

On 21 April 1993, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15 and lead. Lead was detected in MW-1 (70 ug/l) and MW-3 (60 ug/l) in concentrations which exceed NJDEP Class II-A ground water quality criteria. In addition, benzene was detected in MW-1 (520 ug/l) and MW-1 duplicate (470 ug/l), total xylene in MW-3 (74.2 ug/l) and methylene chloride in MW-1 (16 ug/l). Methylene chloride was also detected in the field blank (3.8 ug/l) and the trip blank (4.8 ug/l). The presence of methylene chloride in these quality assurance samples indicates laboratory induced contamination of sample may have occurred and is not related to the operation of the UST system. All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP Class II-A ground water quality criteria.

On 28 April 1993, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for base neutral compounds plus 15 tentatively identified compounds (BN+15). All samples contained either non-detectable concentrations of contaminated or concentrations of contaminants below NJDEP Class II-A Ground Water Quality Criteria.

On 3 February 1994, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15 and lead. Lead was detected in MW-2 (260 ug/l) and MW-3 (41 ug/l) in concentrations which exceed NJDEP Class II-A ground water quality criteria. Benzene was detected in MW-1 (21 ug/l), MW-2 (19 ug/l), MW-3 (19 ug/l) and MW-4 (14 ug/l). Total xylene was detected in MW-1 (42 ug/l), MW-2 (43 ug/l), MW-3 (65 ug/l) and MW-4 (60 ug/l). Methylene chloride was detected in MW-1 (26 ug/l), MW-2 (4 ug/l), MW-3 (4.4 ug/l) and MW-4 (5 ug/l). All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP Class II-A ground water quality criteria.

On 31 March 1994, one groundwater sample was collected from each monitoring well and analyzed by 21st Century Laboratories for VO+15 and lead. Lead was detected in MW-3 (25 ug/l) in concentrations which exceed NJDEP Class II-A ground water quality criteria. Methylene chloride was detected in MW-2 (17 ug/l), MW-4 (2.3 ug/l) and MW-4 duplicate (2.9 ug/l). Since methylene chloride was also detected in the field blank (2.3 ug/l) and the trip blank (3.1 ug/l), its presence indicates laboratory induced contamination of sample may have occurred and is not related to the operation of the UST system. All other samples contained either non-detectable concentrations of contaminants or concentrations of contaminants below NJDEP Class II-A ground water quality criteria.

3.2 CONCLUSIONS AND RECOMMENDATIONS

Prior to the closure of UST No. 42, 43, 44 and 45, four monitoring wells were installed and sampled. Based on the analysis of groundwater samples elevated volatile and semivolatile parameters were detected. The most notable of the parameters were benzene (3 ug/L to 3,200 ug/L) and total xylenes (55 ug/L to 200 ug/L).

During closure, the tanks were observed to be intact and potentially contaminated soil was excavated until further removal would threatened the integrity of structure and roadways or until field screening indicated sufficient reduction in contaminant levels. Upon completion the excavation was backfilled with clean material and the surface paved.

Monitoring well samples, obtained after the closure, indicated significant reductions in groundwater contamination. Samples obtained on 31 March 1994 indicated the presence of only methylene chloride above NJDEP Class IIA groundwater quality criteria.

The reduction in groundwater contaminant levels is attributable to the following:

- The contaminant sources, Tank Nos. 42 to 45, 936 cubic yards of soil and the pump island piping were successfully removed. The analytical testing of soil has indicated that limited residual contamination exists in the soil below the surface.

- The site was backfilled with clean material and paved. The asphalt pavement caps the site precludes the infiltration of precipitation and other surface water to the ground; which reduces the potential for residual soil contaminants leaching from the soil into ground water.

Based on the above actions that have been implement on-site, the future impact of the site on the groundwater is considered to be insignificant. On 23 September 1994 a fifth monitoring well (MW-5) was installed to assess groundwater downgradient from the site. The four on-site and one downgradient wells will be sampled quarterly and analyzed for VO+15, xylenes, methyl tertiary butyl ether, tertiarybutyl alcohol and lead using Method 524.2. Information regarding these samples will be forwarded to the State.

Appendicies omitted for brevity

APPENDIX A

NJDEP-BUST CLOSURE APPROVAL

Historic Soil Analytical Results
Parcel 34
ECP Addendum Report
Fort Monmouth, New Jersey

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Weston 1995 Background (Main Post)	A	B	C	D	E	F	G	H
Sample ID					P34-SS-Bldg2567-A-0.0-0.1	P34-SS-Bldg2567-B-0.0-0.1	P34-SS-Bldg2567-C-0.0-0.1	P34-SS-Bldg2567-D-0.0-0.1	P34-SS-Bldg2567-E-0.0-0.1	P34-SS-Bldg2567-F-0.0-0.1	P34-SS-Bldg2567-G-0.0-0.1	P34-SS-Bldg2567-H-0.0-0.1
Sample Depth (feet, below grade)					UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Sample Date					2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993
Volatile Organic Compounds (mg/kg)												
1,1,1-Trichloroethane	290	4,200	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1	3	0.007	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	2	6	0.02	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	8	24	0.2	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	11	150	0.008	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	73	820	0.7	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.08	0.2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.008	0.04	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	5,300	59,000	17	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.9	3	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	5,300	59,000	19	-	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	5	13	2	-	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	70,000	NLE	19	-	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	2	5	0.005	-	ND	ND	ND	ND	**1.9**	ND	**14**	ND
Bromochloromethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	1	3	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	81	280	0.03	-	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	7,800	110,000	6	-	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	0.6	2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	510	7,400	0.6	-	NA	NA	NA	NA	NA	NA	NA	NA
Chlorodibromomethane	3	8	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	220	1,100	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.6	2	0.4	-	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	230	560	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	490	230,000	39	-	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl benzene	7,800	110,000	13	-	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	78,000	NLE	22	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl bromide	25	59	0.04	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl butyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	4	12	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone	3,100	44,000	0.9	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl isobutyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Tertbutyl Ether	110	320	0.2	-	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	34	97	0.01	-	NA	NA	NA	NA	NA	NA	NA	NA
Ortho Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	90	260	3	-	NA	NA	NA	NA	NA	NA	NA	NA
Tert Butyl Alcohol	1,400	11,000	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	6,300	91,000	7	-	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	-	ND	**195**	ND	ND	ND	**11.74**	**67**	ND
Trans-1,2-Dichloroethene	300	720	0.6	-	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	7	20	0.01	-	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	23,000	340,000	34	-	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.7	2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
TIC VOCs (mg/kg)												
Total Alkanes, VOC	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TIC, Volatile	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)												
Lead	400	800	90	19.5	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
UNK= depth of the 1993 post-excavation soil samples is unknown, but suspected to be approximately 4 ft bgs

Historic Soil Analytical Results
Parcel 34
ECP Addendum Report
Fort Monmouth, New Jersey

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Weston 1995 Background (Main Post)	I	J	K	L	M	N	O	P
Sample ID					P34-SS-Bldg2567-I-0.0-0.1	P34-SS-Bldg2567-J-0.0-0.1	P34-SS-Bldg2567-K-0.0-0.1	P34-SS-Bldg2567-L-0.0-0.1	P34-SS-Bldg2567-M-0.0-0.1	P34-SS-Bldg2567-N-0.0-0.1	P34-SS-Bldg2567-O-0.0-0.1	P34-SS-Bldg2567-P-0.0-0.1
Sample Depth (feet, below grade)					UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Sample Date					2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993
Volatile Organic Compounds (mg/kg)												
1,1,1-Trichloroethane	290	4,200	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1	3	0.007	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	2	6	0.02	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	8	24	0.2	-	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	11	150	0.008	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	73	820	0.7	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.08	0.2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.008	0.04	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	5,300	59,000	17	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.9	3	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	5,300	59,000	19	-	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	5	13	2	-	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	70,000	NLE	19	-	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	2	5	0.005	-	**2.9 J**	**1.8 J**	**2.3**	**11**	**5.6**	**27**	**45**	ND
Bromochloromethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	1	3	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	81	280	0.03	-	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	7,800	110,000	6	-	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	0.6	2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	510	7,400	0.6	-	NA	NA	NA	NA	NA	NA	NA	NA
Chlorodibromomethane	3	8	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	220	1,100	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.6	2	0.4	-	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	230	560	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	490	230,000	39	-	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl benzene	7,800	110,000	13	-	ND	ND	ND	**170**	**140**	**210**	ND	ND
Isopropylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	78,000	NLE	22	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl bromide	25	59	0.04	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl butyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	4	12	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone	3,100	44,000	0.9	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl isobutyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Tertbutyl Ether	110	320	0.2	-	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	34	97	0.01	-	NA	NA	NA	NA	NA	NA	NA	NA
Ortho Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	90	260	3	-	NA	NA	NA	NA	NA	NA	NA	NA
Tert Butyl Alcohol	1,400	11,000	0.3	-	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	6,300	91,000	7	-	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	-	**230**	**230**	**74**	**890**	**550**	**1,200**	**126**	ND
Trans-1,2-Dichloroethene	300	720	0.6	-	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	7	20	0.01	-	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	23,000	340,000	34	-	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.7	2	0.005	-	NA	NA	NA	NA	NA	NA	NA	NA
TIC VOCs (mg/kg)												
Total Alkanes, VOC	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Total TIC, Volatile	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)												
Lead	400	800	90	19.5	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
UNK= depth of the 1993 post-excavation soil samples is unknown, but suspected to be approximately 4 ft bg

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Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Weston 1995 Background (Main Post)	Q	R	S	T	U	V	W
Sample ID					P34-SS-Bldg2567-Q-0.0-0.1	P34-SS-Bldg2567-R-0.0-0.1	P34-SS-Bldg2567-S-0.0-0.1	P34-SS-Bldg2567-T-0.0-0.1	P34-SS-Bldg2567-U-0.0-0.1	P34-SS-Bldg2567-V-0.0-0.1	P34-SS-Bldg2567-W-0.0-0.1
Sample Depth (feet, below grade)					UNK	UNK	UNK	UNK	UNK	UNK	UNK
Sample Date					2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993	2/24/1993
Volatile Organic Compounds (mg/kg)											
1,1,1-Trichloroethane	290	4,200	0.3	-	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1	3	0.007	-	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	2	6	0.02	-	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	8	24	0.2	-	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	11	150	0.008	-	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	73	820	0.7	-	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.08	0.2	0.005	-	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.008	0.04	0.005	-	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	5,300	59,000	17	-	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.9	3	0.005	-	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	5,300	59,000	19	-	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	5	13	2	-	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Acetone	70,000	NLE	19	-	**110 B**	ND	ND	ND	ND	ND	ND
Benzene	2	5	0.005	-	**85 J**	ND	ND	ND	ND	ND	**25 J**
Bromochloromethane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	1	3	0.005	-	NA	NA	NA	NA	NA	NA	NA
Bromoform	81	280	0.03	-	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	7,800	110,000	6	-	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	0.6	2	0.005	-	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	510	7,400	0.6	-	NA	NA	NA	NA	NA	NA	NA
Chlorodibromomethane	3	8	0.005	-	NA	NA	NA	NA	NA	NA	NA
Chloroethane	220	1,100	NLE	-	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.6	2	0.4	-	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	230	560	0.3	-	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	490	230,000	39	-	NA	NA	NA	NA	NA	NA	NA
Ethyl benzene	7,800	110,000	13	-	**120**	ND	ND	ND	ND	ND	**200**
Isopropylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	78,000	NLE	22	-	NA	NA	NA	NA	NA	NA	NA
Methyl bromide	25	59	0.04	-	NA	NA	NA	NA	NA	NA	NA
Methyl butyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	4	12	NLE	-	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone	3,100	44,000	0.9	-	NA	NA	NA	NA	NA	NA	NA
Methyl isobutyl ketone	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Methyl Tertbutyl Ether	110	320	0.2	-	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	34	97	0.01	-	NA	NA	NA	NA	NA	NA	NA
Ortho Xylene	NLE	170,000	NLE	-	NA	NA	NA	NA	NA	NA	NA
Styrene	90	260	3	-	NA	NA	NA	NA	NA	NA	NA
Tert Butyl Alcohol	1,400	11,000	0.3	-	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2	5	0.005	-	NA	NA	NA	NA	NA	NA	NA
Toluene	6,300	91,000	7	-	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	-	**710**	ND	ND	ND	ND	ND	**1,200**
Trans-1,2-Dichloroethene	300	720	0.6	-	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	NLE	7	NLE	-	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	7	20	0.01	-	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	23,000	340,000	34	-	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.7	2	0.005	-	NA	NA	NA	NA	NA	NA	NA
TIC VOCs (mg/kg)											
Total Alkanes, VOC	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Total TIC, Volatile	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)											
Lead	400	800	90	19.5	NA	NA	NA	NA	NA	NA	NA

Notes:
UNK= depth of the 1993 post-excavation soil samples is unknown, but suspected to be approximately 4 ft bg

FINAL

Remedial Investigation Report
And
Remedial Action Workplan

Site 2567

U. S. Army Garrison Fort Monmouth
Fort Monmouth, New Jersey

Directorate of Public Works

October 28, 2005

Versar, Inc.
4700 South McClintock Drive, Suite 150
Tempe, Arizona 85282

Contract No. DACA 51-02-D-0007
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United States Army
Fort Monmouth, New Jersey

Remedial Investigation Report
And
Remedial Action Workplan

Site 2567

Fort Monmouth, New Jersey

October 28, 2005

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October 28, 2005

VERSAR PROJECT NO. 110571.0571.428

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EXECUTIVE SUMMARY

VERSAR, Inc. (Versar) has been contracted by the United States (U.S.) Army Garrison, Fort Monmouth (Fort Monmouth), Directorate of Public Works (DPW), Fort Monmouth, New Jersey to prepare a Remedial Investigation Report (RIR) to document groundwater conditions at Site 2567 located in the Charles Wood Area of Fort Monmouth, New Jersey. This report addresses the remedial investigation activities performed at this site to investigate groundwater conditions from April 1997 through January 2004.

Site 2567 is located in the Charles Wood Area of Fort Monmouth at the northwest corner of the intersection between Laboratory Road and Hope Road. Site 2567 includes Building 2567, two gasoline dispenser islands located within the paved area south of the building and dense wooded areas located to the south and east of the site. Two Underground Storage Tank (UST) closure reports have been submitted to the New Jersey Department of Environmental Protection (NJDEP) regarding USTs in the immediate vicinity of Site 2567.

The *UST Closure and Site Assessment Report for Building 2567, Tanks 33 and 46* documents the removal of two single-wall steel USTs located adjacent to Building 2567. Both USTs were cleaned, excavated and disposed of in accordance with NJDEP requirements. Following the removal of these two USTs, eight post-excavation samples were collected and contained either non-detectable concentrations of total petroleum hydrocarbons (TPHC) or concentrations below NJDEP criteria.

The *UST Closure and Site Assessment Report, Building 2567, UST Nos. 42, 43, 44 and 45* documented the removal of four gasoline USTs located under the pavement approximately 30 feet southeast of Building 2567. The DPW notified the NJDEP of a fuel leak at the Charles Wood gas station, Building 2567. Four groundwater monitoring wells were installed in 1991 to evaluate groundwater quality in the area of Building 2567 and the USTs at Site 2567 were closed. Approximately 936 cubic yards of soil were excavated from the area surrounding the USTs and the dispenser island. Twelve post-excavation soil samples were collected and TPHC was either not detected or detected below NJDEP criteria.

Subsequently, 23 post-excavation soil samples were collected from the side walls of the excavation area. TPHC was detected in one sample at a concentration below the NJDEP criteria. There were three volatile organic compounds (VOCs) detected at concentrations exceeding the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) or the Impact to Groundwater Soil Cleanup Criteria (IGWSCC). Lead was detected below the RDCSCC. There is no IGWSCC for lead.

In response to the suspected discharges from the USTs following the reported release, four groundwater monitoring wells were installed near Building 2567. These wells were sampled in five sampling rounds; during these sampling events, four VOCs and lead were detected in groundwater samples collected at Site 2567 at concentrations greater than the Class II-A NJDEP Ground Water Quality Criteria (GWQC).

The Weston 1995 report identified methyl tert-butyl ether (MTBE) and tert-butyl alcohol (TBA) as groundwater contaminants without GWQC; however, both MTBE and TBA exceeded the interim GWQC in multiple rounds of sampling at one monitoring well.

In September 1994, one additional monitoring well (2567-MW5) was installed by the DPW to determine if contaminants were present downgradient from the site.

In a letter report submitted to the NJDEP in May 2000, ATC Associates (ATC) reported sampling results collected during six sampling events from five monitoring wells at Site 2567. During these six sampling events, five VOCs (benzene, MTBE, TBA, xylenes and methylene chloride) were detected in groundwater samples collected at Site 2567 at concentrations greater than their respective GWQC. Lead was not detected in any of the groundwater samples collected during this time at concentrations exceeding its GWQC.

As presented in the Weston SI Report, several natural and anthropogenic factors contribute to the wide range in concentrations of metals in soils, which further impact the concentration of metals in groundwater. A low-flow sampling methodology was proposed for use by the DPW and accepted by the NJDEP to assess the impact of entrained sediments on the dissolved phase metals concentrations at Fort Monmouth.

Fort Monmouth DPW has conducted a Remedial Investigation (RI), including a groundwater sampling program, to define the areal extent of potential pollutants and evaluate impacts to groundwater in the vicinity of Site 2567. Remedial investigation activities were performed from September 1991 and continued through January 2004.

A total of seven monitoring wells comprise the quarterly groundwater monitoring program conducted by the DPW. The location of each well was strategically selected by the DPW to monitor possible contaminants released into the groundwater due to the former USTs located at Building 2567. As part of the remedial investigation, a quarterly groundwater sampling program was conducted from April 1997 through January 2004 at Site 2567.

During the 30 quarterly sampling events, four VOCs and five Target Analyte List (TAL) metals were detected in groundwater samples at concentrations above their respective NJDEP GWQC. Based on the magnitude of their exceedences, the frequency of their occurrences and their wide-ranging results, TBA is identified as the only contaminant of concern (COC) at Site 2567.

The RI also included the collection of groundwater depth measurements, the performance of slug tests, evaluation of aquifer classification, and the completion of a sensitive receptor survey. The results of the field and laboratory investigations were used to develop a conceptual site model to provide a basis for the development of a three-dimensional computer model. The conceptual site model considers the site-specific topography, groundwater recharge, groundwater flow conditions and the geologic formations present at the site. A MODFLOW computer model was used to simulate

groundwater flow and contaminant transport beneath the site. The purpose of developing a groundwater model for Site 2567 was to predict the migration of the identified COC in site groundwater.

In order to evaluate groundwater conditions and potential COC migration at Site 2567, additional Geoprobe® groundwater samples were collected from seven points in February and April 2004.

Continued groundwater monitoring of TBA degradation through monitored natural attenuation (MNA) at Site 2567 is recommended. Additional groundwater quality sampling results obtained from samples collected at Site 2567 will be reported in Remedial Action Progress Reports (RAPRs).

A Limited Action with MNA alternative has been selected for Site 2567 based upon its appropriateness for remediation of the low residual concentrations of COCs present at the site in a time frame acceptable to the NJDEP. MNA is very low in cost, and the low COC concentrations do not require a permanent alternative. This alternative is equally effective in the short- and long-term, is easy to implement and can attain compliance with NJDEP criteria. Historical groundwater sampling results at Site 2567 indicate that natural attenuation is occurring at an acceptable rate.

Quarterly groundwater sampling at Site 2567 will include groundwater samples collected from monitoring wells 2567-MW1, 2567-MW2, 2567-MW3, 2567-MW4, 2567-MW5, 2567-MW6 and 2567-MW7. The groundwater samples collected from these monitoring wells will be analyzed by the FMETL for VOCs plus 15 TICs.

The remedial action will be performed in accordance with the Quality Assurance Project Plan (QAPP) and the site-specific Health and Safety Plan (SSHSP) for Site 2567.

1.0 INTRODUCTION

Versar has been contracted by the U.S. Army Garrison, Fort Monmouth DPW, Fort Monmouth, New Jersey to prepare an RIR to document groundwater and surface water conditions at Site 2567 located at the Charles Wood Area, Fort Monmouth, New Jersey. This report addresses the remedial investigation activities performed at this site to investigate groundwater conditions from April 1997 through January 2004.

1.1 Objectives

The objectives of this RIR are to define aquifer chemical and physical characteristics and to determine the requirement for further remedial activities at Site 2567. The remedial investigation was conducted in accordance with NJDEP *Technical Requirements for Site Remediation* (February 2003), NJAC 7:26E, et seq.

The remedial investigation and subsequent preparation of the RIR encompassed the following:

- Characterization of groundwater quality over time through quarterly groundwater sampling events conducted from April 1997 through January 2004.
- Characterization of groundwater quality during two low-flow sampling events in May and June 2001.
- Comparison of the results of the groundwater quality monitoring programs with the NJDEP GWQC.
- Investigation and evaluation of the designated aquifer uses, the associated aquifer classification, and the appropriate groundwater quality criteria for groundwater resources beneath Site 2567. The NJDEP Ground Water Quality Standards (GWQS) specify the quality criteria and designated uses for groundwater and also contain technical and general policies to ensure that the designated uses can be adequately protected.
- Performance of slug tests during August 2001 to characterize the hydraulic conductivity and groundwater flow regime.
- Development of a biodegradation model for potential COCs at Site 2567 based on hydrogeologic data, field investigation programs and technical research to evaluate the migration of potential COCs beneath the site.
- Formulation of recommendations for future remedial investigation or remedial action alternatives for Site 2567.

1.2 Report Organization

This report is organized to minimize repetition. **Section 2.0** provides background information and a general description of Site 2567 located in the Charles Wood Area of Fort Monmouth. **Section 3.0** describes and summarizes the field activities conducted at Site 2567 including groundwater and surface water sampling and aquifer testing. **Section 4.0** presents the physical characterization of Site 2567, including lithology and groundwater conditions. Chemical characterization is presented in **Section 5.0**, which includes groundwater sampling results and the determination of potential COCs. **Section 6.0** discusses the potential for contaminant migration in the vicinity of Site 2567 and

presents groundwater modeling involving COCs. Conclusions and recommendations are presented in **Section 7.0**. The references used to prepare this report are listed in **Section 8.0**.

2.0 SITE BACKGROUND AND ENVIRONMENTAL SETTING

The following sections describe the site background and environmental setting of the area surrounding Fort Monmouth and Site 2567. Included is a description of the site location, background, current conditions and environmental setting.

2.1 Site Location and Description

Fort Monmouth is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City and 70 miles northeast of Philadelphia (**Figure 2-1**). In addition to the Main Post, the installation includes two subposts, the Charles Wood Area and the Evans Area. The Main Post encompasses approximately 630 acres and is bounded by State Highway 35, Parkers Creek, Lafetra Brook, the New Jersey Transit Railroad and a residential area to the south. The post was established in 1918 during World War I (WWI) as an Army Signal Corps training center. The Main Post currently provides administrative, training, and housing support functions, as well as providing many of the community facilities for Fort Monmouth. The primary mission of Fort Monmouth is to provide command, administrative, and logistical support for Headquarters, U.S. Army Communications and Electronics Command (CECOM). CECOM is a major subordinate command of the U.S. Army Materiel Command (AMC) and is the host tenant at Fort Monmouth.

Site 2567 is located in the Charles Wood Area of Fort Monmouth at the northwest corner of the intersection between Laboratory Road and Hope Road (**Figure 2-2**). Site 2567 includes Building 2567, two gasoline dispenser islands located within the paved area south of the building and dense wooded areas located to the south and east of the site.

2.2 Site Background

In the early 1990s, the DPW developed a UST program for managing approximately 506 USTs located throughout the Fort Monmouth installation (Main Post, Charles Wood and Camp Evans areas). This program was created to work toward replacing the use of heating oil as a major energy source and to convert to natural gas. The DPW's approach involved installing new gas lines and new gas-fed boilers and removing the non-regulated (residential) USTs. Since 1990, approximately 97 percent of the aforementioned USTs at Fort Monmouth have been removed.

As part of the DPW's UST management program, two UST closure reports (October 1993 and January 1995) have been submitted to the NJDEP regarding USTs in the immediate vicinity of Site 2567. In addition to these two closure reports, the DPW submitted one letter report (May 2000) detailing the results of a long-term groundwater monitoring program for Site 2567. These three reports are presented in **Appendix A**, **Appendix B** and **Appendix C** and are discussed below.

In 1995, the DPW submitted a Site Investigation (SI) report to the NJDEP (Weston, 1995) for the Main Post and Charles Wood areas. Relevant sections of this SI report are presented in **Appendix D** and are discussed below in **Section 2.2.3**. The Weston SI report was incorporated into the discussion of COCs (**Section 5.2**) for Site 2567.

The groundwater monitoring program presented in this report includes the five wells originally installed as part of the closure of former USTs. The locations of these five monitoring wells and two additional wells installed during this remedial investigation are shown in **Figure 2-3**. A well construction summary is provided in **Table 2-1**. Monitoring well records are provided in **Appendix E**.

2.2.1 UST Closure and Site Assessment for Two USTs – Weston, 1993

According to the *UST Closure and Site Assessment Report for Building 2567, Tanks 33 and 46*, prepared by Weston for the DPW, October 1, 1993 (**Appendix A**), there were two single-wall steel USTs (USTs 33 and 46) located adjacent to Building 2567 (**Figure 2-4**). UST No. 33 was a 1,000-gallon No.2 fuel oil UST, and UST No. 46 was a 500-gallon waste oil UST. On December 31, 1991, both USTs were cleaned, excavated and disposed of in accordance with NJDEP requirements. No holes were noted in the USTs, and no potentially contaminated soils were observed surrounding the USTs. U.S. Department of Health (DEH) records indicate that UST No. 46 was never in use. Following the removal of these two tanks, eight post-excavation samples were collected and analyzed for TPHC. The eight soil samples contained either non-detectable concentrations of contaminants or concentrations below NJDEP subsurface cleanup criteria.

2.2.2 UST Closure and Site Assessment for Four USTs – Weston, 1995

According to the *UST Closure and Site Assessment Report, Building 2567, UST Nos. 42, 43, 44, and 45*, prepared by Weston for the DPW in January 1995 (**Appendix B**), there were four gasoline USTs (Nos. 42 through 45) located under the pavement approximately 30 feet southeast of Building 2567 (**Figure 2-4**). UST Nos. 42, 43 and 44 were single-walled steel 10,000-gallon unleaded gasoline USTs. UST No. 45 was a single-walled steel 6,000-gallon leaded gasoline UST.

In December 1989, the DPW notified the NJDEP of a fuel leak at the Charles Wood gas station, Building 2567 (Case No. 89-12-12-1442). In January 1990, a tightness test was conducted on the premium gasoline line, which tested tight. In January 1991, UST Nos. 42, 43 and 44 were tightness tested. UST Nos. 42 and 44 passed the UST system tightness test, although UST No. 43 failed this test (Case No. 91-8-27-1414). In response to the failed tightness test, UST No. 43 was placed out of service and four groundwater monitoring wells were installed in 1991 to evaluate groundwater quality in the area of Building 2567. The closure, remediation and construction of a new facility near Building 2567 were conducted by the DPW in 1993.

In February 1993, UST Nos. 42 through 45 were closed at Site 2567. During the closure, UST Nos. 42 through 45 were drained and removed along with associated piping. The subsurface evaluator did not observe any holes in any of these four USTs after they were removed from the ground. There was no sheen observed on groundwater during the UST removals. Based on visual observations of stained soils and screening with a PID, approximately 936 cubic yards of soil were excavated from the area surrounding the

USTs and the dispenser island (**Figure 2-4**). The excavation was extended to a maximum depth of 11 feet (where groundwater was encountered).

Soil Sampling

On February 2, 1993, four post-excavation samples were collected from the bottom and north side wall of the excavation and analyzed for TPHC. In addition, on February 8, 1994, eight post-excavation soil samples were collected from the east sidewall and also analyzed for TPHC. In these 12 post-excavation soil samples, TPHC was either not detected or detected below NJDEP soil cleanup criteria.

On February 24, 1993, 23 post-excavation soil samples were collected from the sidewalls of the excavation area and analyzed for TPHC, VOCs plus 15 tenatively identified compounds (TICs) and lead. The soil sampling results were compared to the NJDEP RDCSCC and IGWSCC.

TPHC was detected in one sample at a concentration below the NJDEP cleanup criteria. There were three VOCs detected in these 23 post-excavation soil samples at concentrations exceeding the RDCSCC or the IGWSCC. Benzene was detected at concentrations ranging from 1.8 mg/kg to 45 mg/kg. The IGWSCC for benzene is 1 mg/kg and the RDCSCC for benzene is 3 mg/kg. Ethylbenzene was detected at concentrations ranging from 120 mg/kg to 170 mg/kg. The IGWSCC for ethylbenzene is 100 mg/kg and the RDCSCC for ethylbenzene is 1000 mg/kg. Total xylenes were detected at concentrations ranging from 11.7 mg/kg to 1200 mg/kg. The IGWSCC for total xylenes is 10 mg/kg and the RDCSCC for total xylenes is 410 mg/kg. Lead was detected below the RDCSCC of 400 mg/kg at concentrations ranging from 7.77 mg/kg to 129 mg/kg. There is no IGWSCC for lead.

Appendix B includes these soil sampling results as presented in the 1995 Weston SI and Closure Report.

Groundwater Sampling

In response to the suspected discharges from the USTs following the reported release in 1989 and failed tightness test in 1991, four groundwater monitoring wells (2567-MW1, 2567-MW2, 2567-MW3 and 2567-MW4) were installed near Building 2567 in October 1991 (see **Table 2-1** and **Figure 2-3**). Soil boring logs and monitoring well records are contained in **Appendix E**. These wells were sampled in five sampling rounds (December 1991, October 1992, April 1993, February 1994, and March 1994). The groundwater samples that were collected during December 1991, October 1992, February 1994 and March 1994 were analyzed for VOCs plus 15 TICs. The groundwater samples that were collected during April 1993 were analyzed for semi-volatile organic compounds (SVOCs) plus 15 TICs.

During these sampling events, four VOCs (benzene, 1,2-dichloroethene, xylenes, and methylene chloride) and lead were detected in groundwater samples collected at Site 2567 at concentrations greater than the Class II-A NJDEP GWQC. There were no SVOCs detected in groundwater samples collected in April 1993 at concentrations

greater than the GWQC. Groundwater sampling results for wells 2567-MW1 through 2567-MW4, as presented in the 1995 Weston SI report, are included in **Appendix B**.

In the groundwater results tables included in the 1995 Weston SI report, Weston identified MTBE and TBA as groundwater contaminants without GWQC. As of December 2001, the NJDEP applies the interim groundwater quality criteria of 70 ug/L and 100 ug/L to MTBE and TBA, respectively. The exceedences of these interim criteria for the groundwater samples collected between December 1991 and March 1994 are discussed below.

MTBE was detected at concentrations exceeding the interim GWQC of 70 ug/L in four rounds of sampling collected at one monitoring well location (2567-MW1). Concentrations ranged from 650 ug/L (February 1994) to 2,200 ug/L (December 1991).

TBA was detected at concentrations exceeding the interim GWQC of 100 ug/L in three rounds of sampling collected at one monitoring well location (2567-MW1). Concentrations ranged from 470 ug/L (April 1993) to 5,400 ug/L (October 1992).

In the 1995 Weston SI and closure report, Weston presented two groundwater flow maps in addition to groundwater sampling results. These groundwater flow maps both show groundwater flow to the southeast. Weston also conducted an NJDEP well search to identify all irrigation, monitoring, domestic, industrial and public supply wells near Site 2567. The nearest domestic well was found to be 6,500 feet southeast of Site 2567.

In September 1994, one additional monitoring well (2567-MW5) was installed by the DPW to determine if contaminants were present downgradient from the site. Well 2567-MW5 is located southeast of the site on the eastern side of Hope Road (see **Table 2-1**, **Figure 2-3** and **Appendix E**). The results for groundwater samples collected at well 2567-MW5 were presented by ATC in the letter report discussed below.

2.2.3 Groundwater Monitoring Letter Report – ATC, 2000

In a letter report submitted to the NJDEP in May 2000 (**Appendix C**), ATC reported sampling results collected from five monitoring wells at Site 2567 (2567-MW1 through 2567-MW5). These groundwater samples were collected by the DPW during six quarterly sampling rounds between May 1995 and April 1997. In this letter report, ATC also presented one groundwater flow map that shows groundwater flow to the southeast. Groundwater sampling results for wells 2567-MW1 through 2567-MW5, as presented in the ATC letter report (May 2000), are included in **Appendix C**.

The groundwater samples collected at Site 2567 during May 1995, August 1995, November 1995, February 1996, and April 1997 were analyzed for VOCs plus 15 TICs and lead. The groundwater samples collected at Site 2567 during January 1997 were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and lead.

During these six sampling events, four VOCs (benzene, MTBE, xylenes and methylene chloride) were detected in groundwater samples collected at Site 2567 at concentrations

greater than the GWQC. The results of the groundwater sampling indicated that benzene concentrations decreased in monitoring well 2567-MW3 during the period addressed by the ATC letter report. Lead was not detected at concentrations exceeding the GWQC in any of the groundwater samples collected during this time.

In the groundwater results tables included in the ATC 2000 letter report, ATC identified TBA as a groundwater contaminant without an associated GWQC. As discussed above in **Section 2.2.2**, the NJDEP currently applies the interim groundwater quality criterion of 100 ug/L for TBA contamination in class II-A aquifers. In four sampling rounds (May 1995, August 1995, November 1995, and February 1996), TBA was detected above the groundwater criteria of 100 ug/L in groundwater samples collected at well 2567-MW1 at concentrations ranging from 780 ug/L to 930 ug/L.

2.2.4 SI Report for Main Post and Charles Wood Areas – Weston, 1995

Weston, as part of the SI of the Fort Monmouth military installation, conducted soil sampling, monitoring well installation and sampling and geophysical surveying. In addition to sampling of soil and groundwater at sites throughout the Main Post and Charles Wood areas of Fort Monmouth, Weston established background concentrations of chemical constituents in soil and groundwater for the Fort Monmouth installation, as reported in the 1995 Weston SI report. These background concentrations have been used by the DPW for comparing sampling results for native constituents of soil and groundwater.

As presented in the Weston SI Report, several natural and anthropogenic factors contribute to the wide range in concentrations of metals in soils, which further impact the concentration of metals in groundwater. Soils derived from the glauconitic sands contain abundant aluminum, calcium, potassium, iron, magnesium and manganese (among others), which are likely to be present at elevated concentrations in the groundwater, particularly when sediments are entrained in the collected groundwater samples. A low-flow sampling methodology was proposed for use by the DPW and accepted by the NJDEP to assess the impact of entrained sediments on the dissolved phase metals concentrations at the Main Post and Charles Wood areas of Fort Monmouth. Using a low-flow sampling methodology to reduce the presence of entrained sediment has generally yielded substantial reductions in the dissolved phase concentrations of metals, such as arsenic, antimony, beryllium, cadmium, chromium, cobalt, lead, mercury, selenium, silver, thallium and vanadium at Fort Monmouth sites. Significant decreases in the concentrations of metals characteristic of glauconitic sand also were observed. These included aluminum, barium, calcium, copper, iron, magnesium, manganese, nickel, potassium, sodium and zinc.

2.3 Site Conditions

Versar conducted a site walk-through in April 2004, to assess site conditions at Site 2567. The site consists of Building 2567, which is a convenience store and gasoline station, paved parking areas along the west, south, and east sides of the building, and two gasoline dispenser islands located within the paved area south of the building. There are

dense wooded areas located south and east of the site. Site 2567 photographs were taken during a site walk-through in 2001 and are included in **Appendix F**.

The gas station currently utilizes three double-fiberglass reinforced 10,000-gallon USTs to store gasoline (UST Nos. 81515-66, 81515-67, and 81515-68). These three USTs are located at the same approximate area as the former gasoline USTs (UST Nos. 81515-42 through 81515-45, shown in **Figure 2-4**). Underground utility lines at Site 2567, including gas, storm sewer and water are shown in **Figure 2-5**. There is also an abandoned sewer line in the vicinity of the former gasoline USTs. A swale runs parallel to Hope Road, and elevations of the base of the swale indicate that the swale may intersect groundwater in the vicinity of the site. Underground utilities and the swale may impact shallow groundwater flow at Site 2567, as discussed in **Sections 4.0** and **6.0** below.

2.4 Environmental Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Site 2567. Included is a description of the regional geology of the area surrounding Fort Monmouth, as well as descriptions of the local geology and hydrogeology of the Charles Wood area.

2.4.1 Regional and Local Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. Site 2567 is located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands. The geologic map of New Jersey is provided as **Figure 2-6**.

In general, New Jersey Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, sand and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapecza, 1989). These sediments, predominantly derived from deltaic, shallow marine and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units, which are generally thicker to the southeast and reflect a deeper water environment. More than 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations and the Cohansey Sand), while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown and Navesink Formations). The individual thickness for these units varies greatly (e.g., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line (e.g., a boundary zone between older, resistant rocks and younger, softer plain sediments) to greater than 6,500 feet in Cape May County (Brown and Zapecza, 1990).

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post and Charles Wood areas. The Red Bank Sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank Sand is a yellowish-gray to reddish brown clayey medium-to-coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica and glauconite.

The Tinton Sand conformably overlies the Red Bank Sand and ranges from a clayey medium to very coarse-grained feldspathic-quartz and glauconite-sand to a glauconitic-coarse sand. The color varies from dark yellowish orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit. The upper part of the Tinton Sand is often highly oxidized and iron oxide encrusted (Minard, 1969).

The Hornerstown Sand unconformably overlies the Red Bank Sand and dips to the southeast at 50 to 60 feet per mile. The Hornerstown Sand consists of dark green clayey glauconitic sand.

The Tertiary-age Kirkwood Formation and Vincentown Formations crop out approximately two miles south of the Main Post. The Vincentown Formation contains a lower member which is greenish-gray glauconitic sand and an upper member which ranges from sand to clayey limestone. The Kirkwood Formation consists of alternating layers of sand and clay. The Vincentown and Kirkwood Formations dip to the southeast at approximately 20 and 27 feet per mile, respectively (Jablonski, 1968).

Based on the interpretation of lithologic boring logs (**Appendix E**), the lithology of native material at Site 2567 consists of the Tinton Sand. Below Building 2567 and the surrounding paved areas exists asphalt and/or fill material overlying sedimentary layers of light green sand, dark brown/green clay with trace amounts of sand, and medium-fine sand. In the area of monitoring well 2567-MW5, there exists a slightly different progression consisting of brown fine sand overlying black, soft clay, followed by brown fine sand with trace amounts of silt, and finally gray medium sand intermixed with well-rounded gravel. Further discussion of the subsurface conditions is presented in **Section 4.0**.

2.4.2 Hydrogeology

Fort Monmouth lies in the Atlantic and Eastern Gulf Coastal Plain groundwater region. This groundwater region is underlain by undeformed, unconsolidated to semi-consolidated sedimentary deposits. The chemistry of the water near the surface is variable with low dissolved solids and high iron concentrations. The water chemistry in areas underlain by glauconitic sediments (such as Red Bank, Tinton and Hornerstown Sands) is dominated by calcium, magnesium, manganese, aluminum and iron. The sediments in the area of Fort Monmouth were deposited in fluvial-deltaic to near shore environments.

The water table aquifer in the Main Post and Charles Wood areas is identified as part of the "Composite Confining Unit," or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation and the basal clay of the Kirkwood Formation. These geologic formations comprise a "Composite Confining Bed" for the Wenonah Mount Laurel Aquifer (Zapecza, 1984). Measured hydraulic conductivities for the Navesink Hornerstown Confining Unit, presented in Martin (1998) range from 0.0005 to 9 feet per day, with a geometric mean of 0.12 feet per day. The hydraulic conductivity of 0.12 feet per day is discussed in relation to Site 2567 in **Section 6.1.4**.

Wells installed in the Red Bank and Tinton Sands produce 2 to 25 gallons per minute (gpm) (Jablonski, 1968). Groundwater is typically encountered at the Charles Wood areas at shallow depths below ground surface (bgs) (2 to 9 feet bgs). Water in the surficial aquifer generally flows east toward the Atlantic Ocean.

As presented in **Figure 2-7**, Fort Monmouth is located within the outcrop area of the Composite Confining Unit (Martin, 1998), which also includes the Red Bank Sand, Tinton Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation and the basal clay of the Kirkwood Formation. The Composite Confining Unit is approximately 125 feet thick at Site 2567.

Based on a review of the NJDEP GWQS, January 7, 1993, Versar has determined that the site is underlain by a Class III-A aquifer. A formal presentation of this finding was made to the NJDEP on April 17, 2001. The primary designated use for Class III-A groundwater is the release or transmittal of groundwater to adjacent classification areas and surface water, as relevant. Secondary designated uses in Class III-A include any reasonable use. Further discussion of the Class III-A aquifer designation is presented in **Section 6.3**.

Shallow groundwater may be locally influenced within the Charles Wood Area by the following factors:

- Tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries)
- Topography
- Nature of the fill material within the Charles Wood Area
- Presence of clay and silt lenses in the natural overburden deposits
- Local groundwater recharge areas (e.g., streams, lakes)
- Roadways, utility conduits and stormwater culverts

Due to the fluvial nature of the overburden deposits (e.g., sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. Groundwater in the vicinity of Site 2567 appears to be flowing in a south-southeast direction toward

Wampum Brook. Underground utilities may have a significant effect of diverting shallow groundwater flow.

2.4.3 Soils

According to the U.S. Department of Agriculture (USDA), Soil Conservation Service, Monmouth County Soil Survey (April 1989), the majority of the Main Post and Charles Wood areas is covered by urban land (**Figure 2-8**). The soil survey describes urban land as areas where concrete, asphalt, buildings, shopping centers, airports or other impervious surfaces cover 80 percent or more of the surface. In addition, the survey indicated that the natural subsurface soils have largely been replaced with artificial or foreign fill materials (developed land with disturbed soils).

The following soil series and classification units are mapped in the Charles Wood area:

- DoB Downer sandy loam (with 2 to 5 percent slopes)
- FrB Freehold sandy loam (with 2 to 5 percent slopes)
- FUB Freehold sandy loam/urban land complex (with 0 to 10 percent slopes)
- HUA Holmdel sandy loam/urban land complex (with 0 to 5 percent slopes)
- HV Humaquepts, frequently flooded
- KvA Kresson loam (with 0 to 5 percent slopes)
- PT Pits, Sand and Gravel
- Sn Shrewsbury sandy loam
- UA Udorthents, smoothed and
- UD Udorthents – urban land complex (with 0 to 3 percent slopes).

The Downer series soils are well-drained soils that are found on uplands and terraces. The soils are formed in acid, silty coastal plain sediments. The Freehold soils are also well drained and are formed in acid, loamy, coastal plain sediments that, by volume, are 1 to 10 percent glauconite and are found on uplands. The Holmdel series consists of moderately well drained or somewhat poorly drained soils on uplands. The soils are formed in acid, loamy, coastal plain sediments that have 2 to 10 percent glauconite by volume. The Humaquepts soils are somewhat poorly- to very poorly- drained soils that are formed in stratified, sandy, or loamy sediments of fluvial origins. The Humaquepts soils are located on the floodplain and are subject to flooding several times each year. The Kresson loam is a nearly level to gently sloping soil and is somewhat poorly drained. The soil is found on low divides and in depressions. The Shrewsbury soils consist of poorly drained soils or upland flats that are formed in acid, loamy, coastal sediments that, by volume, are as much as 10 percent glauconite. The Udorthents soils have been altered by excavation or filling activities, and may include old sand and gravel pits. In filled areas, these soils consist of loamy material that is more than 20 inches thick. The filled areas include floodplain, tidal marshes and areas with moderately well-drained to very poorly drained soils. Some Udorthent soils contain concrete, asphalt, metal and glass. The soils in the vicinity of Site 2567 are classified as HUA – Holmdel sandy loam/urban land complex (**Figure 2-8**).

2.4.4 Topography and Surface Drainage

Over the last 80 years, the natural topography of Fort Monmouth has been altered by excavation and filling activities by the military. Site 2567 is located just north of the floodplain of Wampum Brook. The USGS topographic map (**Figure 2-1**) shows that the land surface of the site is relatively flat at an elevation of approximately 30 to 35 feet above mean sea level (amsl).

Surface water bodies in the vicinity of the Charles Wood area include two unnamed tributaries of Wampum Brook. Wampum Brook is joined by several unnamed tributaries east of Charles Wood, prior to becoming Wampum Lake. Wampum Lake discharges into Mill Creek, which flows toward the Main Post area.

The U.S. Fish and Wildlife Service (FWS) National Wetland Inventory Long Branch quadrangle maps indicate the presence of several wetlands at the Main Post and Charles Wood areas. In the Charles Wood Area, the golf course lake is classified as palustrine open water/unknown bottom, and several areas along the unnamed tributaries of Wampum Brook are classified as palustrine forested wetland, broad-leaved deciduous.

Based on the topography of the area, surface water runoff is expected to flow in a southeast direction toward Wampum Brook. There are drainage ditches that run south along Hope Road and an unnamed tributary/drainage ditch that crosses underneath Hope Road about 200 feet south of Site 2567 (**Figure 2-2**). Surface water runoff from Site 2567 drains into these ditches and flows south then east into Wampum Brook.

3.0 SITE ACTIVITIES

Fort Monmouth DPW has conducted remedial investigation activities, including a groundwater sampling program, to define the areal extent of potential pollutants and evaluate impacts to groundwater in the vicinity of Site 2567. Remedial investigation activities were performed from September 1991 and continued through January 2004. These activities were managed by the Fort Monmouth DPW and performed by TECOM-Vinnell Services (TVS). The details of remedial investigation activities that occurred at Site 2567 are described in the following sections.

3.1 Well Installation

A total of seven monitoring wells (2567-MW1, 2567-MW2, 2567-MW3, 2567- MW4, 2567-MW5, 2567-MW6 and 2567-MW7) comprise the quarterly groundwater monitoring program conducted by the DPW. Four of the seven monitoring wells were installed in 1991 during the Weston UST closure and site investigation (2567-MW1, 2567-MW2, 2567-MW3 and 2567- MW4). One monitoring well was installed in 1994 (2567-MW5), and the remaining two monitoring wells were installed by the DPW in 2000 (2567-MW6 and 2567-MW7). **Figure 2-3** shows the locations of the monitoring wells at Site 2567. The location of each well was strategically selected by the DPW to monitor possible contaminants released into the groundwater due to the former USTs located at Building 2567. Monitoring well construction details are discussed in **Section 2.2** and are summarized in **Table 2-1**. Well boring logs and monitoring well records are provided in **Appendix E**.

3.2 Groundwater Monitoring Well Sample Collection Activities

As part of the remedial investigation, a quarterly groundwater sampling program was conducted from April 1997 through January 2004 at Site 2567. Sampling activities were performed in accordance with the *Fort Monmouth Standard Sampling Operating Procedure* (December 1997). Laboratory analyses of the samples collected at Site 2567 were conducted at the Fort Monmouth Environmental Testing Laboratory (FMETL), a New Jersey certified laboratory (Certification No. 13461).

Five monitoring wells (2567-MW1, 2567-MW2, 2567-MW3, 2567-MW4 and 2567-MW5) were sampled during 28 quarterly sampling rounds (#1 through #28) from June 1997 through January 2004 and two low-flow sampling rounds for a total of 30 quarterly sampling rounds. Monitoring wells 2567-MW6 and 2567-MW7 were incorporated later into the quarterly monitoring program and sampled from August 2000 through January 2004 during 15 quarterly rounds (#14 through #28) and two low-flow sampling rounds for a total of 17 quarterly sampling rounds.

During the 30 rounds of quarterly groundwater sampling, a total of 240 groundwater samples, including 31 duplicate samples, 33 field blanks and 28 trip blanks for quality assurance/quality control (QA/QC), were collected from seven monitoring wells. The quarterly groundwater samples were analyzed as follows:

- During quarterly sampling rounds #1 and #2, VOCs plus 15 TICs were analyzed using USEPA Method 624, and lead was analyzed using USEPA Method 3113B.
- During quarterly sampling rounds #3 and #4, VOCs plus 15 TICs were analyzed using USEPA Method 624, SVOCs plus 25 TICs were analyzed using USEPA Method 625, pesticides and PCBs were analyzed using USEPA Method 608, and TAL metals were analyzed using USEPA Methods 3120B and 3112B.
- During quarterly sampling rounds #5 through #28, VOCs plus 15 TICs were analyzed using USEPA Method 624, and lead was analyzed using USEPA Method 3120B.

A summary of the groundwater sampling activities, including rounds, well IDs, sample IDs, sample locations, collection/analysis date, analytical parameters and analysis method, is provided in **Table 3-1**. Copies of the groundwater sampling chain-of-custody forms and laboratory data sheets are presented in **Appendix G**. The results of the quarterly groundwater monitoring program for Site 2567 are discussed in **Section 5.1**.

In consideration of the potential benefits of the low-flow sampling procedure, two additional rounds of low-flow sampling (Low Flow #1 and Low Flow #2) were conducted from May 31-June 5, 2001 and June 25-26, 2001. A total of 21 samples, including three duplicate samples and four field blanks, were collected and analyzed for TAL metals to determine whether elevated metal concentrations observed in the groundwater samples at Site 2567 are due to entrained soil particles (e.g., high turbidity) rather than dissolved phased groundwater constituents. The samples were analyzed by the FMETL for TAL metals utilizing USEPA Methods 3120B and 3112B.

Sampling equipment was thoroughly decontaminated before and after each use, in accordance with the *Fort Monmouth Standard Sampling Operating Procedure* (1997). Following collection, groundwater samples were immediately placed in laboratory-supplied bottleware. The sample containers were labeled, sealed, packed in ice and transported to the FMETL under proper chain-of-custody procedures.

During each of the monitoring well sampling rounds, aquifer chemical characteristics including pH, temperature, conductivity and dissolved oxygen (DO) were recorded prior to sampling. These chemical characteristics are included in the laboratory data packages. The aquifer DO data is presented in **Section 5.3** and discussed in **Section 6.1.3**.

3.3 Geoprobe® Groundwater Sample Collection Activities

In order to evaluate groundwater conditions and potential COC migration at Site 2567, additional Geoprobe® groundwater samples were collected from seven points in February and April 2004. Sampling activities were performed in accordance with the *Fort Monmouth Standard Sampling Operating Procedure* (December 1997). Laboratory analyses of the samples collected at Site 2567 were conducted at the Fort Monmouth Environmental Testing Laboratory (FMETL), a New Jersey certified laboratory (Certification No. 13461).

Seven Geoprobe® sampling points (GW-1, GW-2, GW-3, W-1, W-2, W-3 and W-4) were sampled during two separate sampling events in February and April 2004.

During the two Geoprobe® groundwater sampling events, a total of 13 groundwater samples, including two duplicate samples, two field blanks and two trip blanks for QA/QC, were collected from the seven Geoprobe® points. The Geoprobe® groundwater samples were analyzed as follows:

- During the two sampling events, VOCs plus 15 TICs were analyzed using USEPA Method 624.

A summary of the Geoprobe® groundwater sampling activities, including Geoprobe® point IDs, sample IDs, sample locations, collection/analysis date, analytical parameters and analysis method, is provided in **Table 3-2**. Copies of the groundwater sampling chain-of-custody forms and laboratory data sheets are presented in **Appendix H**. The results of the Geoprobe® groundwater sampling program for Site 2567 are discussed in **Section 5.2**.

Sampling equipment was thoroughly decontaminated before and after each use, in accordance with the *Fort Monmouth Standard Sampling Operating Procedure* (1997). Following collection, groundwater samples were immediately placed in laboratory-supplied bottleware. The sample containers were labeled, sealed, packed in ice and transported to the FMETL under proper chain-of-custody procedures.

3.4 Groundwater Depth Measurements

During each of the 30 groundwater monitoring rounds conducted at Site 2567 (including the 28 quarterly monitoring rounds and two low-flow rounds), measurements of the depth to water in each of the monitoring wells was recorded with an accuracy of 0.01 feet. These depth to groundwater measurements, recorded from 1997 through 2004, are presented in **Table 3-2**. The groundwater elevation at each well was calculated by subtracting the measured depth to groundwater from the elevation of the top of the well casing. Groundwater elevations are discussed in **Section 4.2**.

3.5 Slug Testing Procedures

Versar conducted slug testing on the seven monitoring wells located at Site 2567 from August 16-17, 2001. The slug testing was performed to estimate hydrogeologic properties of the shallow soils at this site, such as groundwater velocity, to be used for contaminant transport modeling. The equipment used to perform the slug testing included a Hermit Environmental Data logger (Model 1000C), a 10-psi pressure transducer, and a 4-foot long, 3.5-inch diameter PVC slug.

The slug testing was performed by first recording the depth to top of groundwater, then placing the slug and the transducer into the well and allowing the water to equilibrate to a level close to the original water level. The new water level was set as the reference water level for the data logger during the slug test. The slug was then removed and the data logger recorded the changing water level with time. The collected data were then

transferred to a personal computer for later review and reduction. The raw data are presented in **Appendix H**. The results are discussed in **Section 4.2**.

3.6 Sensitive Receptors and Well Search

Searches were conducted using various databases and historical information to identify receptors and groundwater wells that may be potentially affected by Site 2567. An Offsite Receptor Report (dated October 24, 2001) was prepared for Site 2567 by Environmental Data Resources, Inc. (EDR).

In addition, a search of the comprehensive well database maintained by the NJDEP Well Permitting and Regulations Section of the Bureau of Water Allocation was performed to identify groundwater wells that may potentially be affected by Site 2567. The search was performed for a one-mile radius surrounding the central point of the Site 2567. A copy of the sensitive receptor survey is provided in **Appendix I** and a copy of the well search summary is provided in **Appendix J**. The results of the sensitive receptor survey and well search are discussed in **Section 6.2**.

4.0 SITE PHYSICAL CHARACTERISTICS

The following sections represent the findings of the geologic and hydrogeologic characterization program for Site 2567. These sections include a detailed discussion of the physical properties of the unconsolidated soil, bedrock and groundwater underlying the study area. Groundwater elevation data collected by the DPW from August 1997 through January 2004 are presented in this section.

4.1 Lithology

The lithology encountered at Site 2567 consists primarily of fill material, fine sand, silt and clay. Two geologic cross-sections were prepared for Site 2567. Geologic cross-sections A-A' and A-A" were based on the boring logs of monitoring wells in the study area, as well as the locations of underground utilities. The geologic cross-section location map is included as **Figure 4-1**. Geologic cross-sections A-A' (**Figure 4-2**) and A-A" (**Figure 4-3**) include the locations of underground utility pipes, which are discussed with regard to shallow groundwater flow in **Section 4.2**. The data used to construct the geologic cross-sections are presented in **Table 4-1** (data for geologic cross-section A-A') and **Table 4-2** (data for geologic cross-section A-A"). The boring logs used to create the cross-section data tables are contained in **Appendix E**.

Geologic cross-section A-A' (**Figure 4-2**) depicts the profiles for monitoring wells 2567-MW2, 2567-MW3 and 2567-MW6, and portrays the following lithology:

- In the boring of well 2567-MW2, asphalt was encountered at the surface, fill was encountered below the asphalt to a depth of 5 feet bgs, and native material was encountered beneath the fill to a depth of 13 feet bgs.
- In the boring of well 2567-MW3, asphalt was encountered at the surface, fill was encountered below the asphalt to a depth of 4 feet bgs, and native material was encountered beneath the fill to a depth of 13 feet bgs.
- In the boring of well 2567-MW6, topsoil and roots were encountered at the surface, fill was encountered below the topsoil to a depth of 5 feet bgs, and native material was encountered to a depth of 13 feet bgs.
- There are three underground utilities shown in geologic cross-section A-A’: a 15-inch diameter sewer line, a 6-inch diameter gas line and a 15-inch diameter abandoned storm sewer line.
- Geologic cross-section A-A’’ portrays an area of fill with unknown depth beneath the gas line, sanitary sewer line and abandon storm sewer line.

Geologic cross-section A-A" (**Figure 4-3**) depicts the profiles for monitoring wells 2567-MW2, 2567-MW1 and 2567-MW5, and portrays the following lithology:

- As in geologic cross-section A-A' (**Figure 4-2**), the boring of well 2567-MW2, asphalt was encountered at the surface, fill was encountered below the asphalt to a depth of 5 feet bgs, and native material was encountered beneath the fill to a depth of 13 feet bgs.

- In the boring of well 2567-MW1, asphalt was encountered at the surface, fill was encountered below the asphalt to a depth of 4 feet bgs, and native material was encountered to a depth of 13 feet bgs.
- In the boring of well 2567-MW5, native material was encountered from the surface to a depth of 12.5 feet bgs. As an approximation, geologic cross-section A-A" shows approximately 1 foot of topsoil and roots at the surface of well 2567-MW5, which was not noted on the boring log for this well.
- There are three underground utilities shown on geologic cross-section A-A": one 6-inch diameter gas line, one gas main of unknown diameter, and one 36-inch diameter water main.
- Geologic cross-section A-A" portrays an area of fill with unknown depth and lithology surrounding the gas and water mains.
- Geologic cross-section A-A'' portrays an area of fill with a depth of at least 11 feet in the vicinity of the former UST excavation.

The fill encountered in the well borings at Site 2567 consisted of light orange to brown sand (Unit 3). Fill with unknown lithology is portrayed in **Figure 4-2** as Unit 7. The native material encountered in the well borings at Site 2567 consisted of poorly sorted brown, green, gray and black clay, silt and fine sand (Units 4, 5, 8, 9 and 10) and gray sand with well-rounded gravel (Unit 11). The lithology of the native material is consistent with the Tinton Sand (Minard, 1969).

4.2 Groundwater Flow

During the groundwater sampling program at Site 2567 (28 quarterly rounds and two low-flow rounds), groundwater was encountered in monitoring wells at Site 2567 at depths ranging from 1.69 to 12.20 feet bgs (**Table 3-2**) with a slight gradient toward the southeast. Groundwater velocity and flow directions were predicted based on the interpretation of groundwater contour maps and slug test results, as well as the locations of underground utilities.

4.2.1 Groundwater Flow Direction

In accordance with NJAC 7:26E-3.13(d)2iv, 15 groundwater contour maps were generated for Site 2567 based on groundwater depth measurements from the seven monitoring wells collected on August 22, 2000 (**Figure 4-4a**), November 1, 2000 (**Figure 4-4b**), February 9, 2001 (**Figure 4-4c**), May 8, 2001 (**Figure 4-4d**), August 15, 2001 (**Figure 4-4e**), November 9, 2001 (**Figure 4-4f**), February 26, 2002 (**Figure 4-4g**), May 28, 2002 (**Figure 4-4h**), August 20, 2002 (**Figure 4-4i**), October 28, 2002 (**Figure 4-4j**), February 26, 2003 (**Figure 4-4k**), June 11, 2003 (**Figure 4-4l**), July 22, 2003 (**Figure 4-4m**), October 7, 2003 (**Figure 4-4n**) and January 16, 2004 (**Figure 4-4o**). The groundwater underlying Site 2567 appears to be consistently flowing to the southeast. No significant variations in groundwater flow conditions were observed in these 15 groundwater contour maps. Groundwater elevation data are presented in **Table 3-2**.

4.2.2 Hydrogeologic Properties

As discussed in **Section 3.4**, Versar conducted slug testing of the seven monitoring wells located at Site 2567 on August 16 and 17, 2001. Versar used the computer software

Aquifer Test by Waterloo Hydrogeologic, Inc. (version 3.01, 2001) to reduce the slug testing data using the Bouwer-Rice methodologies. Data plots generated by Aquifer Test are presented in **Appendix I**. A summary of the calculated conductivity values is presented in **Table 4-3**.

The calculated conductivity values range from 18.8 feet/day at monitoring well 2567-MW7 to 35.6 feet/day at Monitoring Well 2567-MW3, with a calculated geometric mean of 25.9 feet/day. The variability in the range of hydraulic conductivities is associated with the shallow depth of the monitoring wells, partial penetration into the aquifer, and the heterogeneous nature of the fill material at the site. The geometric mean is used instead of the average due to the commonly high range of variability in hydraulic conductivity measurements.

The groundwater flow gradient for the site was estimated using the groundwater elevation data discussed above. The groundwater flow gradient (*i*) is calculated by measuring the distance (L) between two equipotential lines h_1 and h_2 using the following equation:

$$i = \frac{h_1 - h_2}{L}$$

The groundwater flow gradient for Site 2567, based on water level measurements collected on February 9, 2001, was estimated at approximately 0.02 feet per foot.

Groundwater flow velocity (v) in the vicinity of the site was then estimated using the groundwater flow gradient (*i*), an estimated hydraulic conductivity (K) for the surrounding soils based on the slug test results, and an assumed porosity (α) in the following equation:

$$v = \frac{Ki}{\alpha}$$

The hydraulic conductivity (K) used in the calculation, 25.9 feet/day, is the geometric average based on the results of slug testing performed by Versar (**Table 4-3**). The porosity (α) was estimated at 40% using average values for silt and sands (Heath, USGS, 1989). The groundwater velocity for the site was calculated to be approximately 1.3 feet per day (equal to 475 feet per year) based on the February 9, 2001 water-level measurements.

As discussed in **Section 2.4.2**, Site 2567 is located within the Composite Confining Unit, which typically has low hydraulic conductivities (on the order of 0.1 feet per day). However, the higher hydraulic conductivity of the subsurface materials at Site 2567 is most likely due to the following factors:

- Fill material is present in the subsurface throughout much of Site 2567.
- The native material (Tinton Sand Formation) found at Site 2567, is comprised of relatively coarse material such as sand and sub-rounded quartz gravel.

5.0 SITE CHEMICAL CHARACTERIZATION

This section includes a discussion of the chemical characterization of Site 2567 based on the various samples collected and analyzed including 30 rounds of monitoring well samples. DPW personnel were responsible for the collection of samples during this remedial investigation. Sample analyses were performed by the FMETL. In **Section 5.1**, groundwater sampling results are presented for samples collected between April 1997 and January 2004. In **Section 5.1**, the groundwater sampling results are evaluated and one potential COC (TBA) is identified for groundwater at Site 2567.

5.1 Groundwater Monitoring Well Sampling Results

This section presents a discussion of the results of laboratory analyses performed for the 30 rounds (28 quarterly rounds plus two additional low-flow rounds) of groundwater samples collected from April 1997 through January 2004 from the seven monitoring wells (2567-MW1 through 2567-MW7) at Site 2567. The groundwater samples were collected and analyzed for VOCs plus 15 TICs, SVOCs plus 15 TICs, pesticides, plychlorinated biphenyls (PCBs) and TAL metals. The two low-flow sampling rounds were conducted from May 31 to June 5, 2001 and June 25-26, 2001 using a low-flow groundwater sampling technique for TAL metals.

As discussed in **Section 2.4.2**, Fort Monmouth is underlain by a Class III-A aquifer. The appropriate groundwater quality criteria for Class III-A are the criteria for the most stringent classification for vertically or horizontally adjacent ground waters that are not Class III-A (NJAC 7:9-6.7e). The NJDEP criteria used for comparison of groundwater analytical results were the higher of the Practical Quantitation Limits (PQLs) and the NJDEP GWQC for Class II-A aquifers (NJAC 7:9-6, Table 1). Analytes detected in groundwater monitoring well samples at Site 2567 at concentrations above the NJDEP criteria are bold and highlighted in **Table 5-1**. The chain-of-custody forms for groundwater monitoring well samples and laboratory data sheets are provided in **Appendix G**. **Figure 5-1** shows the distribution of COCs for groundwater within the area of Site 2567.

During the 30 quarterly sampling events, a total of 11 VOCs were detected in site groundwater. Four VOCs were detected at concentrations that exceeded their respective GWQC in at least one sample, while the remaining seven VOCs were detected below their respective GWQC. A total of four SVOCs were detected in site groundwater below their respective GWQC. No pesticides or PCBs were detected in site groundwater. A total of 18 metals were detected in site groundwater. Five metals were detected at concentrations that exceed their respective GWQC in at least one sample, while the remaining 13 metals were detected below their respective GWQC.

Analytes exceeding the NJDEP GWQC in groundwater samples are presented in four subsections: VOCs (**Section 5.1.1**), SVOCs (**Section 5.1.2**), Pesticides and PCBs (**Section 5.1.3**) and TAL Metals (**Section 5.1.4**).

5.1.1 VOCs

During 30 quarterly sampling events, four VOCs were detected in site groundwater at concentrations that exceeded their respective GWQC in at least one sample.

Benzene was detected at concentrations exceeding the GWQC of 1.0 ug/L in eight rounds of sampling collected at two monitoring well locations. Concentrations ranged from 1.03 ug/L (sampling round #8) in 2567-MW3 to 39.4 ug/L (sampling round #2) in 2567-MW1.

Methylene chloride was detected at concentrations exceeding the interim GWQC of 2.0 ug/L in one round of sampling collected at one monitoring well location at a concentration of 25 ug/L (sampling round #2) in 2567-MW3.

MTBE was detected at concentrations exceeding the interim GWQC of 70 ug/L in four rounds of sampling collected at two monitoring well locations. Concentrations ranged from 81.82 ug/L (sampling round #5) in 2567-MW3 to 240 ug/L (sampling round #2) in 2567-MW1.

TBA was detected at concentrations exceeding the interim GWQC of 100 ug/L in 24 rounds of sampling collected at two monitoring well locations. Concentrations ranged from 143.26 ug/L (sampling round #7) in 2567-MW1 to 1,488.05 ug/L (sampling round #2) in 2567-MW1.

5.1.2 SVOCs

No SVOCs were detected above the appropriate GWQC at the site.

5.1.3 Pesticides and PCBs

No pesticides or PCBs were detected at the site.

5.1.4 TAL Metals

During 30 quarterly sampling events, five metals were detected in groundwater samples at concentrations above their respective NJDEP GWQC.

Aluminum was detected at concentrations exceeding the GWQC of 200 ug/L in four rounds of sampling collected at five monitoring well locations. Concentrations ranged from 261 ug/L (sampling round #4) in 2567-MW2 to 1,832 ug/L (sampling round #4) in 2567-MW3.

Iron was detected at concentrations exceeding the GWQC of 300 ug/L in four rounds of sampling collected at seven monitoring well locations. Concentrations ranged from 3,290 ug/L (Low Flow #2) in 2567-MW6 to 19,180 ug/L (sampling round #3) in 2567-MW5.

Lead was detected at concentrations exceeding the GWQC of 10 ug/L in seven rounds of sampling collected at two monitoring well locations. Concentrations ranged from 10.7 ug/L (sampling round #1) to 49.5 ug/L (sampling round #23) in 2567-MW5.

Manganese was detected at concentrations exceeding the GWQC of 50 ug/L in four rounds of sampling collected at six monitoring well locations. Concentrations ranged from 56.4 ug/L (sampling round #4) in 2567-MW5 to 271.8 ug/L (sampling round #3) in 2567-MW2.

Sodium was detected at concentrations exceeding the GWQC of 50,000 ug/L in two rounds of sampling collected at two monitoring well locations. Concentrations ranged from 51,200 ug/L (Low Flow #1) in 2567-MW1 to 98,300 ug/L (Low Flow #1) in 2567-MW2.

5.2 Groundwater Geoprobe® Point Sampling Results

This section presents a discussion of the results of laboratory analyses performed for the groundwater samples collected in February and April 2004 from the seven Geoprobe® points (GW-1, GW-2, GW-3, W-1, W-2, W-3 and W-4) at Site 2567. The groundwater samples were collected and analyzed for VOCs plus 15 TICs.

As discussed in **Section 2.4.2**, Fort Monmouth is underlain by a Class III-A aquifer. The appropriate groundwater quality criteria for Class III-A are the criteria for the most stringent classification for vertically or horizontally adjacent ground waters that are not Class III-A (NJAC 7:9-6.7e). The NJDEP criteria used for comparison of groundwater analytical results were the higher of the PQLs and the NJDEP GWQC for Class II-A aquifers (NJAC 7:9-6, Table 1). Analytes detected in Geoprobe® point groundwater samples at Site 2567 at concentrations above the NJDEP criteria are bold and highlighted in **Table 5-2**. The chain-of-custody forms for groundwater Geoprobe® point samples and laboratory data sheets are provided in **Appendix H**. **Figure 5-1** shows the distribution of COCs for groundwater within the area of Site 2567.

During the one sampling event, a total of two VOCs, MTBE and TBA, were detected in site groundwater at concentrations below their respective GWQC in at least one sample.

5.3 Potential COCs

In order to determine the contaminants of concern at Site 2567, the first step was to identify exceedences of the NJDEP criteria. These exceedences are presented in **Section 5.1** and **Section 5.2** above and in **Table 5-1** and **Table 5-2**. There were several factors that were used to eliminate or identify analytes as COCs. These factors include the magnitude and frequency of the exceedences, comparisons to low-flow sampling results (for metals only) and comparisons to established background concentrations. **Table 5-3** summarizes the process used to identify contaminants of concern at Site 2567.

There were four VOCs (benzene, methylene chloride, MTBE and TBA) that were detected in groundwater at concentrations exceeding the GWQC. Of the four VOCs detected above the NJDEP GWQC, three are considered to be uncharacteristic (benzene, MTBE and TBA), as discussed below:

- Benzene has not been detected in monitoring wells at Site 2567 above its NJDEP criteria of 1.0 ug/L since May 1999 and it has not been detected at all in monitoring wells since July 1999. Benzene was not detected in any of the Geoprobe® points. Although benzene was identified as a contaminant at Site 2567 in the 1995 Weston SI and closure report, due to the magnitude and frequency of its exceedences, benzene is no longer considered to be a COC.
- Methylene chloride exceeded the NJDEP criteria of 3.0 ug/L in only one groundwater monitoring well sample collected at Site 2567 since April 1997 and is therefore not considered to be a COC.
- MTBE has not been detected in groundwater samples at Site 2567 at concentrations exceeding its GWQC since June 1998. MTBE was not detected in any of the Geoprobe® points at concentrations exceeding its GWQC. Although MTBE was identified as a contaminant at Site 2567 in the 1995 Weston SI and closure report, due to the magnitude and frequency of its exceedences, MTBE is no longer considered to be a COC.
- TBA was detected above the NJDEP criteria of 100 ug/L during 23 rounds of sampling conducted at monitoring well 2567-MW1. TBA was also detected above the NJDEP criteria of 100 ug/L during one round of groundwater sampling at monitoring well 2567-MW3 (in August 1997). TBA was detected in one of the seven Geoprobe® points at a concentration below its GWQC. Based on these results, TBA is determined to be a COC at Site 2567.

There were no SVOCs detected at concentrations exceeding the GWQC, and therefore no SVOCs are considered COCs at Site 2567. In addition, there are no pesticides or PCBs considered to be COCs at Site 2567 because none were detected in groundwater samples at the site.

There were five metals that were detected in site groundwater at concentrations exceeding the NJDEP GWQC (aluminum, iron, lead, manganese and sodium). The specific exceedences and the identification of each of these metals as a potential contaminant of concern are discussed below. As presented in the Weston SI Report (1995), several natural and man-made factors contribute to the wide range in concentrations of metals in soils, which further impact the concentration of metals in groundwater. Soils derived from the glauconitic sands contain abundant aluminum, calcium, potassium, iron, magnesium and manganese (among others), which are likely to be present at elevated concentrations in the groundwater, particularly when sediments are entrained in the collected groundwater samples. A low-flow sampling methodology was proposed for use by the DPW and accepted by the NJDEP to assess the impact of suspended sediments on the dissolved phase metals concentrations at the site. Using a low-flow sampling methodology to reduce the presence of suspended sediment yielded substantial reductions in the dissolved phase concentrations of metals, particularly for the constituents regarded as “non-native” (e.g., arsenic, antimony, beryllium, cadmium, chromium, cobalt, lead, mercury, selenium, silver, thallium, vanadium). Significant decreases in the concentrations of naturally occurring metals have been observed when the low-flow sampling procedure was used prior to analysis, including the results for aluminum, barium, calcium, copper, iron, magnesium, manganese, nickel, potassium,

sodium and zinc. However, the native metal constituents (e.g., those indigenous to the soil types present at Fort Monmouth) were consistently present in the groundwater, even when the low-flow sampling methodology was employed.

The five different metals that were detected in site groundwater at concentrations exceeding the NJDEP GWQC are distinguished into background and non-native metals. The indigenous metals are compared to the Main Post Maximum Background Concentrations (MBC) identified in the Weston SI Report (1995), which are presented in **Tables 5-1** and **5-3**. The non-native metals are discussed in relation to the NJDEP GWQC only.

Of the five metals detected in site groundwater that exceed the NJDEP cleanup criteria, four metals (aluminum, iron, manganese and sodium) are common background constituents in Monmouth County soils. The water chemistry in areas underlain by glauconitic sediments (such as Red Bank, Tinton and Hornerstown Sands) is dominated by calcium, magnesium, manganese, aluminum and iron. Elevated concentrations of these metals are routinely observed in groundwater samples collected at Fort Monmouth. In consideration of these facts, the groundwater analytical results for these eight metals were compared to their respective MBCs of 121,000 ug/L (aluminum), 431,000 ug/L (iron), 331 ug/L (manganese), and 21,500 ug/L (sodium). Aluminum, iron and manganese are not considered to be COCs because these metals did not exceed their respective MBC. Sodium is not considered to be a COC due to the proximity of Site 2567 to sea water.

There was one non-native metal that exceeded its GWQC (lead). Lead is not considered to be a COC at Site 2567 because there were only seven exceedences of NJDEP criteria in groundwater samples collected at two monitoring well locations.

Two separate rounds of sampling (May 31 to June 5, 2001, and June 25-26, 2001) were performed during the groundwater sampling program using the low-flow groundwater sampling technique as discussed in **Section 3.2.1**. This technique was used to determine if the detected metal concentrations observed in the groundwater samples are a function of entrained sediments suspended in the groundwater during the course of well purging and sampling activities, or an accurate representation of dissolved phase aquifer/groundwater conditions. Since the five metals detected above the GWQC at Site 2567 were not considered to be COCs through other reasons (as discussed above), the low-flow sample results do not affect the determination of the COCs.

Based on the magnitude of the exceedences, the frequency of occurrences and the wide-ranging results, one VOC (TBA) is identified as potential COC at Site 2567 and is given further consideration with regard to contaminant migration potential in **Section 6.0** of this RIR. No other potential COCs were identified at Site 2567.

5.4 Dissolved Oxygen

During each of the monitoring well sampling rounds, the DO of the groundwater was recorded prior to sampling. The average DO ranged from 1.85 mg/L in well 2567-MW7

to 3.31 in well 2567-MW5. The aquifer DO measurements for groundwater sampling rounds between April 1997 and January 2004 are shown in **Table 5-4**. The DO measurements are included in the laboratory data packages. The aquifer DO is discussed in more detail in **Section 6.1.3**.

6.0 CONTAMINANT MIGRATION AND GROUNDWATER USE DESIGNATION

As discussed above, there was one identified COCs in groundwater at Site 2567: TBA. The possible migration and degradation of this COC is discussed below.

Section 6.1 presents a groundwater model that addresses TBA biodegradation and migration at Site 2567. Predictions for the migration and change in TBA concentration over time are based on the most recent groundwater sampling results for TBA at Site 2567 and published biodegradation rates for TBA in groundwater. These model results are presented graphically and in tabular form.

Following the discussion of the groundwater migration model for Site 2567, **Section 6.2** presents the results of the sensitive receptor survey. A discussion of appropriate aquifer classification is provided in **Section 6.3**. The findings of the contaminant migration model and groundwater use designation are summarized in **Section 6.4**.

6.1 Groundwater Model Development

The parameters used in the groundwater flow model were based on Fort Monmouth survey data, published literature covering the hydrogeology of the region, as well as field measurements of groundwater elevation at the site (discussed in **Section 4.2**). A biodegradation spreadsheet model was used to predict the decay and contaminant transport of TBA at Site 2567. The biodegradation model incorporates the effects of horizontal groundwater flow, biodegradation and retardation.

6.1.1 Conceptual Site Model

Land surface at the Charles Wood Area is mostly flat with some moderate slopes, with elevation ranging from 20 feet amsl in the northeast to 60 feet amsl in the southwest. Site 2567 is located approximately 200 feet north of an unnamed tributary/drainage to Wampum Brook (**Figure 2-2**), which flows eastward into Wampum Brook. The USGS topographic map (**Figure 2-1**) shows that the land surface of the site is relatively flat with an elevation of approximately 30 feet amsl. Surface water runoff from Site 2567 is likely to flow south along Hope Road and into the unnamed tributary to Wampum Brook identified in **Figure 2-2**.

As discussed in **Section 2.4.1**, the geologic formations that outcrop at the Charles Wood Area of Fort Monmouth include the Tinton and Red Bank Sands, as well as the Hornerstown Formation. These formations, along with the Navesink Formation, are part of the Composite Confining Unit that overlies the Wenonah-Mount Laurel Aquifer (Zapecza, 1990). A cross section of the New Jersey Coastal plain that shows these formations is presented in **Figure 6-1.**

As discussed in **Section 4.1**, the lithology encountered at Site 2567 consists primarily of fill material, fine sand, silt and clay. The well borings in the paved area of Site 2567 (2567-MW1 through 2567-MW4) encountered fill with a maximum depth ranging from 4

to 9 feet bgs. The fill consisted of light orange and light green sand. The native material encountered in the well borings consisted of brown, green and black clay, silt and fine sand, as well as gray sand with well-rounded gravel. The lithology of the native material is consistent with the Tinton Sand (Minard, 1969).

As discussed in **Section 4.2**, groundwater was encountered in the seven monitoring wells at Site 2567 at depths ranging from 1.69 to 12.20 feet bgs. The groundwater underlying Site 2567 appears to be consistently flowing to the southeast with a gradient of approximately 0.02 feet per foot.

6.1.2 Biodegradation Model

A Microsoft Excel spreadsheet (**Table 6-1**) was used to predict the biodegradation and migration of TBA at Site 2567. The biodegradation model incorporates the effects of horizontal groundwater flow, first-order biodegradation and retardation. The results of this biodegradation model are discussed with respect to possible offsite migration of the TBA at Site 2567. The model results were used to explain groundwater sample results for the one identified COC at Site 2567.

As discussed in **Section 5.1**, TBA was detected in well 2567-MW1 during 23 of the 30 rounds of sampling at concentrations in excess of the NJDEP criteria of 100 ug/L at concentrations ranging from 143.26 ug/L to 1,488.05 ug/L. In one round of sampling (sampling round #5), TBA was detected below the NJDEP criteria of 100 ug/L in well 2567-MW1 at a concentration of 95.63 ug/L. TBA was also detected above the NJDEP criteria of 100 ug/L in well 2567-MW3 in only one round (940 ug/L in sampling round #2). Due to the infrequent occurances of TBA in well 2567-MW3, the biodegradation model does not address TBA contamination at this well. TBA was not detected in the other five wells sampled during the 30 rounds of groundwater samples collected and analyzed from Site 2567.

Due to the lack of a decreasing trend in the TBA detections in well 2567-MW1, a site-specific decay rate for TBA was not calculated. Instead, the first-order, aerobic decay constant of 0.0019 (1/day) was obtained from published results (high value listed in Howard, 1991) and used in the model. This published decay constant corresponds to a half-life of 365 days.

6.1.3 Dissolved Oxygen

The aerobic biodegradation of the COCs at Site 2567 is justified based on analysis of the DO observed during monitoring well sampling at Site 2567. During each sampling event at each well, DO was recorded while the wells were being purged. **Table 5-4** shows the DO measurements for the monitoring wells at Site 2567 during sampling events between April 1997 and January 2004.

Aerobic respiration is the first reaction in an aerobic environment that contains microorganisms capable of biodegradation (Wiedemeir, 1999). Once the available DO is depleted and anaerobic conditions dominate the interior regions of the organic contaminant plume, anaerobic microorganisms can utilize other electron acceptors in the

following order of preference: nitrate, manganese, iron (III), sulfate and finally, carbon dioxide. As each electron acceptor being utilized for biodegradation becomes depleted, the next most preferable electron acceptor is utilized. Each successive redox couple provides less energy to the microorganism.

Aerobic degradation requires the presence of DO. If the subsurface environment becomes devoid of oxygen, the rate of aerobic biodegradation will typically be limited by oxygen supply rather than by nutrient concentration. For anaerobic biodegradation the microbial competition ultimately will determine the dominant process, but the dominant process can vary both temporally and spatially. Therefore, either iron (III) reduction, sulfate reduction or methanogenesis may dominate depending on seasonal variations in concentrations of DO and sulfate.

Using stoichiometry, a utilization factor can be developed showing the ratio of the oxygen consumed to the mass of DO consumed in the biodegradation reactions. Similarly, utilization factors can be developed to show the ratio of the mass of metabolic by-products (such as ferrous iron) that are generated to the mass of dissolved organic degraded in the biodegradation reactions. When the available electron acceptor/by-product concentrations are divided by the appropriate utilization factor, an estimate of the biodegradation capacity of the ground water flowing through the source zone and plume can be developed as follows:

Biodegradation Capacity (mg/L) =

{(Average Upgradient Electron Acceptor Concentration) -
(Minimum Plume Zone Electron Acceptor Concentration)} / Utilization Factor

The upgradient well used in the calculation of Biodegradation Capacity is well 2567-MW2. The plume zone is assumed to be located in the vicinity of well 2567-MW1. The following utilization factors and site biodegradation capacity, based on the degradation of benzene, MTBE and TBA, are calculated for Site 2567:

Contaminant of Concern	Upgradient Well	Average Upgradient Dissolved Oxygen (mg/L)	Plume Zone Well	Minimum Plume Zone Dissolved Oxygen (mg/L)	Utilization Factor	Site Biodegradation Capacity (mg/L)
Aerobic Biodegeradation of Benzene: $C_6H_6 + 7.5O_2 \rightarrow 6CO_2 + 3H_2O$						
Benzene	2567-MW2	4.04	2567-MW3	1.00	3.08	0.98
Aerobic Biodegeradation of MTBE: $C_5H_{12}O + 7.5O_2 \rightarrow 5CO_2 + 6H_2O$						
MTBE	2567-MW2	4.04	2567-MW3	1.00	2.73	1.11
Aerobic Biodegeradation of TBA: $C_4H_{10}O + 6O_2 \rightarrow 4CO_2 + 5H_2O$						
TBA	2567-MW2	4.04	2567-MW1	1.40	0.385	6.85

The highest concentration of TBA detected at well 2567-MW1 (in February 2001) was 1,488.05 ug/L (=1.48805 mg/L). Based on the calculations presented in the preceding table and on site observations, groundwater has enough biodegradation capacity to degrade dissolved-phase TBA, if aerobic reactions are occurring at Site 2567.

6.1.4 Model Results and Discussion

The TBA biodegradation model parameters and results for well 2567-MW1 is presented in **Table 6-1**. At monitoring well 2567-MW1, the initial TBA concentration was measured to be 1,488.05 ug/L on February 9, 2001. This concentration led to a predicted time of 3.9 years for compliance with the NJDEP criteria (100 ug/L). The migration distance of TBA from well 2567-MW1 is predicted to be 1,800 feet. The predicted TBA concentration at well 2567-MW1 is shown in **Figure 6-2**. **Figure 6-3** displays the area that is estimated to be impacted by future TBA migration.

The model predictions for TBA do not match observations of TBA concentrations in groundwater at Site 2567. If the TBA contamination will migrate approximately 1,800 feet in 3.9 years, as predicted in the biodegradation model, TBA should have already migrated to one of the three downgradient monitoring wells 2567-MW5, 2567-MW6 or 2567-MW7. However, TBA was not detected in any of these three monitoring wells in any of the sampling rounds presented in this RIR (see **Table 5-1**), and was also not detected in samples collected at well 2567-MW5 between May 1995 and April 1997. Additionally, TBA was not detected in six of seven groundwater Geoprobe® sampling points. Therefore, it appears that no significant migration of TBA has occurred at Site 2567.

6.2 Sensitive Receptor Survey Results

The sensitive receptor survey was completed by performing two tasks: an Offsite Receptor Report and an NJDEP well record search.

Offsite Receptor Report

An Offsite Receptor Report (dated October 24, 2001) was prepared for Site 2567 by EDR of Southport, Connecticut. A copy of the Offsite Receptor Report, identifying sensitive receptors in the area, is provided in **Appendix J**.

The Offsite Receptor Report indicates that there are seven schools and one daycare facility located within a one-mile of Site 2567. The seven schools were located between ½ and 1 mile from Site 2567. The day care facility is located approximately ½ mile south of Site 2567 and approximately ¼ mile south of Wampum Brook.

Well Record Search

A search of the comprehensive well database maintained by the NJDEP Well Permitting and Regulations Section of the Bureau of Water Allocation was performed by Versar to identify groundwater wells that may be potentially affected by contaminant migration at Site 2567. The search was performed for a one-mile radius surrounding the central point of Site 2567.

The well records obtained during the Well Search are provided in **Appendix K** and are summarized in **Table 6-2**. The wells designated for domestic or irrigation uses are presented in **Figure 6-4**. The migration distance of 1,800 feet, which is discussed above, was used as a basis for comparison. There were no domestic wells identified by records within 1,800 feet of Site 2567 with the following exception (though actual water use and physical presence were not verified):

NJDEP Permit #2919540
Permit Date: 11/9/87
Location: N40°17'33" W74°04'53"
Depth of well: 200 feet
Approximate distance from site: 1,400 feet (southwest)

Due to the significant distance of this one sensitive receptor to Site 2567, as well as the south to southeasterly groundwater flow direction from Site 2567, the concern for this groundwater receptor is minimal. The probability that any well in the vicinity of the site is being used for consumptive purposes is low, thus minimizing health-based risks associated with ingestion. Therefore, no sensitive receptors are likely to be impacted by the presence of COCs in the groundwater beneath Site 2567.

6.3 Aquifer Classification

Upon review of the NJDEP Groundwater Quality Standards (NJAC 7:9-6), January 7, 1993, Site 2567 is found to be underlain by a Class III-A aquifer. The primary designated use for Class III-A ground water is the release or transmittal of groundwater to adjacent classification areas and surface water, as relevant. Secondary designated uses in Class III-A include any reasonable uses. For an area to be classified as a Class III-A aquifer, the groundwater must meet the following characteristics:

- Class III-A groundwater includes portions of the saturated zones (that meet the criteria below) of the Woodbury Formation, Merchantville Formation, Marshalltown Formation, Navesink Formation, Hornerstown Formation, aquitard formations of the Potomac-Raritan-Magothy aquifer system and the Kirkwood aquifer system, portions of the glacial moraine and glacial lake deposits, and other geologic units having the characteristics of an aquitard. Class III-A areas have the following characteristics (NJAC 7:9-6.5):
  - The average thickness of a Class III-A aquifer must be at least 50 feet
  - Typical hydraulic conductivity of a Class III-A aquifer is approximately 0.1 feet/day or less
  - The aereal extent defined as Class III-A must be at least 100 acres.

The shallow aquifer at Site 2567 meets each of the four criteria listed above. These criteria are discussed below:

- The Charles Wood Area of Fort Monmouth is located within the outcrop area of the Composite Confining Unit (Martin, 1998), which includes the Red Bank Sand, Tinton Sand, Vincentown Formation, Manasquan Formation, Shark River

Formation, Piney Point Formation and the basal clay of the Kirkwood Formation (see **Section 2.4.2**). The thickness of the Composite Confining Unit in the vicinity of Fort Monmouth is approximately 125 feet.

- Published hydraulic conductivities (Martin, 1998) for the Composite Confining Unit yield a geometric mean of 0.12 feet per day, which is consistent with an aquitard.
- The Charles Wood area of Fort Monmouth is greater than 100 acres.

6.4 Contaminant Migration Summary

TBA was identified as the only COC in groundwater at Site 2567 using the NJDEP GWQC for Class II-A aquifers. The Class II-A criteria were used for comparison with site-specific data obtained from the various sampling rounds because the GWQS (NJAC 7:9-6.7e) state that the groundwater quality criteria to be used for Class III-A aquifers are the most stringent criteria associated with vertically or horizontally adjacent groundwaters that are not Class III-A.

Groundwater modeling and a sensitive receptor survey were conducted to determine whether groundwater from Site 2567 could impact surface water, off-site domestic wells and the subsurface groundwater aquifers. The groundwater modeling shows the impact of TBA migration in groundwater will be minimal. The results of the groundwater modeling (**Section 6.1**) and sensitive receptor survey (**Section 6.2**) are summarized below:

- The surface waters nearest to Site 2567 are the unnamed tributary to Wampum Brook and Wampum Brook. Using published biodegradation rates for TBA, the biodegradation model predicts that the TBA will degrade at well 2567-MW1 within 3.9 years. However, because downgradient sampling did not detect TBA, impacts to surface water are not expected.
- The sensitive receptor survey indicates that the closest downstream domestic well is approximately 1,400 feet southwest of the site, which is too far off the predicted groundwater flow direction to be impacted by COC migration.
- The risk of impacts to human health or to domestic animals associated with the ingestion of the TBA is negligible. It is unlikely that the well in the vicinity of the site is used for consumptive purposes due to poor overall water quality and low well yields. The potential migration of COCs from Site 2567 to this well in any reasonable time period is not possible.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Geologic publications show that Site 2567 is located within an aquitard (the Navesink-Hornerstown Confining Unit). The low hydraulic conductivity of the aquitard and the thickness of the aquitard at the site conform to the requirements of a Class III-A aquifer, as specified in the NJDEP GWQS (NJAC 7:9-6, January 7, 1993).

The analytical results for the groundwater samples collected between June 1997 and January 2004 indicate that TBA is a potential COC at Site 2567. The Class II-A criteria were used for comparison with site-specific data obtained from the various sampling rounds because the GWQS (N.J.A.C. 7:9-6.7e) state that the GWQC to be used for Class III-A aquifers are the most stringent criteria associated with vertically or horizontally adjacent groundwaters that are not Class III-A. Although previous investigations at Site 2567 did not address TBA as a potential COC, the current NJDEP interim groundwater criteria of 100 ug/L was used in reference to TBA concentrations in this RIR, and further remedial investigations should consider exceedences of this interim groundwater criteria.

Based on a review of the groundwater sampling results by the DPW and NJDEP, it appears that no significant migration of TBA has occurred at Site 2567. TBA degradation has the potential to occur at the site, based on the site results and the model. Continued monitoring of TBA degradation through monitored natural attenuation (MNA) is recommended at the site.

8.0 REMEDIAL ACTION WORKPLAN

The following sections present the RAWP for the remediation of the identified COC at Site2567: TBA. This RAWP was prepared in accordance with the applicable sections of NJDEP *Technical Requirements for Site Remediation* (February 2003), NJAC 7:26E, et seq. The remedial activities described in the RAWP will be performed by the DPW.

8.1 Description of Remedial Action Alternatives

Based on the findings of the previous RIR sections of this report, four general response actions were considered for implementation at Site 2567: No Action, Limited Action and MNA, *In-Situ* Active Restoration and *Ex-Situ* Active Restoration. Numerous remedial technologies were identified for each general response action, and process options of each remedial technology were screened based on effectiveness, implementability and cost. The remedial technology process options derived from the consideration of the general response actions yielded the following remedial action alternatives for further consideration: No Action, Limited Action with MNA, Limited Action with Enhanced Bioremediation and MNA and a Mass Extraction Pump-and-Treat System with MNA.

Alternative #1: No Action

A No Action alternative is evaluated to establish a baseline for the comparison of other remedial alternatives. Under this alternative, no remedial action will take place and there are no associated costs.

Alternative #2: Limited Action with MNA

A Limited Action with MNA alternative includes long-term monitoring of groundwater and surface water. No active treatment will be implemented to remove the COC from groundwater at the site under this alternative. Monitoring of groundwater and surface water for the natural attenuation of the COC will verify that the COC is naturally biodegrading and TBA levels are continually decreasing over time. This remedial action alternative will minimize capital and Operation and Maintenance (O&M) costs while effectively allowing COC concentrations to naturally degrade below action levels.

Alternative #3: Limited Action with Enhanced Bioremediation and MNA

A Limited Action with Enhanced Bioremediation and MNA alternative includes direct-push injections of Hydrogen Release Compound® (HRC®) and long-term monitoring of groundwater and surface water. The HRC® will be injected into the “hot-spot” areas of the site, accelerating the rate of biodegradation of the COC. Monitoring of groundwater and surface water for the natural attenuation of the COC will verify that the COC is naturally biodegrading and PCE levels are continually decreasing over time. This remedial action alternative has low capital costs and virtually zero O&M costs while effectively enhancing and accelerating the degradation of COC concentrations to below action levels.

Alternative #4: Mass Extraction Pump-and-Treat System with MNA

A Mass Extraction Pump-and-Treat System with MNA alternative includes powered machinery that actively pumps contaminated groundwater to an above-ground remediation facility and long-term monitoring of groundwater and surface water. The Mass Extraction Pump-and-Treat System degrades contamination levels in the above-ground facility and often returns the treated water to a nearby surface water body. Monitoring of groundwater and surface water for the natural attenuation of the COC will verify that the COC is naturally biodegrading and TBA levels are continually decreasing over time. This remedial action alternative typically requires extensive O&M costs, as well as high capital costs for equipment and site preparation.

8.2 Comparative Analysis of Remedial Action Alternatives

Each of the above alternatives was evaluated against a standard set of criteria, such as protection of human health and the environment, compliance with the NJDEP, short- and long-term effectiveness, permanence, reduction of toxicity, mobility or volume through treatment, implementability and cost.

Alternative #1: A No Action alternative takes no actions to eliminate, reduce or control exposure pathways, provides no short- or long-term effectiveness or permanence and does not comply with NJDEP criteria. This alternative is not appropriate for remediating COCs under current conditions at Site 2567.

Alternative #3: Limited Action with Enhanced Bioremediation and MNA alternatives are becoming increasingly popular due to their extremely low capital costs and non-existent O&M costs and their aggressive treatment of contaminant plumes. Not only are these remedial alternatives low in cost and active treatments, they are easily implemented, very effective in the short-term, not permanent and are accepted by the NJDEP. However, due to the low residual concentrations of COCs present at Site 2567, this alternative would not significantly impact COC levels at the site.

Alternative #4: A Mass Extraction Pump-and-Treat System with MNA is one of the most widely used groundwater remediation technologies. This remedial alternative is a very aggressive treatment approach with long-term effectiveness and permanence; however, this alternative is also difficult to implement, has low short-term effectiveness, is high is cost and often experiences unforeseen difficulties relating to the sorption of COCs to soil particles. The molecular nature of groundwater contaminants allows them to sorb to soil particles, which prevents the COCs from being effectively pumped out of the ground for treatment. Greater capital costs combined with protracted O&M costs, plus the high incidence of unexpected treatment difficulties and marginal efficiency, often lead to total project costs that exceed the initial estimates by an order of magnitude. Due to the low residual COC concentrations at Site 2567, this approach is not of appropriate cost and remediation strength for success at the site.

Alternative #2: A Limited Action with MNA alternative has been selected for Site 2567 based upon its appropriateness for remediation of the low residual concentrations of COCs present at the site in a time frame acceptable to the NJDEP. MNA is very low in

cost, and the low COC concentrations do not require a permanent alternative. This alternative is equally effective in the short- and long-term, is easy to implement and can attain compliance with NJDEP criteria. Historical groundwater sampling results at Site 2567 indicate that natural attenuation is occurring at an acceptable rate. The specifics of the MNA remedial action are discussed below.

8.3 Approach

The following sections provide details of the approach the DPW will use to perform this remedial action.

8.3.1 Monitored Natural Attenuation

The long-term monitoring program at Fort Monmouth includes semi-annual groundwater monitoring and quarterly surface water sampling at strategic locations. Continued groundwater and surface water monitoring at Site 2567 is recommended.

Quarterly groundwater sampling at Site 2567 will include groundwater samples collected from monitoring wells 2567-MW1, 2567-MW2, 2567-MW3, 2567-MW4, 2567-MW5, 2567-MW6 and 2567-MW7. The groundwater samples collected from these monitoring wells will be analyzed by the FMETL for VOCs plus 15 TICs. NJDEP GWQC for the identified COC should be used for comparison to groundwater sampling results. A remedial action progress report will be submitted annually. The following table summarizes the groundwater sampling program at Site 2567.

Monitoring Well	Analyzed for	Future Sampling Status
2567-MW1	VOCs	Continue Quarterly Sampling
2567-MW2	VOCs	Continue Quarterly Sampling
2567-MW3	VOCs	Continue Quarterly Sampling
2567-MW4	VOCs	Continue Quarterly Sampling
2567-MW5	VOCs	Continue Quarterly Sampling
2567-MW6	VOCs	Continue Quarterly Sampling
2567-MW7	VOCs	Continue Quarterly Sampling

8.3.2 Quality Assurance Project Plan (QAPP)

Field sampling activities will be conducted in accordance with the NJDEP Field Sampling Manual. The FMETL will conduct all analyses in accordance with the New Jersey Laboratory Certification Program.

Quality control samples will be collected to assure that data developed during sampling are comparable to, or are of greater quality than, prior data collected at the site. Quality control samples for this project include trip blanks, field blanks and duplicate samples. One trip blank will be included with each sample shipment; one field blank will be taken each day that sampling is performed. Duplicate samples are to be collected at a rate of one duplicate sample for every 20 samples; therefore, one duplicate sample is required for every round of samples submitted to the FMETL for analysis. The FMETL will conduct internal auditing procedures according to their established Quality Assurance Manual.

All samples will be placed in laboratory-supplied bottles and placed on ice upon collection to assure samples are maintained below 4°C. Proper chain-of-custody procedures will be followed, tracking the samples from collection through analysis and reporting.

8.3.3 Remedial Action Progress Report (RAPR)

An RAPR will be prepared one year after the completion of this RIR/RAWP in accordance with NJDEP *Technical Requirements for Site Remediation* (February 2003), NJAC 7:26E-6.6. The RAPR will include a summary of the remedial actions performed during the reporting period, an analysis of the semi-annual groundwater and surface water sampling results collected during the reporting period, conclusions about the effectiveness of the MNA program, and the trends of the COC and recommendations concerning further action at Site2567.

8.4 Project Organization

The Contracting Officer's Representative (COR) for this project is Mr. Dinker Desai, who is responsible for all procurement and change orders. Mr. Doug Guenther can provide technical site guidance as requested by the contractor. Any variance to the NJDEP *Technical Requirements for Site Remediation* (February 2003), NJAC 7:26E, et seq. will be communicated to the NJDEP immediately. No variance to the NJDEP regulations will be permitted unless approved by the NJDEP Case Manager, Mr. Greg Zalaskus.

8.5 Site Specific Health and Safety Plan (SSHSP)

The SSHSP will be prepared, as required by NJDEP *Technical Requirements for Site Remediation* (February 2003), NJAC 7:26E, et seq., and adhered to as part of the remediation activities.

8.6 Effectiveness Analysis and Certification

The effectiveness of this remedial action will be assured through an evaluation of the quarterly groundwater sampling analytical results. This analysis will be performed as discussed in **Section 8.2.1**.

8.7 Remedial Action Costs

The estimated costs for implementation of the remedial action to be performed at Site 2567 are provided below:

Estimated Costs of Remedial Actions to be Performed at Site 2567 (per year)	
TASK	**ESTIMATED COSTS**
1. Total Labor Cost	$ 3,200
2. Laboratory costs	$ 5,700
3. Data analysis and Progress Report	$ 8,700
TOTAL ESTIMATED COSTS	$ 17,600
TOTAL ESTIMATED COST TO CLOSURE	$ 91,000

9.0 REFERENCES

ATC Associates, letter report submitted to the NJDEP in May 2000, *Results of Long-Term Groundwater Monitoring Program, Fort Monmouth, Building 2567, Fort Monmouth, New Jersey*.

Domenico, P.A. and F.W. Schwartz, 1998, *Physical and Chemical Hydrogeology, 2nd ed.* New York, John Wiley and Sons, New York.

Heath, R.C., 1989, *Basic ground-water hydrology*, U.S. Geological Survey Water-Supply Paper 2220, 5th printing, U.S. Government Printing Office, Washington, DC.

Howard, P.H., et. al., 1991, *Handbook of Environmental Degradation Rates*. Lewis Publishers.

Jablonski, L.A., 1968, *Groundwater Resources of Monmouth County, New Jersey. USGS Special Report 23*. USGS, Washington, DC.

Martin, M., 1998, *Groundwater Flow in the New Jersey Coastal Plain.* USGS Professional Paper 1404-H.

Meisler, H., J.A. Miller, L.L. Knobel, and R.L. Wait, 1988, "Region 22, Atlantic and Eastern Gulf Coastal Plan," in *Hydrogeology: The Geology of North America*, W. Back, J.S. Rosenhein, and P.R. Seaber, editors. Vol. 0-2. pp. 209-218.

Minard, J.P., 1969, *Geology of Sandy Hook Quadrangle in Monmouth County, New Jersey*. U.S. Government Printing Office, Washington, DC.

New Jersey Geological Survey, 1994, *Geologic Map of New Jersey*.

National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, 1997, *NIOSH Pocket Guide to Chemical Hazards*, Washington, D.C.

Roy F. Weston, Inc. (Weston), October 1993, *UST Closure and Site Assessment Report for Building 2567, Tanks 33 and 46,* Fort Monmouth, New Jersey.

Roy F. Weston, Inc. (Weston), January 1995, *UST Closure and Site Assessment Report, Building 2567, UST Nos. 42, 42, 43, 44, and 45*, prepared by Roy F. Weston, Inc. (Weston) for the DPW in January 1995, Fort Monmouth, New Jersey.

Roy F. Weston, Inc. (Weston), December 1995, *Site Investigation Report - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey*.

U.S. Army Garrison, Fort Monmouth, Directorate of Public Works (DPW), December 1997, *Fort Monmouth Standard Sampling Operating Procedure*, New Jersey.

U.S. Army Garrison, Fort Monmouth, Directorate of Public Works (DPW), Nad-83 Base Map of Fort Monmouth, New Jersey.

U.S. Army Garrison, Fort Monmouth, Directorate of Public Works (DPW), Nad-83 Topographic Survey of Fort Monmouth, New Jersey.

USDA Soil Conservation Service, 1989, *Soil Survey of Monmouth County, New Jersey.*

U.S. Geological Survey, 1981, *Long Branch Quadrangle Map*.

VERSAR, Inc. (Versar), 12 September, 2000, *Indefinite Quantity Indefinite Delivery Contract No. DACA51-00-D-0004 Fort Monmouth, Contract Support Services Relating to the Investigation of Groundwater and Surface Water at Five Restoration Sites*.

Wiedemeier, T.H., Rifai, H.S., Newell, C.J., and Wilson, J.T., 1999. *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*. John Wiley and Sons, New York.

Zapecza, O., 1989, *Hydrogeologic Framework of the New Jersey Coastal Plain.* U.S. Geological Survey Professional Paper 1404-B. U.S. Government Printing Office, Washington, DC.

TABLES

Table 2-1
Well Construction Summary
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

Well ID	NJDEP Permit Number	Northing	Easting	Elevation of Inner Casing Survey Mark	Elevation of Ground Surface	Hole Diameter	Total Depth of Well	Depth to Top of Screen	Screen Length	Screen Diameter	Screen Material	Date of Construction
Units	**--**	**ft**	**ft**	**ft (amsl)[1]**	**ft (amsl)[1]**	**in**	**ft (bgs)[2]**	**ft (bgs)[2]**	**ft**	**in**	**--**	**--**
2567-MW1	29-26925	532956.749	609537.780	33.93	34.14	10	13.0	3.0	10.0	4.0	10 Slot PVC	9/31/91
2567-MW2	29-26926	533016.726	609468.755	35.26	35.28	10	13.0	3.0	10.0	4.0	10 Slot PVC	10/1/91
2567-MW3	29-26947	532939.317	609472.358	33.88	33.94	10	13.0	3.0	10.0	4.0	10 Slot PVC	10/1/91
2567-MW4	29-26948	533042.700	609544.264	33.51	33.64	10	12.0	2.0	10.0	4.0	10 Slot PVC	9/31/91
2567-MW5	29-31783	532871.131	609697.518	34.99	31.83	8	12.5	2.5	10.0	4.0	20 Slot PVC	9/23/94
2567-MW6	29-42585	532869.379	609542.569	35.10	32.86	8	13.0	3.0	10.0	4.0	10 Slot PVC	5/12/00
2567-MW7	29-42586	532879.489	609473.420	36.34	33.41	8	13.0	3.0	10.0	4.0	10 Slot PVC	5/12/00

Notes:

[1]amsl = above mean sea level

[2]bgs = below ground surface

Where a difference in reported data exists between a monitoring well permit and the corresponding boring log, data from the permit was used.

The wells presented in this table were installed by the Department of Public Works (DPW) at Fort Monmouth, New Jersey.

NA = Not available

Well locations were recorded using Trimble GPS equipment in August 2001.

Table 3-1
Groundwater Monitoring Well Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
1	2446.01	Trip Blank	04/11/97	04/22/97	aqueous	Blank	VOCs +15	Method 624
	2446.02	Field Blank	04/11/97	04/22/97	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2446.03	2567-MW4	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2446.04	2567-MW5	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2446.05	2567-MW2	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2446.06	2567-MW1	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2446.07	2567-MW3	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2446.08	Duplicate	04/11/97	04/22/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
2	2940.01	Trip Blank	08/28/97	09/02/97	aqueous	Blank	VOCs +15	Method 624
	2940.02	Field Blank	08/28/97	09/02/97	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2940.03	2567-MW5	08/28/97	09/02/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2940.04	2567-MW2	08/28/97	09/02/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2940.05	2567-MW4	08/28/97	09/02/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2940.06	2567-MW3	08/28/97	09/02/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2940.07	2567-MW1	08/28/97	09/08/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2940.08	Duplicate	08/28/97	09/08/97	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
3	3188.01	Trip Blank	12/02/97	12/05/97	aqueous	Blank	VOCs +15	Method 624
	3188.02	Field Blank	12/02/97	12/05/97	aqueous	Blank	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.03	2567-MW2	12/02/97	12/05/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.04	2567-MW4	12/02/97	12/05/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.05	2567-MW5	12/02/97	12/06/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.06	2567-MW1	12/02/97	12/06/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.07	2567-MW3	12/02/97	12/06/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3188.08	Duplicate	12/02/97	12/10/97	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
4	3381.01	Trip Blank	03/04/98	03/06/98	aqueous	Blank	VOCs +15	Method 624
	3381.02	Field Blank	03/04/98	03/06/98	aqueous	Blank	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.03	2567-MW1	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.04	2567-MW2	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.05	2567-MW3	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.06	2567-MW4	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.07	Duplicate	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	3381.08	2567-MW5	03/04/98	03/06/98	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
5	3605.01	Trip Blank	06/01/98	06/02/98	aqueous	Blank	VOCs +15	Method 624
	3605.02	Field Blank	06/01/98	06/02/98	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3605.03	2567-MW1	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3605.04	2567-MW2	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3605.05	2567-MW3	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3605.06	2567-MW4	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3605.07	2567-MW5	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3605.08	Duplicate	06/01/98	06/02/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
6	3912.01	Trip Blank	09/24/98	10/05/98	aqueous	Blank	VOCs +15	Method 624
	3912.02	Field Blank	09/24/98	09/29/98	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3912.03	2567-MW4	09/24/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3912.04	2567-MW2	09/24/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3912.05	2567-MW1	09/24/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3912.06	Duplicate	09/24/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3916.01	Field Blank	09/25/98	10/06/98	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3916.02	2567-MW3	09/25/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3916.03	2567-MW5	09/25/98	09/29/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B

Notes:
GW : Groundwater
TAL metals : Target Analyte List metals
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)
SVOCs+15: Semi-Volatile Organic Compounds plus 15 TICs
*Low Flow Sampling Method was used to collect sample

Table 3-1
Groundwater Monitoring Well Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
7	4144.01	Trip Blank	12/16/98	12/28/98	aqueous	Blank	VOCs +15	Method 624
	4144.02	Field Blank	12/16/98	12/28/98	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	4144.03	2567-MW1	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4144.04	2567-MW2	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4144.05	2567-MW3	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4144.06	2567-MW4	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4144.07	2567-MW5	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4144.08	Duplicate	12/16/98	12/28/98	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
8	4296.01	Trip Blank	02/24/99	02/26/99	aqueous	Blank	VOCs +15	Method 624
	4296.02	Field Blank	02/24/99	02/26/99	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	4296.03	2567-MW1	02/24/99	02/26/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4296.04	2567-MW2	02/24/99	02/26/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4296.05	2567-MW3	02/24/99	02/26/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4296.06	2567-MW4	02/24/99	02/27/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4296.07	2567-MW5	02/24/99	02/27/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4296.08	Duplicate	02/24/99	02/27/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
9	4524.01	Trip Blank	05/29/99	06/03/99	aqueous	Blank	VOCs +15	Method 624
	4524.02	Field Blank	05/29/99	06/01/99	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	4524.03	2567-MW1	05/29/99	06/01/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4524.04	2567-MW2	05/29/99	06/01/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4524.05	2567-MW3	05/29/99	06/01/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4524.06	2567-MW4	05/29/99	06/01/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4524.08	Duplicate	05/29/99	06/01/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4535.01	2567-MW5	06/08/99	06/10/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
10	4635.01	Trip Blank	07/21/99	07/22/99	aqueous	Blank	VOCs +15	Method 624
	4635.02	Field Blank	07/21/99	07/22/99	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	4635.03	2567-MW1	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4635.04	2567-MW2	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4635.05	2567-MW3	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4635.06	2567-MW4	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4635.07	2567-MW5	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4635.08	Duplicate	07/21/99	07/22/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
11	4871.01	Trip Blank	10/21/99	10/25/99	aqueous	Blank	VOCs +15	Method 624
	4871.02	Field Blank	10/21/99	10/25/99	aqueous	Blank	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	4871.03	Duplicate	10/21/99	10/25/99	aqueous	GW	VOCs+15; SVOCs+25; Pesticides; PCBs; TAL metals	Method 624; Method 625; Method 608; Methods 3112B and 3120B
	4872.01	2567-MW1	10/21/99	10/25/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4872.02	2567-MW2	10/21/99	10/25/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4872.03	2567-MW3	10/21/99	10/25/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4872.04	2567-MW4	10/21/99	10/25/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4872.05	2567-MW5	10/21/99	10/26/99	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
12	5167.01	Trip Blank	02/14/00	02/16/99	aqueous	Blank	VOCs +15	Method 624
	5167.02	Field Blank	02/14/00	02/15/00	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	5167.03	Duplicate	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5167.04	2567-MW1	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5167.05	2567-MW2	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5167.06	2567-MW3	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5167.07	2567-MW4	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5167.08	2567-MW5	02/14/00	02/15/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B

Notes:
GW : Groundwater
TAL metals : Target Analyte List metals
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)
SVOCs+15: Semi-Volatile Organic Compounds plus 15 TICs
*Low Flow Sampling Method was used to collect sample

Table 3-1
Groundwater Monitoring Well Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
13	5417.01	2567-MW1	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5417.02	2567-MW2	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5417.03	2567-MW3	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5417.04	2567-MW4	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5417.05	2567-MW5	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5417.06	Trip Blank	05/15/00	05/17/00	aqueous	Blank	VOCs +15	Method 624
	5417.07	Field Blank	05/15/00	05/17/00	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	5417.08	Duplicate	05/15/00	05/17/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
14	5647.01	Trip Blank	08/22/00	08/31/00	aqueous	Blank	VOCs +15	Method 624
	5647.02	Field Blank	08/22/00	08/31/00	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	5647.03	Duplicate	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.04	2567-MW1	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.05	2567-MW2	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.06	2567-MW3	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.07	2567-MW4	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.08	2567-MW5	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.09	2567-MW6	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5647.10	2567-MW7	08/22/00	08/31/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
15	5825.01	Trip Blank	11/01/00	11/07/00	aqueous	Blank	VOCs +15	Method 624
	5825.02	Field Blank	11/01/00	11/07/00	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	5825.03	Duplicate	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.04	2567-MW1	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.05	2567-MW2	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.06	2567-MW3	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.07	2567-MW4	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.08	2567-MW5	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.09	2567-MW6	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	5825.10	2567-MW7	11/01/00	11/07/00	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
16	707	Trip Blank	02/09/01	02/10/01	aqueous	Blank	VOCs +15	Method 624
	708	Field Blank	02/09/01	02/10/01	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	709	Duplicate	02/09/01	02/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	710	2567-MW1	02/09/01	02/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	711	2567-MW2	02/09/01	02/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	712	2567-MW3	02/09/01	02/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	713	2567-MW4	02/09/01	02/12/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	714	2567-MW5	02/09/01	02/12/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	715	2567-MW6	02/09/01	02/12/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	716	2567-MW7	02/09/01	02/12/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
Low Flow #1	1615401	Field Blank	05/31/01	06/01/01	aqueous	Blank	TAL Metals	Method 3112B, 3120B
	1615405	Field Duplicate	05/31/01	06/01/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1615402	2567-MW05	05/31/01	06/01/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1615403	2567-MW04	05/31/01	06/01/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1615404	2567-MW01	05/31/01	06/01/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
Low Flow #1	1616801	Field Blank	06/05/01	06/05/01	aqueous	Blank	TAL Metals	Method 3112B, 3120B
	1616802	2567-MW3	06/05/01	06/05/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1616803	2567-MW2	06/05/01	06/05/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1616804	2567-MW7	06/05/01	06/05/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1616805	2567-MW6	06/05/01	06/05/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
Low Flow #2	1621101	Field Blank	06/25/01	06/25/01	aqueous	Blank	TAL Metals	Method 3112B, 3120B
	1621106	Field Duplicate	06/25/01	06/25/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621102	2567-MW1	06/25/01	06/25/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621105	2567-MW2	06/25/01	06/25/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621104	2567-MW3	06/25/01	06/25/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621103	2567-MW4	06/25/01	06/25/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
Low Flow #2	1621401	Field Blank	06/26/01	06/26/01	aqueous	Blank	TAL Metals	Method 3112B, 3120B
	1621405	Field Duplicate	06/26/01	06/26/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621404	2567-MW5	06/26/01	06/26/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621403	2567-MW6	06/26/01	06/26/01	aqueous	GW	TAL Metals	Method 3112B, 3120B
	1621402	2567-MW7	06/26/01	06/26/01	aqueous	GW	TAL Metals	Method 3112B, 3120B

Notes:
GW : Groundwater
TAL metals : Target Analyte List metals
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)
SVOCs+15: Semi-Volatile Organic Compounds plus 15 TICs
*Low Flow Sampling Method was used to collect sample

Table 3-1
Groundwater Monitoring Well Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
17	1610701	Trip Blank	05/08/01	05/16/01	aqueous	Blank	VOCs +15	Method 624
	1610702	Field Blank	05/08/01	05/16/01	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	1610703	Duplicate	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610704	2567-MW1	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610705	2567-MW2	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610706	2567-MW3	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610707	2567-MW4	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610708	2567-MW5	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610709	2567-MW6	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1610710	2567-MW7	05/08/01	05/16/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
18	1635601	Trip Blank	08/15/01	08/23/01	aqueous	Blank	VOCs +15	Method 624
	1635602	Field Blank	08/15/01	08/23/01	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	1635603	Duplicate	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635604	2567-MW1	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635605	2567-MW2	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635606	2567-MW3	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635607	2567-MW4	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635608	2567-MW5	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635609	2567-MW6	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1635610	2567-MW7	08/15/01	08/23/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
19	1657301	Trip Blank	11/09/01	11/10/01	aqueous	Blank	VOCs +15	Method 624
	1657302	Field Blank	11/19/01	11/10/01	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	1657303	Duplicate	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657304	2567-MW1	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657305	2567-MW2	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657306	2567-MW3	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657307	2567-MW4	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657308	2567-MW5	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657309	2567-MW6	11/19/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	1657310	2567-MW7	11/09/01	11/10/01	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
20	2011201	Trip Blank	02/26/02	03/04/02	aqueous	Blank	VOCs +15	Method 624
	2011202	Field Blank	02/26/02	03/04/02	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2011203	Duplicate	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011204	2567-MW1	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011205	2567-MW2	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011206	2567-MW3	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011207	2567-MW4	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011208	2567-MW5	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011209	2567-MW6	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2011210	2567-MW7	02/26/02	03/04/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
21	2033101	Trip Blank	05/28/02	06/06/02	aqueous	Blank	VOCs +15	Method 624
	2033102	Field Blank	05/28/02	06/06/02	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2033103	Duplicate	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033104	2567-MW1	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033105	2567-MW2	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033106	2567-MW3	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033107	2567-MW4	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033108	2567-MW5	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033109	2567-MW6	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2033110	2567-MW7	05/28/02	06/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
22	2058501	Trip Blank	08/20/02	08/22/02	aqueous	Blank	VOCs +15	Method 624
	2058502	Field Blank	08/20/02	08/22/02	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2058503	Duplicate	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058504	2567-MW1	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058505	2567-MW2	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058506	2567-MW3	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058507	2567-MW4	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058508	2567-MW5	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058509	2567-MW6	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2058510	2567-MW7	08/20/02	08/22/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B

Notes:
GW : Groundwater
TAL metals : Target Analyte List metals
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)
SVOCs+15: Semi-Volatile Organic Compounds plus 15 TICs
*Low Flow Sampling Method was used to collect sample

Table 3-1
Groundwater Monitoring Well Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
23	2076201	Trip Blank	10/28/02	11/06/02	aqueous	Blank	VOCs +15	Method 624
	2076202	Field Blank	10/28/02	11/06/02	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	2076203	Duplicate	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076204	2567-MW1	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076205	2567-MW2	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076206	2567-MW3	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076207	2567-MW4	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076208	2567-MW5	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076209	2567-MW6	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	2076210	2567-MW7	10/28/02	11/06/02	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
24	3008301	Trip Blank	02/26/03	03/12/03	aqueous	Blank	VOCs +15	Method 624
	3008302	Field Blank	02/26/03	03/12/03	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3008303	Duplicate	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008304	2567-MW1	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008305	2567-MW2	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008306	2567-MW3	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008307	2567-MW4	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008308	2567-MW5	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008309	2567-MW6	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3008310	2567-MW7	02/26/03	03/12/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
25	3028301	Trip Blank	06/11/03	06/24/03	aqueous	Blank	VOCs +15	Method 624
	3028302	Field Blank	06/11/03	06/24/03	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3028303	Duplicate	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028304	2567-MW1	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028305	2567-MW2	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028306	2567-MW3	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028307	2567-MW4	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028308	2567-MW5	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028309	2567-MW6	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3028310	2567-MW7	06/11/03	06/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
26	3039701	Trip Blank	07/22/03	07/24/03	aqueous	Blank	VOCs +15	Method 624
	3039702	Field Blank	07/22/03	07/24/03	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3039703	Duplicate	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039704	2567-MW1	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039705	2567-MW2	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039706	2567-MW3	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039707	2567-MW4	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039708	2567-MW5	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039709	2567-MW6	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3039710	2567-MW7	07/22/03	07/24/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
27	3063401	Trip Blank	10/07/03	10/17/03	aqueous	Blank	VOCs +15	Method 624
	3063402	Field Blank	10/07/03	10/17/03	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	3063403	Duplicate	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063404	2567-MW1	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063405	2567-MW2	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063406	2567-MW3	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063407	2567-MW4	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063408	2567-MW5	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063409	2567-MW6	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	3063410	2567-MW7	10/07/03	10/17/03	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
28	4004301	Trip Blank	01/16/04	01/27/04	aqueous	Blank	VOCs +15	Method 624
	4004302	Field Blank	01/16/04	01/27/04	aqueous	Blank	VOCs+15; Lead	Method 624; Method 3113B
	4004303	Duplicate	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004304	2567-MW1	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004305	2567-MW2	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004306	2567-MW3	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004307	2567-MW4	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004308	2567-MW5	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004309	2567-MW6	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B
	4004310	2567-MW7	01/16/04	01/27/04	aqueous	GW	VOCs+15; Lead	Method 624; Method 3113B

Notes:
GW : Groundwater
TAL metals : Target Analyte List metals
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)
SVOCs+15: Semi-Volatile Organic Compounds plus 15 TICs
*Low Flow Sampling Method was used to collect sample

Table 3-2
Geoprobe Groundwater Sample Collection Summary
Site 2567
Fort Monmouth, New Jersey

Round #	Sample ID	Monitoring Well ID	Date Collected	Date Analysis Started	Matrix	Sample Type	Analytical Parameters	Analysis Method
1	4008901	Trip Blank	02/02/04	02/06/04	aqueous	Blank	VOCs +15	Method 624
	4008902	Field Blank	02/02/04	02/06/04	aqueous	Blank	VOCs+15	Method 624
	4008903	GW-1	02/02/04	02/06/04	aqueous	GW	VOCs+15	Method 624
	4008905	GW-2	02/02/04	02/06/04	aqueous	GW	VOCs+15	Method 624
	4008906	GW-3	02/02/04	02/06/04	aqueous	GW	VOCs+15	Method 624
	4008904	Duplicate	02/02/04	02/06/04	aqueous	GW	VOCs+15	Method 624
	4031601	Trip Blank	04/30/04	05/06/04	aqueous	Blank	VOCs+15	Method 624
	4031602	Field Blank	04/30/04	05/06/04	aqueous	Blank	VOCs+15	Method 624
	4031603	W-1	04/30/04	05/06/04	aqueous	GW	VOCs+15	Method 624
	4031604	W-2	04/30/04	05/06/04	aqueous	GW	VOCs+15	Method 624
	4031606	W-3	04/30/04	05/06/04	aqueous	GW	VOCs+15	Method 624
	4031607	W-4	04/30/04	05/06/04	aqueous	GW	VOCs+15	Method 624
	4031605	Duplicate	04/30/04	05/06/04	aqueous	GW	VOCs+15	Method 624

Notes:
GW : Groundwater
VOCs+15: Volatile Organic Compounds plus 15 tentatively identified compounds (TICs)

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#: 1			2			3			4		
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	04/11/97	3.80	30.13	08/28/97	4.80	29.13	12/02/97	3.90	30.03	03/04/98	3.51	30.42
2567-MW2	35.26	04/11/97	3.40	31.86	08/28/97	4.30	30.96	12/02/97	3.45	31.81	03/04/98	2.92	32.34
2567-MW3	33.88	04/11/97	3.15	30.73	08/28/97	4.00	29.88	12/02/97	3.10	30.78	03/04/98	2.48	31.4
2567-MW4	33.51	04/11/97	2.55	30.96	08/28/97	3.20	30.31	12/02/97	2.45	31.06	03/04/98	2.11	31.4
2567-MW5	34.99	04/11/97	7.20	27.79	08/28/97	7.50	27.49	12/02/97	7.20	27.79	03/04/98	7.30	27.69
2567-MW6	35.10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2567-MW7	36.34	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	5			5			6			7	
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	06/01/98	4.06	29.87	NS	NS	NS	09/24/98	5.21	28.72	12/09/98	4.90	29.03
2567-MW2	35.26	06/01/98	3.59	31.67	NS	NS	NS	09/24/98	12.20	23.06	12/09/98	3.42	31.84
2567-MW3	33.88	06/01/98	3.99	29.89	06/19/98	3.99	29.89	09/25/98	4.56	29.32	12/16/98	4.25	29.63
2567-MW4	33.51	06/01/98	2.33	31.18	06/19/98	2.33	31.18	09/24/98	3.55	29.96	12/12/98	3.11	30.4
2567-MW5	34.99	06/01/98	7.55	27.44	NS	NS	NS	09/25/98	7.59	27.4	12/16/98	7.34	27.65
2567-MW6	35.10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2567-MW7	36.34	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	8			9			10			11		
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	02/24/99	3.75	30.18	05/29/99	4.20	29.73	07/21/99	5.48	28.45	10/21/99	4.03	29.9
2567-MW2	35.26	02/24/99	3.38	31.88	05/29/99	3.83	31.43	07/21/99	5.03	30.23	10/21/99	3.65	31.61
2567-MW3	33.88	02/24/99	3.16	30.72	05/29/99	3.55	30.33	07/21/99	4.85	29.03	10/21/99	3.93	29.95
2567-MW4	33.51	02/24/99	2.44	31.07	05/29/99	2.76	30.75	07/21/99	3.98	29.53	10/21/99	2.37	31.14
2567-MW5	34.99	02/24/99	8.16	26.83	06/08/99	7.33	27.66	07/21/99	7.87	27.12	10/21/99	8.57	26.42
2567-MW6	35.10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2567-MW7	36.34	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	12			13			14			15		
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	02/14/00	3.31	30.62	05/15/00	4.04	29.89	08/22/00	3.87	30.06	11/01/00	4.24	29.69
2567-MW2	35.26	02/14/00	3.00	32.26	05/15/00	3.77	31.49	08/22/00	3.51	31.75	11/01/00	4.15	31.11
2567-MW3	33.88	02/14/00	3.42	30.46	05/15/00	3.40	30.48	08/22/00	3.17	30.71	11/01/00	3.56	30.32
2567-MW4	33.51	02/14/00	1.69	31.82	05/15/00	2.65	30.86	08/22/00	2.49	31.02	11/01/00	2.91	30.6
2567-MW5	34.99	02/14/00	5.75	29.24	05/15/00	6.92	28.07	08/22/00	6.73	28.26	11/01/00	7.16	27.83
2567-MW6	35.10	NS	NS	NS	NS	NS	NS	08/22/00	7.06	28.04	11/01/00	7.26	27.84
2567-MW7	36.34	NS	NS	NS	NS	NS	NS	08/22/00	6.65	29.69	11/02/00	6.80	29.54

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	16			Low Flow 1			Low Flow 2			17	
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	02/09/01	3.30	30.63	02/09/01	3.30	30.63	02/09/01	3.30	30.63	05/08/01	4.15	29.78
2567-MW2	35.26	02/09/01	2.75	32.51	02/09/01	2.75	32.51	02/09/01	2.75	32.51	05/08/01	3.95	31.31
2567-MW3	33.88	02/09/01	2.50	31.38	02/09/01	2.50	31.38	02/09/01	2.50	31.38	05/08/01	3.40	30.48
2567-MW4	33.51	02/09/01	1.99	31.52	02/09/01	1.99	31.52	02/09/01	1.99	31.52	05/08/01	2.68	30.83
2567-MW5	34.99	02/09/01	5.26	29.73	02/09/01	5.26	29.73	02/09/01	5.26	29.73	05/08/01	7.47	27.52
2567-MW6	35.10	02/09/01	6.44	28.66	02/09/01	6.44	28.66	02/09/01	6.44	28.66	05/08/01	7.42	27.68
2567-MW7	36.34	02/09/01	6.23	30.11	02/09/01	6.23	30.11	02/09/01	6.23	30.11	05/08/01	7.02	29.32

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	18			19			20			21	
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	08/15/01	4.95	28.98	11/09/01	5.11	28.82	02/26/02	3.95	29.98	05/28/02	4.09	29.84
2567-MW2	35.26	08/15/01	4.65	30.61	11/09/01	4.81	30.45	02/26/02	3.86	31.4	05/28/02	3.83	31.43
2567-MW3	33.88	08/15/01	4.30	29.58	11/09/01	4.30	29.58	02/26/02	3.29	30.59	05/28/02	3.40	30.48
2567-MW4	33.51	08/15/01	3.50	30.01	11/09/01	3.65	29.86	02/26/02	2.71	30.8	05/28/02	2.83	30.68
2567-MW5	34.99	08/15/01	7.70	27.29	11/09/01	7.83	27.16	02/26/02	6.95	28.04	05/28/02	5.91	29.08
2567-MW6	35.10	08/15/01	8.15	26.95	11/09/01	8.09	27.01	02/26/02	6.82	28.28	05/28/02	7.29	27.81
2567-MW7	36.34	08/15/01	7.75	28.59	11/09/01	7.56	28.78	02/26/02	6.71	29.63	05/28/02	6.83	29.51

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	22			23			24			25	
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	08/20/02	5.45	28.48	10/28/02	3.62	30.31	02/26/03	3.11	30.82	06/11/03	3.35	30.58
2567-MW2	35.26	08/20/02	5.13	30.13	10/28/02	3.32	31.94	02/26/03	2.71	32.55	06/11/03	3.00	32.26
2567-MW3	33.88	08/20/02	4.03	29.85	10/28/02	2.98	30.9	02/26/03	2.39	31.49	06/11/03	2.55	31.33
2567-MW4	33.51	08/20/02	3.96	29.55	10/28/02	2.26	31.25	02/26/03	1.84	31.67	06/11/03	2.15	31.36
2567-MW5	34.99	08/20/02	8.03	26.96	10/28/02	5.95	29.04	02/26/03	5.37	29.62	06/11/03	5.78	29.21
2567-MW6	35.10	08/20/02	8.78	26.32	10/28/02	6.62	28.48	02/26/03	6.24	28.86	06/11/03	6.50	28.6
2567-MW7	36.34	08/20/02	8.28	28.06	10/28/02	6.40	29.94	02/26/03	6.07	30.27	06/11/03	6.26	30.08

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 3-3
Groundwater Elevation Summary
Site 2567
Fort Monmouth, New Jersey

		Round#:	26			27			28	
Well ID	Elev. of Inner Casing Survey Mark	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.	Date	Depth to Water	Ground-water Elev.
2567-MW1	33.93	07/22/03	4.39	29.54	10/07/03	4.23	29.7	01/16/04	3.60	30.33
2567-MW2	35.26	07/22/03	3.91	31.35	10/07/03	3.89	31.37	01/16/04	3.42	31.84
2567-MW3	33.88	07/22/03	3.81	30.07	10/07/03	3.52	30.36	01/16/04	2.95	30.93
2567-MW4	33.51	07/22/03	2.62	30.89	10/07/03	2.75	30.76	01/16/04	2.37	31.14
2567-MW5	34.99	07/22/03	7.30	27.69	10/07/03	7.17	27.82	01/16/04	6.93	28.06
2567-MW6	35.10	07/22/03	7.61	27.49	10/07/03	7.31	27.79	01/16/04	6.65	28.45
2567-MW7	36.34	07/22/03	7.19	29.15	10/07/03	6.88	29.46	01/16/04	6.37	29.97

Notes:
1) Elev.: Elevation in feet
above mean sea level.
2) Depth to water: depth in feet
from the inner casing survey mark.
3) NS: Not Sampled

Table 4-1
Data for Geologic Cross-Section A-A'
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

Well ID	Units	2567-MW2	2567-MW3	2567-MW6
Elevation of Top of Casing	ft (amsl)	35.26	33.88	35.1
Elevation of Ground Surface	ft (amsl)	35.28	33.94	32.86
Elevation of Top of Screen	ft (amsl)	32.28	30.94	29.86
Elevation of Groundwater (5/8/01)	ft (amsl)	31.31	30.48	27.68
Elevation of Top of Unit 4	ft (amsl)	30.28	NA	NA
Elevation of Top of Unit 5	ft (amsl)	27.28	29.94	NA
Elevation of Top of Unit 6	ft (amsl)	NA	NA	32.86
Elevation of Bottom of Well	ft (amsl)	22.28	20.94	19.86

Explanation of Units (see Minard, 1969):

Surface Materials:

*Unit 1 = topsoil/roots

*Unit 2 = asphalt/base stone

*Unit 3 = light orange and brown sand - fill

Native Material (Tinton Sand or Hornerstown Sand Formation):

Unit 4 = light green sand

Unit 5 = dark brown/black clay with some fine sand

Unit 6 = medium-fine sand

Notes:

*Shown in geologic cross section A-A' but not in table above

All measurements in feet.

amsl: above mean sea level

NA: Not Applicable

Unit numbering matches Geologic Cross Section A-A"

Table 4-2
Data for Geologic Cross-Section A-A''
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

Well ID	Units	2567-MW2	2567-MW1	2567-MW5
Elevation of Top of Casing	ft (amsl)	35.26	33.93	34.99
Elevation of Ground Surface	ft (amsl)	35.28	34.14	31.83
Elevation of Top of Screen	ft (amsl)	32.28	31.14	29.33
Elevation of Groundwater (5/8/01)	ft (amsl)	31.31	29.78	27.52
Elevation of Top of Unit 1	ft (amsl)	0	NA	NA
Elevation of Top of Unit 2	ft (amsl)	30.28	NA	NA
Elevation of Top of Unit 3	ft (amsl)	27.28	32.14	NA
Elevation of Top of Unit 7	ft (amsl)	NA	NA	32.33
Elevation of Top of Unit 8	ft (amsl)	NA	NA	30.83
Elevation of Top of Unit 9	ft (amsl)	NA	NA	29.83
Elevation of Top of Unit 10	ft (amsl)	NA	NA	28.83
Elevation of Bottom of Well	ft (amsl)	22.28	21.14	19.33

Explanation of Units (see Minard, 1969):

Surface Materials:

*Unit 1 = topsoil/roots

*Unit 2 = asphalt/base stone

Unit 3 = light orange and brown sand - fill

Unit 4 = light green sand - fill

*Unit 7 = fill, unknown depth and lithology

Native Material (Tinton Sand Formation):

Unit 5 = dark brown/black clay with some fine green sand

Unit 8 = brown fine sand

Unit 9 = black, soft clay

Unit 10 = brown fine sand and silts

Unit 11 = gray medium sand with well-rounded gravel

Notes:

*Shown in geologic cross section A-A" but not in table

All measurements in feet.

amsl: above mean sea level

NA: Not Applicable

Unit numbering matches Geologic Cross Section A-A'

Table 4-3
Slug Testing Results Summary
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

Well ID	Date	Depth to Static Water Level	DTW at t=0	b	DTW Adjustment	Hydraulic Conductivity (feet/day)
2567-MW1	8/17/2001	4.97	7.464	5.536	0.007	35.1
2567-MW2	8/17/2001	4.52	7.154	5.846	0.038	28.5
2567-MW3	8/17/2001	5.49	7.827	5.173	0.789	35.6
2567-MW4	8/17/2001	3.42	5.330	6.670	0.108	20.2
2567-MW5	8/17/2001	7.56	10.405	2.095	0.005	24.4
2567-MW6	8/17/2001	8.14	10.685	2.315	0.013	23.6
2567-MW7	8/16/2001	7.75	10.348	2.652	0.083	18.8
Geometric Mean of Hydraulic Conductivity (feet/day):						25.9

Notes:
DTW = Depth To Water
Depth to Static Water Level was estimated by subtracting 0.3 ft. from the measured DTW at the end of each test.
b = height of water in well at the beginning of the test.
DTW Adjustment = factor by which raw data was adjusted so final hermit data point equals final measured DTW.

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID / Sample Date	NJDEP Criteria	Site Specific MBC[1]	Well ID	2567-MW1 2446.06 04/11/97	2567-MW1 2940.07 08/28/97	2567-MW1 3188.06 12/02/97	2567-MW1 3381.03 03/04/98	2567-MW1 3605.03 06/01/98	2567-MW1 3912.05 09/24/98	2567-MW1 4144.03 12/16/98	2567-MW1 4296.03 02/24/99	2567-MW1 4524.03 05/29/99	2567-MW1 4635.03 07/21/99	2567-MW1 4872.01 10/21/99	2567-MW1 5167.04 02/14/00	2567-MW1 5417.01 05/15/00	2567-MW1 5647.04 08/22/00	2567-MW1 5825.04 11/01/00
		Round No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Volatiles																		
Acetone	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**		ND	**39.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		ND	**240**	20.3	37	24.23	10.02	3.43	26.15	9.16	3.33	4.8	12.05	5.24	1.2	15.04
Di-isopropyl ether[3]	**100**	**N/A**		ND	ND	3.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		ND	ND	**357**	**560**	95.63	**283**	**143.26**	**675**	**605.1**	**155.56**	**497.3**	**992**	**458.88**	**218.42**	ND
Toluene	**1000**	**N/A**		ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	72.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																		
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	1.25	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																		
Aluminum	**200**	**121000**		NS	NS	128	186	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	NS	356.7	367.1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	NS	46880	52030	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	NS	1.8	3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	NS	40	23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	NS	**4112**	**5774**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		1.8	1.4	7	ND	0.5	ND	ND	ND	ND	ND	1.3	1.31	ND	ND	ND
Magnesium	**NLE**	**62700**		NS	NS	4970	5480	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	NS	**92.8**	**107.6**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	NS	0.4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	NS	2.4	2.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	NS	7120	7390	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	NS	**76190**	48910	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	NS	63	37	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

NJDEP Criteria: Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

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D: Diluted Sample

NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID / Sample Date	NJDEP Criteria	Site Specific MBC[1]	Well ID	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1	2567-MW1
				710	1615404	1621102	1610704	1635604	1657304	2011204	2033104	2058504	2076204	3008304	3028304	3039704	3063404	4004304
				02/09/01	5/31/2001	6/25/2001	05/08/01	08/15/01	11/09/01	2/26/2002*	05/28/02	08/20/02	10/28/02	02/26/03	06/11/02	07/22/03	10/07/03	01/16/04
		Round No.		16	LF1[2]	LF2[2]	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																			
Acetone	**700**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		4.83	NS	NS	2.1	ND	1.09	1.61	ND	ND	ND	ND	1.78	1.93	ND	2.08	
Di-isopropyl ether[3]	**100**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		**1488.05**	NS	NS	**764.25**	**248.74**	ND	**859.38**	**331.75**	**441.16**	**259.69**	**828.6**	**186.42**	**205.86**	**175.48**	**224.08**	
Toluene	**1000**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																			
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																			
Aluminum	**200**	**121000**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	526	0.528	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	68200	64.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	**8580**	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		ND	ND	ND	0.93	ND	ND	ND	ND	ND	1.22	1.4	ND	ND	ND	ND	ND
Magnesium	**NLE**	**62700**		NS	**7900**	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	**148**	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	6060	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	**51200**	47.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	9.4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

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Exceedences of NJDEP GWQS are shaded and**bold**

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ND: Analyte not detected in sample

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D: Diluted Sample

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[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2
Lab Sample ID	**NJDEP**	**Site Specific**	2446.05	2940.04	3188.03	3381.04	3605.04	3912.04	4144.04	4296.04	4524.04	4635.04	4872.02	5167.05	5417.02	5647.05	5825.05
Sample Date	**Criteria**	**MBC[1]**	04/11/97	08/28/97	12/02/97	03/04/98	06/01/98	09/24/98	12/16/98	02/24/99	05/29/99	07/21/99	10/21/99	02/14/00	05/15/00	08/22/00	11/01/00
		Round No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Volatiles																	
Acetone	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.99	ND
Benzene	**1**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	ND	6.98	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	4.79	6.98	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	1.08	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	NS	78	**261**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	NS	796.2	188.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	NS	67840	21250	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	NS	1.7	1.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	NS	8	23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	NS	**16290**	**12450**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	**10.7**	ND	**20**	8	1.4	ND	ND	ND	ND	ND	1.2	1.49	ND	ND	ND
Magnesium	**NLE**	**62700**	NS	NS	7520	2030	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	NS	**271.8**	**99.6**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	NS	0.4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	NS	3.9	2.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	NS	8730	7880	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	NS	**58690**	26640	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	NS	53	93	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

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Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID	NJDEP	Site Specific	Well ID	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2	2567-MW2
				711	1616803	1621105	1610705	1635605	1657305	2011205	2033105	2058505	2076205	3008305	3028305	3039705	3063405	4004305
Sample Date	**Criteria**	**MBC[1]**		02/09/01	5/31/2001	6/25/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.		16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																		
Acetone	**700**	**N/A**		ND	NS	NS	3.31	ND	ND	ND	ND	ND	ND	4.19	ND	ND	ND	ND
Benzene	**1**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	NS	NS	2.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	1.94	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																		
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																		
Aluminum	**200**	**121000**		NS	72.1	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	398	283	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	ND	1.81	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	52400	26700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	0.574	1.15	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	4.72	8.83	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	**5890**	**14300**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		ND	ND	ND	1.02	ND	ND	ND	ND	ND	2.47	ND	ND	ND	0.831	ND
Magnesium	**NLE**	**62700**		NS	5490	3370	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	**113**	**125**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	0.13	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	6630	4380	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	**98300**	27300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	ND	2.18	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	ND	27.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

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[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3
Lab Sample ID	**NJDEP**	**Site Specific**	2446.07	2940.06	3188.07	3381.05	3605.05	3916.02	4144.06	4296.05	4524.05	4635.05	4872.03	5167.06	5417.03	5647.06	5825.06
Sample Date	**Criteria**	**MBC[1]**	04/11/97	08/28/97	12/02/97	03/04/98	06/01/98	09/25/98	12/16/98	02/24/99	05/29/99	07/21/99	10/21/99	02/14/00	05/15/00	08/22/00	11/01/00
		Round No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Volatiles																	
Acetone	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**	ND	ND	**4.31**	**19**	**4.68**	**5.96**	**15.45**	**1.03**	**1.7**	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	1.04	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	**25**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	ND	62	**188**	**102**	**81.82**	27.27	20.54	3.3	26.34	8.98	13.08	3.78	9.35	5.36	20.24
Di-isopropyl ether[3]	**100**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	**940**	ND	ND	27.52	ND	19.38	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	ND	ND	8.6	ND	3.62	3.67	ND	1.29	ND	ND	ND	ND	ND	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	ND	1.29	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	1.92	1.67	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	3.9	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	4.5	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	NS	**341**	**1832**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	NS	212.1	356.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	NS	27450	39820	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	NS	1.5	3.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	NS	79	22	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	NS	**5342**	**13860**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	2.5	ND	10	ND	ND	ND	ND	1	ND	ND	1.3	1.22	ND	ND	ND
Magnesium	**NLE**	**62700**	NS	NS	2910	4560	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	NS	**56.6**	**144.4**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	NS	0.4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	NS	2	1.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	NS	5440	6460	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	NS	26920	39610	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	NS	ND	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	NS	81	30	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

NJDEP Criteria: Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

N/A: Not Applicable NS: Not Sampled

D: Diluted Sample

NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3	2567-MW3
Lab Sample ID	**NJDEP**	**Site Specific**	712	1616802	1621104	1610706	1635606	1657306	2011206	2033106	2058506	2076206	3008306	3028306	3039706	3063406	4004306
Sample Date	**Criteria**	**MBC[1]**	02/09/01	5/31/2001	6/25/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.	16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																	
Acetone	**700**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	2.97	ND	ND	ND	ND
Benzene	**1**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	ND	31.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	1.96	NS	NS	11.95	17.8	5.51	4.14	3.13	ND	2.37	3.64	ND	6.82	4.56	ND
Di-isopropyl ether[3]	**100**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	NS	NS	ND	67.42	ND	31.59	ND	ND	ND	ND	ND	ND	13.51	ND
Toluene	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.38	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	195	22.1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	298	275	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	32200	33100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	2.97	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	6.27	9.93	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	**12400**	**4670**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	ND	1.92	ND	0.96	ND	ND	ND	ND	ND	ND	ND	ND	0.983	ND	ND
Magnesium	**NLE**	**62700**	NS	3490	4030	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	**137**	**74.3**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	0.11	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	4660	5470	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	30700	**61100**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	2.46	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	22.7	16.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

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Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

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D: Diluted Sample

NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID / Sample Date	NJDEP Criteria	Site Specific MBC[1]	Well ID	2567-MW4 2446.03 04/11/97	2567-MW4 2940.05 08/28/97	2567-MW4 3188.04 12/02/97	2567-MW4 3381.06 03/04/98	2567-MW4 3605.07 06/01/98	2567-MW4 3912.03 09/24/98	2567-MW4 4144.05 12/16/98	2567-MW4 4296.06 02/24/99	2567-MW4 4524.06 05/29/99	2567-MW4 4635.06 07/21/99	2567-MW4 4872.04 10/21/99	2567-MW4 5167.07 02/14/00	2567-MW4 5417.08 05/15/00	2567-MW4 5647.07 08/22/00	2567-MW4 5825.07 11/01/00
		Round No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Volatiles																		
Acetone	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.57	ND
Benzene	**1**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																		
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	ND	1.03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	1.37	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																		
Aluminum	**200**	**121000**		NS	NS	**1208**	**608**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	NS	156	103.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	NS	ND	2.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	NS	19850	14720	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	NS	9	1.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	NS	1.7	2.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	NS	14	11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	NS	**3586**	**4212**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		2.3	ND	9	ND	ND	ND	ND	ND	ND	ND	1.2	1.4	ND	ND	ND
Magnesium	**NLE**	**62700**		NS	NS	2320	1700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	NS	**90**	**78.6**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	NS	0.3	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	NS	4.8	10.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	NS	2810	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	NS	15600	12580	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	NS	3	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	NS	57	79	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

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ND: Analyte not detected in sample

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[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4	2567-MW4
Lab Sample ID	**NJDEP**	**Site Specific**	713	1615403	1621103	1610707	1635607	1657307	2011207	2033107	2058507	2076207	3008307	3028307	3039707	3063407	4004307
Sample Date	**Criteria**	**MBC[1]**	02/09/01	5/31/2001	6/25/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.	16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																	
Acetone	**700**	**N/A**	ND	NS	NS	4.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	2.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	20.2	**602**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	233	196	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	ND	1.18	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	27100	20900	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	0.729	1.79	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	0.757	1.85	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	ND	29.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	**6510**	**4160**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	ND	ND	6.18	ND	2.2	ND	ND	ND	ND	ND	ND	2.26	1.22	ND	ND
Magnesium	**NLE**	**62700**	NS	3090	3240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	**160**	**118**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	ND	0.13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	2.68	8.27	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	3300	2980	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	22800	19300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	1.47	1.73	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	18.6	30.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

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[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

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Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5
Lab Sample ID	**NJDEP**	**Site Specific**	2446.04	2940.03	3188.05	3381.08	3605.06	3916.03	4144.07	4296.07	4535.01	4635.07	4872.05	5167.08	5417.05	5647.08	5825.08
Sample Date	**Criteria**	**MBC[1]**	04/11/97	08/28/97	12/02/97	03/04/98	06/01/98	09/25/98	12/16/98	02/24/99	06/08/99	07/21/99	10/21/99	02/14/00	05/15/00	08/22/00	11/01/00
		Round No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Volatiles																	
Acetone	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	1.3	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	NS	**406**	**362.6**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	NS	93.1	58.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	NS	1.3	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	NS	21120	12180	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	NS	5.5	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	NS	14	13.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	NS	**19180**	**16370**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	2.7	ND	7	ND	ND	ND	ND	1	ND	ND	4.4	1.21	ND	1.6	2.4
Magnesium	**NLE**	**62700**	NS	NS	3410	1961	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	NS	**100.2**	**56.4**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	NS	0.4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	NS	6.5	3.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	NS	3530	2675	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	NS	10480	9134	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	NS	5	6.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	NS	91	43.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

NJDEP Criteria: Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

N/A: Not Applicable NS: Not Sampled

D: Diluted Sample

NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Well ID			2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5	2567-MW5
Lab Sample ID	**NJDEP**	**Site Specific**	714	1615402	1621404	1610708	1635608	1657308	2011208	2033108	2058508	2076208	3008308	3028308	3039708	3063408	4004308
Sample Date	**Criteria**	**MBC[1]**	02/09/01	5/31/2001	6/26/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.	16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																	
Acetone	**700**	**N/A**	ND	NS	NS	4.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**	ND	ND	ND	2.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																	
bis(2-Ethylhexyl)phthalate	**30**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																	
Aluminum	**200**	**121000**	NS	**893**	**557**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**	NS	86.8	68.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**	NS	21000	18000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**	NS	5.32	5.04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**	NS	1.96	0.803	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**	NS	6.17	12.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**	NS	**8850**	**3910**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**	ND	8.47	3.21	4.53	8.4	9.7	6.5	3.6	**32.3**	**49.5**	3.57	**43.9**	**22.1**	**22.1**	ND
Magnesium	**NLE**	**62700**	NS	2910	2440	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**	NS	**86.1**	46.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**	NS	4.22	4.19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**	NS	3610	3470	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**	NS	19200	17300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**	NS	8.23	4.74	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**	NS	57.5	36.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

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Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

N/A: Not Applicable NS: Not Sampled

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NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID	NJDEP	Site Specific	Well ID	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6	2567-MW6
				5647.09	5825.09	715	1616805	1621403	1610709	1635609	1657309	2011209	2033109	2058509	2076209	3008309	3028309	3039709	3063409	4004309
Sample Date	Criteria	MBC[1]		08/22/00	11/01/00	02/09/01	6/5/2001	6/26/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.		14	15	16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																				
Acetone	**700**	**N/A**		4.02	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																				
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																				
Aluminum	**200**	**121000**		NS	NS	NS	**381**	**320**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	NS	NS	94.3	79.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	NS	NS	0.887	1.16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	NS	NS	ND	1.25	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	NS	NS	11900	8170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	NS	NS	3.11	2.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	NS	NS	2.09	5.63	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	NS	NS	2.53	19.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	NS	NS	**6000**	**3920**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		ND	ND	ND	ND	ND	1.48	ND	ND	ND	ND	1.32	ND	ND	ND	ND	ND	ND
Magnesium	**NLE**	**62700**		NS	NS	NS	1700	1360	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	NS	NS	44.2	29.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	NS	NS	5.77	10.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	NS	NS	2510	1930	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	NS	NS	18100	15000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	NS	NS	1.74	0.871	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	NS	NS	61.8	101	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

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[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-1
Groundwater Monitoring Well Sampling Results
Site 2567
Fort Monmouth, New Jersey

Lab Sample ID	NJDEP	Site Specific	Well ID	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7	2567-MW7
				5647.1	5825.1	716	1616804	1621402	1610710	1635610	1657310	2011210	2033110	2058510	2076210	3008310	3028310	3039710	3063410	4004310
Sample Date	Criteria	MBC[1]		08/22/00	11/01/00	02/09/01	6/5/2001	6/26/2001	05/08/01	08/15/01	11/09/01	02/26/02	05/28/02	08/20/02	10/28/02	02/26/03	06/11/03	07/22/03	10/07/03	01/16/04
		Round No.		14	15	16	LF1	LF2	17	18	19	20	21	22	23	24	25	26	27	28
Volatiles																				
Acetone	**700**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	**1**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**300**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	**NLE**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	**700**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	**2**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE[3]	**70**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-isopropyl ether[3]	**100**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**1000**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes[3]	**1000**	**N/A**		ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatiles																				
bis(2-Ethylhexyl)phthalate	**30**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-butylphthalate	**900**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyridine[3]	**100**	**N/A**		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pesticides/PCBs				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals																				
Aluminum	**200**	**121000**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium	**2000**	**699**		NS	NS	NS	220	255	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Beryllium	**20**	**N/A**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	**4**	**N/A**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Calcium	**NLE**	**45400**		NS	NS	NS	25500	30100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium	**100**	**N/A**		NS	NS	NS	0.852	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cobalt	**NLE**	**N/A**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	**1000**	**65.6**		NS	NS	NS	2.78	10.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	**300**	**431000**		NS	NS	NS	**5250**	**6520**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	**10**	**N/A**		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.855	ND	ND	ND
Magnesium	**NLE**	**62700**		NS	NS	NS	2950	4380	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	**50**	**331**		NS	NS	NS	**113**	**157**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	**2**	**N/A**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	**100**	**187**		NS	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Potassium	**NLE**	**137000**		NS	NS	NS	4260	4970	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	**50000**	**21500**		NS	NS	NS	33300	30800	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	**NLE**	**N/A**		NS	NS	NS	0.75	0.602	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	**5000**	**233**		NS	NS	NS	13.9	9.11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

NJDEP Criteria: Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

Exceedences of NJDEP GWQS are shaded and**bold**

*Sampling results that exceeded calibration limits were not run again with dilution due to a laboratory error.

ND: Analyte not detected in sample

N/A: Not Applicable NS: Not Sampled

D: Diluted Sample

NLE: No cleanup standard exists for this analyte

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Low Flow Sampling Method used to collect sample

[3]Interim Criteria used as NJDEP criteria

Table 5-2
Geoprobe Groundwater Sampling Results
Site 2567
Fort Monmouth, New Jersey

Geoprobe ID			GW-1	GW-2	GW-3	W-1	W-2	W-3	W-4
Lab Sample ID	**NJDEP**	**Site Specific**	4008903	4008905	4008906	4031603	4031604	4031606	4031607
Sample Date	**Criteria**	**MBC[1]**	02/02/04	02/02/04	02/02/04	04/30/04	04/30/04	04/30/04	04/30/04
Volatiles									
MTBE[2]	**70**	**N/A**	5.52	2.63	0.47	3.37	3.29	1.2	ND
tert-Butyl Alcohol (TBA)[2]	**100**	**N/A**	ND	ND	46	ND	ND	ND	ND

Notes

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb)

NJDEP Criteria: Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

Exceedences of NJDEP GWQS are shaded and**bold**

ND: Analyte not detected in sample

N/A: Not Applicable

[1]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[2]Interim Criteria used as NJDEP criteria

Table 5-3
Determination of Contaminants of Concern
Site 2567
Fort Monmouth, New Jersey

Analyte	NJDEP Criteria[1]	Site Specific Groundwater MBC[2]	Maximum Result	No. of NJDEP Criteria Exceedences	No. of Site Maximum Background Exceedences	Comments
Volatiles						
Acetone	**700**	N/A	5.99	0	N/A	No exceedence of NJDEP criteria
Benzene	**1**	**N/A**	**39.4**	**8**	**N/A**	**Not a Contaminant of Concern. Benzene has not been detected at Site 2567 since July 1999.**
2-Butanone	300	N/A	31.95	0	N/A	No exceedence of NJDEP criteria
Carbon Disulfide	NLE	N/A	1.94	0	N/A	No exceedence of NJDEP criteria
Ethylbenzene	**700**	N/A	1.04	0	N/A	No exceedence of NJDEP criteria
Methylene Chloride	**2**	**N/A**	**25**	**1**	**N/A**	**Not a Contaminant of Concern: only one exceedence of NJDEP Cleanup Criteria.**
MTBE[3]	**70**	**N/A**	**240**	**4**	**N/A**	**Not a Contaminant of Concern. MTBE has not been detected in wells at Site 2567 above the NJDEP Groundwater Criteria[1] since June 1998.**
Di-isopropyl ether[3]	**100**	N/A	3.66	0	N/A	No exceedence of NJDEP criteria
Tert-Butyl Alcohol (TBA)[3]	**100**	**N/A**	**1488.05**	**24**	**N/A**	**Contaminant of Concern. exceedences primarily at well 2567-MW1. There was only one other well with an exceedence of the NJDEP criteria (2567-MW3 in August 1997).**
Toluene	**1000**	N/A	1.3	0	N/A	No exceedence of NJDEP criteria
Xylenes[3]	**1000**	N/A	72.7	0	N/A	No exceedence of NJDEP criteria
Semi-Volatiles						
bis(2-Ethylhexyl)phthalate	**30**	N/A	6.98	0	N/A	No exceedence of NJDEP criteria
Naphthalene[3]	**100**	N/A	6.98	0	N/A	No exceedence of NJDEP criteria
Di-n-butylphthalate	**900**	N/A	3.9	0	N/A	No exceedence of NJDEP criteria
Pyridine[3]	**100**	N/A	4.5	0	N/A	No exceedence of NJDEP criteria

Table 5-3
Determination of Contaminants of Concern
Site 2567
Fort Monmouth, New Jersey

Analyte	NJDEP Criteria[1]	Site Specific Groundwater MBC[2]	Maximum Result	No. of NJDEP Criteria Exceedences	No. of Site Maximum Background Exceedences	Comments
Pesticides/PCBs: None Detected						
Metals						
Aluminum	**200**	**121000**	**1832**	**7**	**0**	**Not a Contaminant of Concern: no exceedence of the Site Specific MBC**
Barium	**2000**	699	796.2	0	1	No exceedence of NJDEP criteria
Beryllium	**20**	N/A	1.3	0	N/A	No exceedence of NJDEP criteria
Cadmium	**4**	N/A	2.2	0	N/A	No exceedence of NJDEP criteria
Calcium	**NLE**	45400	67840	N/A	3	No NJDEP Groundwater Criteria
Chromium	**100**	N/A	9	0	N/A	No exceedence of NJDEP criteria
Cobalt	**NLE**	N/A	2.5	N/A	N/A	No NJDEP Groundwater Criteria
Copper	**1000**	65.6	79	0	1	No exceedence of NJDEP criteria
Iron	**300**	**431000**	**19180**	**10**	**0**	**Not a Contaminant of Concern: no exceedence of the Site Specific MBC**
Lead	**10**	**N/A**	**49.5**	**7**	**N/A**	**Not a Contaminant of Concern: only seven exceedences of NJDEP criteria at two monitoring wells.**
Magnesium	**NLE**	62700	7520	N/A	0	No NJDEP Groundwater Criteria
Manganese	**50**	**331**	**271.8**	**10**	**0**	**Not a Contaminant of Concern: no exceedence of the Site Specific MBC.**
Mercury	**2**	N/A	0.4	0	N/A	No exceedence of NJDEP criteria
Nickel	**100**	187	10.8	0	0	No exceedence of NJDEP criteria
Potassium	**NLE**	137000	8730	N/A	0	No NJDEP Groundwater Criteria
Sodium	**50000**	**21500**	**76190**	**2**	**6**	**Not a Contaminant of Concern due to the proximity of the site to sea water.**
Vanadium	**NLE**	N/A	6.8	N/A	N/A	No NJDEP Groundwater Criteria
Zinc	**5000**	233	93	0	0	No exceedence of NJDEP criteria

Notes:

All concentrations in micrograms per liter (ug/L), equivalent to parts per billion (ppb).

NJDEP GWQC: New Jersey Department of Environmental Protection Groundwater Quality Criteria.

N/A = Not Applicable

Exceeds NJDEP GWQC =

ND: Analyte not detected in sample

NLE: No limit established for this analyte

[1]Higher of Practical Quantitation Limits (PQLs) and Groundwater Quality Criteria (GWQC) per NJAC 7:9-6

[2]Fort Monmouth Site-specific Groundwater Maximum Background Concentrations (MBCs), background (native) metals only (Weston SI Report Dated 1995)

[3]Interim Criteria used as NJDEP criteria

Table 5-4
Aquifer Dissolved Oxygen
Site 2567
Fort Monmouth, New Jersey

2567-MW1	
Sample Date	DO (mg/L)
04/11/97	3.00
08/28/97	2.40
12/02/97	1.40
03/04/98	4.10
06/01/98	2.10
09/24/98	5.18
12/16/98	7.87
02/24/99	3.85
05/29/99	4.77
07/21/99	3.07
10/21/99	4.33
02/14/00	5.17
05/15/00	4.23
08/22/00	3.17
11/01/00	3.87
02/09/01	5.22
05/08/01	5.17
08/15/01	0.01
11/09/01	1.40
02/26/02	1.60
05/28/02	2.10
08/20/02	2.71
10/28/02	0.00
02/26/03	1.03
06/11/03	1.84
07/22/03	0.40
10/07/03	1.74
01/16/04	2.61
Min:	0.00
Max:	7.87
Average:	3.01

2567-MW2	
Sample Date	DO (mg/L)
04/11/97	2.50
08/28/97	2.40
12/02/97	1.90
03/04/98	5.40
06/01/98	2.30
09/24/98	5.92
12/16/98	6.72
02/24/99	3.27
05/29/99	5.70
07/21/99	2.77
10/21/99	4.37
02/14/00	5.16
05/15/00	4.81
08/22/00	3.07
11/01/00	3.21
02/09/01	5.07
05/08/01	5.14
08/15/01	0.05
11/09/01	0.73
02/26/02	0.98
05/28/02	1.97
08/20/02	2.47
10/28/02	0.29
02/26/03	2.17
06/11/03	2.11
07/22/03	0.43
10/07/03	1.11
01/16/04	2.21
Min:	0.05
Max:	6.72
Average:	3.01

2567-MW3	
Sample Date	DO (mg/L)
04/11/97	2.50
08/28/97	2.20
12/02/97	1.00
03/04/98	3.50
06/01/98	2.20
09/25/98	6.90
12/16/98	7.33
02/24/99	3.37
05/29/99	2.95
07/21/99	3.31
10/21/99	4.41
02/14/00	4.71
05/15/00	4.57
08/22/00	3.04
11/01/00	3.37
02/09/01	5.07
05/08/01	5.05
08/15/01	0.00
11/09/01	0.41
02/26/02	1.11
05/28/02	1.97
8/20/2002	2.91
10/28/02	0.08
02/26/03	2.69
06/11/03	2.52
07/22/03	0.40
10/07/03	1.96
01/16/04	2.08
Min:	0.00
Max:	7.33
Average:	2.91

2567-MW4	
Sample Date	DO (mg/L)
04/11/97	2.40
08/28/97	2.50
12/02/97	1.50
03/04/98	3.50
06/01/98	1.70
09/24/98	6.76
12/16/98	7.63
02/24/99	3.64
05/29/99	4.27
07/21/99	3.74
10/21/99	4.57
02/14/00	5.20
05/15/00	5.34
08/22/00	3.11
11/01/00	3.71
02/09/01	5.20
05/08/01	5.20
08/15/01	0.13
11/09/01	1.16
02/26/02	1.08
05/28/02	2.11
08/20/02	2.31
10/28/02	0.63
02/26/03	2.99
06/11/03	2.32
07/22/03	0.52
10/07/03	2.01
01/16/04	2.17
Min:	0.13
Max:	7.63
Average:	3.12

2567-MW5	
Sample Date	DO (mg/L)
04/11/97	2.20
08/28/97	3.40
12/02/97	1.80
03/04/98	2.60
06/01/98	1.10
09/25/98	7.27
12/16/98	8.04
02/24/99	3.68
06/08/99	4.80
07/21/99	4.18
10/21/99	4.17
02/14/00	5.19
05/15/00	5.36
08/22/00	3.24
11/01/00	3.76
02/09/01	5.31
05/08/01	5.18
08/15/01	0.17
11/09/01	0.87
02/26/02	0.97
05/28/02	1.66
08/20/02	2.32
10/28/02	5.10
02/26/03	2.50
06/11/03	2.30
07/22/03	1.38
10/07/03	2.03
01/16/04	2.17
Min:	0.17
Max:	8.04
Average:	3.31

Table 5-4
Aquifer Dissolved Oxygen
Site 2567
Fort Monmouth, New Jersey

2567-MW6	
Sample Date	DO (mg/L)
08/22/00	3.27
11/01/00	3.81
02/09/01	5.27
05/08/01	5.23
08/15/01	0.30
11/09/01	0.89
02/26/02	1.17
05/28/02	1.07
08/20/02	2.04
10/28/02	1.17
02/26/03	1.71
06/11/03	2.01
07/22/03	0.91
10/07/03	2.10
01/16/04	2.09
Min:	0.30
Max:	5.27
Average:	2.20

2567-MW7	
Sample Date	DO (mg/L)
08/22/00	3.31
11/01/00	3.87
02/09/01	NA
05/08/01	5.22
08/15/01	0.05
11/09/01	0.42
02/26/02	1.04
05/28/02	1.02
08/20/02	1.98
10/28/02	0.39
02/26/03	1.38
06/11/03	2.30
07/22/03	0.57
10/07/03	2.17
01/16/04	2.23
Min:	0.05
Max:	5.22
Average:	1.85

Notes:
1.) DO: Dissolved Oxygen
2.) NA: Not Available

Table 6-1
tert-Butyl Alcohol Biodegradation at Monitoring Well 2567-MW1
Site 2567 - Charles Woods Area
Fort Monmouth, New Jersey

Duration of tert-Butyl Alcohol Degradation Based on Published Biodegradation Rate

Input

Parameters	Units	Constituent: tert-Butyl Alcohol (TBA)
Δt	days	90
$T_{1/2}$	days	365
k [(1)]	$days^{-1}$	0.00190
Initial Concentration, C_0 [(2)] February 9, 2001	µg/L	1488.05

Calculation and Results

Time (days)	Date	Predicted Concentrations, C (ug/L)
0	February 9, 2001	1488.05
90	May 10, 2001	1254.27
180	August 8, 2001	1057.22
270	November 6, 2001	891.12
360	February 4, 2002	751.12
450	May 5, 2002	633.12
540	August 3, 2002	533.65
630	November 1, 2002	449.81
720	January 30, 2003	379.14
810	April 30, 2003	319.58
900	July 29, 2003	269.37
990	October 27, 2003	227.05
1080	January 25, 2004	191.38
1170	April 24, 2004	161.31
1260	July 23, 2004	135.97
1350	October 21, 2004	114.61
1440	January 19, 2005	96.60

Time until NJDEP criteria is reached:

1,440	**January 19, 2005**	**96.60**
New Jersey Criteria	**µg/L**	**100**

Notes:

NJ Critera = Interim Groundwater Quality Criteria

Constituent Predicted Concentration: $C_p(t) = C_p(t-1) * e^{-k\Delta t}$

Time to reach NJ Criteria = TNJC

Reaction Rate Constant = $k = -\ln(0.5)/t_{1/2}$

Length of Impacted Area Based on Available Published Biodegradation Rates

Input Data

Hydraulic Conductivity[(3)] (K)	**ft/day**	**25.9**
Hydraulic Gradient[(4)] (i):	**ft/ft**	**0.02**
Effective Porosity[(5)] (n_e):	**---**	**0.4**
Bulk Density of Formation[(5)] (ρ_b)	**kg/L**	**1.59**
n-Octanol/Carbon Partition[(6)] (K_{oc}):	**L/kg**	**2.27**
Fraction of Organic Carbon[(7)] (f_{oc})	**---**	**0.003**
Sorption Coefficient (K_d)	**L/kg**	**0.007**

Calculation and Results

Seepage Velocity (ft/day)	vs = K*i/ne =	1.295
Retardation Factor	Rd = 1 + (Kd * ρ_b / ne) =	1.03
Pollutant Transport Rate (ft/day)	vpt = vs/Rd =	1.261
or (ft/year)		460.22
TNJC (days)	**Determined above**	**1,440**
TNJC (years)		**3.9**
Length (ft)	**vpt * TNJC =**	**1,800**

Notes:

(1) Half-Life for aerobic biodegradation in groundwater, upper limit: Howard, P.H. et. al. 1991. *Handbook of Environmental Degradation Rates.* Lewis Publishers.

(2) Initial concentration (Co) is the most recent concentration that was detected during the groundwater monitoring program.

(3) Hydraulic conductivity of surficial fill, K = 25.9 ft/day (Geometeric mean of slug tests performed by Versar in August 2001)

(4) Hydraulic gradient (i) derived from ground water elevation contours (August 2000)

(5) Effective porosity, n = 0.4, and bulk density, ρ_b = 1.5 g/mL (consistent with the type of soil - clayey sands, at the Site).

(6) K_{oc} data reference: USEPA Soil Screeening Guidance 1996.

(7) f_{oc} = 0.003 (the geometric mean of the minimum and maximum range of f_{oc}). *USEPA 1996* .

Table 6-2
Well Search Summary
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

NJDEP Permit Number	Depth (feet)	Use*	Permit Date	Lattitude	Longitude
2900151	300	D	7/13/1951	401746	740546
2901121	70	D	6/2/1954	401706	740519
2901154	70	D	6/17/1954	401800	740546
2903374	50	D	8/15/1960	401733	740546
2903863	90	D	6/29/1962	401733	740546
2905076	100	D	5/20/1966	401733	740546
2907536	150	D	6/14/1974	401813	740533
2908442	60	D	8/3/1976	401826	740426
2911733	150	D	12/4/1981	401813	740533
2912070	40	G	5/14/1982	401720	740346
2912719	40	G	4/8/1983	401726	740406
2913187	80	G	9/12/1983	401819	740446
2913524	20	M	3/21/1984	401712	740406
2913525	20	M	3/21/1984	401712	740406
2913526	20	M	3/21/1984	401712	740406
2913527	20	M	3/21/1984	401712	740406
2913528	20	M	3/21/1984	401712	740406
2913529	20	M	3/21/1984	401712	740406
2913551	20	M	3/21/1984	401712	740406
2913552	20	M	3/21/1984	401712	740406
2913553	20	M	3/21/1984	401712	740406
2913581	50	E	7/20/1984	401712	740406
2914431	20	G	1/15/1985	401819	740446
2916207	220	D	2/17/1986	401726	740406
2916766	20	M	6/30/1986	401659	740432
2916767	20	M	6/30/1986	401659	740432
2916768	20	M	6/30/1986	401659	740432
2916769	20	M	6/30/1986	401659	740432
2916770	20	M	6/30/1986	401659	740432
2916771	20	M	6/30/1986	401659	740432
2916772	20	M	6/30/1986	401659	740432
2916773	20	M	6/30/1986	401659	740432
2916774	20	M	6/30/1986	401659	740432
2916775	15	M	6/30/1986	401752	740552
2916776	15	M	6/30/1986	401752	740552
2916777	20	M	6/30/1986	401659	740512
2916778	20	M	6/30/1986	401659	740512
2916779	20	M	6/30/1986	401726	740406
2916780	20	M	6/30/1986	401659	740446
2916781	20	M	6/30/1986	401659	740446
2916782	20	M	6/30/1986	401659	740446
2916783	20	M	6/30/1986	401659	740446
2916784	20	M	6/30/1986	401659	740446
2916785	20	M	6/30/1986	401659	740446
2916786	15	M	6/30/1986	401712	740406
2916787	15	M	6/30/1986	401712	740406
2916788	20	M	6/30/1986	401659	740432
2916789	20	M	6/30/1986	401659	740432
2917933	13	W	2/10/1987	401739	740406
2917934	13	W	2/10/1987	401739	740406
2917935	13	W	2/10/1987	401739	740406
2917936	13	W	2/10/1987	401739	740406
2917937	13	W	2/10/1987	401739	740406
2917938	13	W	2/10/1987	401739	740406
2917939	13	W	2/10/1987	401739	740406
2917940	13	W	2/10/1987	401739	740406
2917941	13	W	2/10/1987	401739	740406
2917942	13	W	2/10/1987	401739	740406
2917943	13	W	2/10/1987	401739	740406

NJDEP Permit Number	Depth (feet)	Use*	Permit Date	Lattitude	Longitude
2917944	13	W	2/10/1987	401739	740406
2917945	13	W	2/10/1987	401739	740406
2917946	13	W	2/10/1987	401739	740406
2917947	13	W	2/10/1987	401739	740406
2917948	13	W	2/10/1987	401739	740406
2917949	13	W	2/10/1987	401739	740406
2917950	13	W	2/10/1987	401739	740406
2917951	13	W	2/10/1987	401739	740406
2917952	13	W	2/10/1987	401739	740406
2918127	13	W	3/17/1987	401739	740406
2918128	13	W	3/17/1987	401739	740406
2918129	13	W	3/17/1987	401739	740406
2918130	13	W	3/17/1987	401739	740406
2918131	13	W	3/17/1987	401739	740406
2918132	13	W	3/17/1987	401739	740406
2918579	13	W	5/18/1987	401746	740413
2918580	13	W	5/18/1987	401746	740413
2918581	13	W	5/18/1987	401746	740413
2918582	13	W	5/18/1987	401746	740413
2918583	13	W	5/18/1987	401746	740413
2918584	13	W	5/18/1987	401746	740413
2918585	13	W	5/18/1987	401746	740413
2918586	13	W	5/18/1987	401746	740413
2918587	13	W	5/18/1987	401746	740413
2918588	13	W	5/18/1987	401746	740413
2918589	13	W	5/18/1987	401746	740413
2918590	13	W	5/18/1987	401746	740413
2919285	40	M	9/11/1987	401720	740413
2919286	40	M	9/11/1987	401720	740413
2919287	40	M	9/11/1987	401720	740413
2919288	40	M	9/11/1987	401720	740413
2919540	200	D	11/9/1987	401733	740453
2920979	80	G	7/20/1988	401720	740346
2921634	200	G	10/19/1988	401733	740346
2921698	190	R	11/9/1988	401813	740519
2921967	30	M	12/22/1988	401733	740533
2922685	30	M	5/1/1989	401746	740519
2922686	30	M	5/1/1989	401746	740519
2922982	35	M	6/8/1989	401653	740453
2923160	30	M	7/17/1989	401733	740533
2923339	20	B	8/23/1989	401706	740440
2923916	20	M	12/11/1989	401720	740506
2923917	20	M	12/11/1989	401720	740506
2923918	20	M	12/11/1989	401720	740506
2923919	20	M	12/11/1989	401720	740453
2923920	20	M	12/11/1989	401720	740453
2923921	20	M	12/11/1989	401720	740453
2923922	10	B	12/11/1989	401720	740506
2923923	10	B	12/11/1989	401720	740506
2923924	10	B	12/11/1989	401720	740506
2923925	10	B	12/11/1989	401720	740453
2923926	10	B	12/11/1989	401720	740453
2923927	10	B	12/11/1989	401720	740453
2923928	10	B	12/11/1989	401720	740453
2923929	10	B	12/11/1989	401720	740453
2923930	10	B	12/11/1989	401720	740453
2923931	10	B	12/11/1989	401720	740453
2923932	10	B	12/11/1989	401720	740453
2923933	10	B	12/11/1989	401720	740453

Table 6-2
Well Search Summary
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

NJDEP Permit Number	Depth (feet)	Use*	Permit Date	Lattitude	Longitude
2923934	10	B	12/11/1989	401720	740453
2923935	10	B	12/11/1989	401720	740453
2923936	10	B	12/11/1989	401720	740453
2923937	10	B	12/11/1989	401720	740453
2923938	10	B	12/11/1989	401720	740453
2923939	10	B	12/11/1989	401720	740453
2923940	10	B	12/11/1989	401720	740453
2923941	10	B	12/11/1989	401720	740453
2923942	10	B	12/11/1989	401720	740453
2923943	10	B	12/11/1989	401720	740453
2923944	10	B	12/11/1989	401720	740453
2924555	30	M	4/10/1990	401733	740533
2924890	30	B	6/12/1990	401800	740453
2924891	30	B	6/12/1990	401800	740453
2924892	30	B	6/12/1990	401800	740453
2924893	30	B	6/12/1990	401800	740453
2924894	30	B	6/12/1990	401800	740453
2924895	30	B	6/12/1990	401800	740453
2924896	30	B	6/12/1990	401800	740453
2924897	30	B	6/12/1990	401800	740453
2924898	30	B	6/12/1990	401800	740453
2924899	30	B	6/12/1990	401800	740453
2925352	3	M	10/10/1990	401733	740533
2925775	13	M	1/29/1991	401720	740506
2926312	13	M	6/6/1991	401720	740506
2926590	25	M	7/18/1991	401706	740506
2926591	25	M	7/18/1991	401706	740506
2926592	25	M	7/18/1991	401706	740506
2926724	60	D	8/8/1991	401653	740453
2927443	25	M	1/21/1992	401733	740546
2927444	25	M	1/21/1992	401733	740546
2927453	25	M	1/23/1992	401733	740546
2927643	20	Z	3/5/1992	401813	740426
2927644	20	Z	3/5/1992	401813	740426
2927645	20	Z	3/5/1992	401813	740426
2927756	20	Z	3/31/1992	401733	740453
2927757	20	Z	3/31/1992	401733	740453
2927758	20	Z	3/31/1992	401733	740453
2928781	25	M	9/22/1992	401720	740546
2928782	25	M	9/22/1992	401720	740546
2929189	78	Y	12/30/1992	401653	740453
2929421	25	M	3/23/1993	401720	740506
2929607	25	M	4/29/1993	401720	740546
2929623	25	M	5/4/1993	401720	740546
2929742	30	M	6/3/1993	401733	740519
2929743	30	M	6/3/1993	401733	740519
2929744	30	M	6/3/1993	401733	740519
2929745	30	M	6/3/1993	401733	740519
2929752	14	M	6/3/1993	401706	740519
2929753	14	M	6/3/1993	401706	740519
2929754	14	M	6/3/1993	401706	740519
2930115	45	M	8/19/1993	401800	740346
2930116	45	M	8/19/1993	401800	740346
2930117	45	M	8/19/1993	401800	740346
2930118	45	M	8/19/1993	401800	740346
2930119	45	M	8/19/1993	401800	740346
2930120	45	M	8/19/1993	401800	740346
2930480	20	M	11/18/1993	401800	740400
2930494	35	M	11/24/1993	401800	740346

NJDEP Permit Number	Depth (feet)	Use*	Permit Date	Lattitude	Longitude
2930495	35	M	11/24/1993	401800	740346
2930514	20	M	12/3/1993	401720	740453
2930958	15	M	4/5/1994	401800	740506
2930959	15	M	4/5/1994	401800	740506
2930960	15	M	4/5/1994	401800	740506
2930969	15	M	4/5/1994	401746	740533
2931238	15	Z	5/11/1994	401733	740506
2931239	15	M	5/11/1994	401733	740506
2931240	15	M	5/11/1994	401733	740506
2931561	20	M	7/5/1994	401813	740413
2931562	20	M	7/5/1994	401813	740413
2931563	20	M	7/5/1994	401813	740413
2932158	60	G	9/27/1994	401813	740440
2932159	60	G	9/27/1994	401813	740440
2932160	60	G	9/27/1994	401813	740440
2932161	60	G	9/27/1994	401813	740440
2932162	60	G	9/27/1994	401813	740440
2932163	60	G	9/27/1994	401813	740440
2932590	25	M	11/29/1994	401746	740519
2932591	25	M	11/29/1994	401746	740519
2932592	25	M	11/29/1994	401746	740519
2932593	25	M	11/29/1994	401746	740519
2932594	25	M	11/29/1994	401746	740519
2932595	25	M	11/29/1994	401746	740519
2932596	25	M	11/29/1994	401746	740519
2932597	25	M	11/29/1994	401746	740519
2932598	25	M	11/29/1994	401746	740519
2932599	25	M	11/29/1994	401800	740440
2932600	25	M	11/29/1994	401800	740440
2932601	25	M	11/29/1994	401800	740440
2932602	25	M	11/29/1994	401800	740440
2932603	25	M	11/29/1994	401800	740440
2932604	25	M	11/29/1994	401800	740519
2932605	25	M	11/29/1994	401800	740519
2932894	20	M	3/1/1995	401720	740533
2932895	20	M	3/1/1995	401720	740533
2932896	20	V	3/1/1995	401720	740533
2932897	20	J	3/1/1995	401720	740533
2933763	20	M	7/19/1995	401813	740440
2934753	15	M	1/10/1996	401733	740453
2934754	15	M	1/10/1996	401733	740453
2934755	15	M	1/10/1996	401733	740453
2935236	100	G	4/23/1996	401720	740413
2935462	180	D	5/29/1996	401813	740533
2936178	180	D	10/31/1996	401813	740533
2936179	180	D	10/31/1996	401813	740533
2936202	180	D	11/7/1996	401813	740533
2936204	180	D	11/7/1996	401813	740533
2936284	180	D	11/25/1996	401813	740533
2936563	10	V	2/5/1997	401720	740533
2936564	6	V	2/5/1997	401720	740533
2936565	6	V	2/5/1997	401720	740533
2936566	6	V	2/5/1997	401720	740533
2936567	6	V	2/5/1997	401720	740533
2936568	35	V	2/5/1997	401720	740533
2936569	35	V	2/5/1997	401720	740533
2936570	35	V	2/5/1997	401720	740533
2936571	20	M	2/5/1997	401720	740533
2936653	180	D	2/28/1997	401813	740533

Table 6-2
Well Search Summary
Site 2567 - Charles Wood Area
Fort Monmouth, New Jersey

NJDEP Permit Number	Depth (feet)	Use*	Permit Date	Lattitude	Longitude
2936654	180	D	2/28/1997	401813	740533
2936658	180	D	3/4/1997	401813	740533
2936753	10	M	3/31/1997	401720	740506
2936968	100	G	5/20/1997	401720	740426
2936969	100	G	5/20/1997	401720	740426
2937036	10	V	6/4/1997	401720	740533
2937037	35	V	6/4/1997	401720	740533
2937899	50	B	11/20/1997	401800	740506
2938654	180	U	5/15/1998	401826	740519
2938660	100	G	5/15/1998	401720	740426
2939028	180	1	7/30/1998	401813	740519

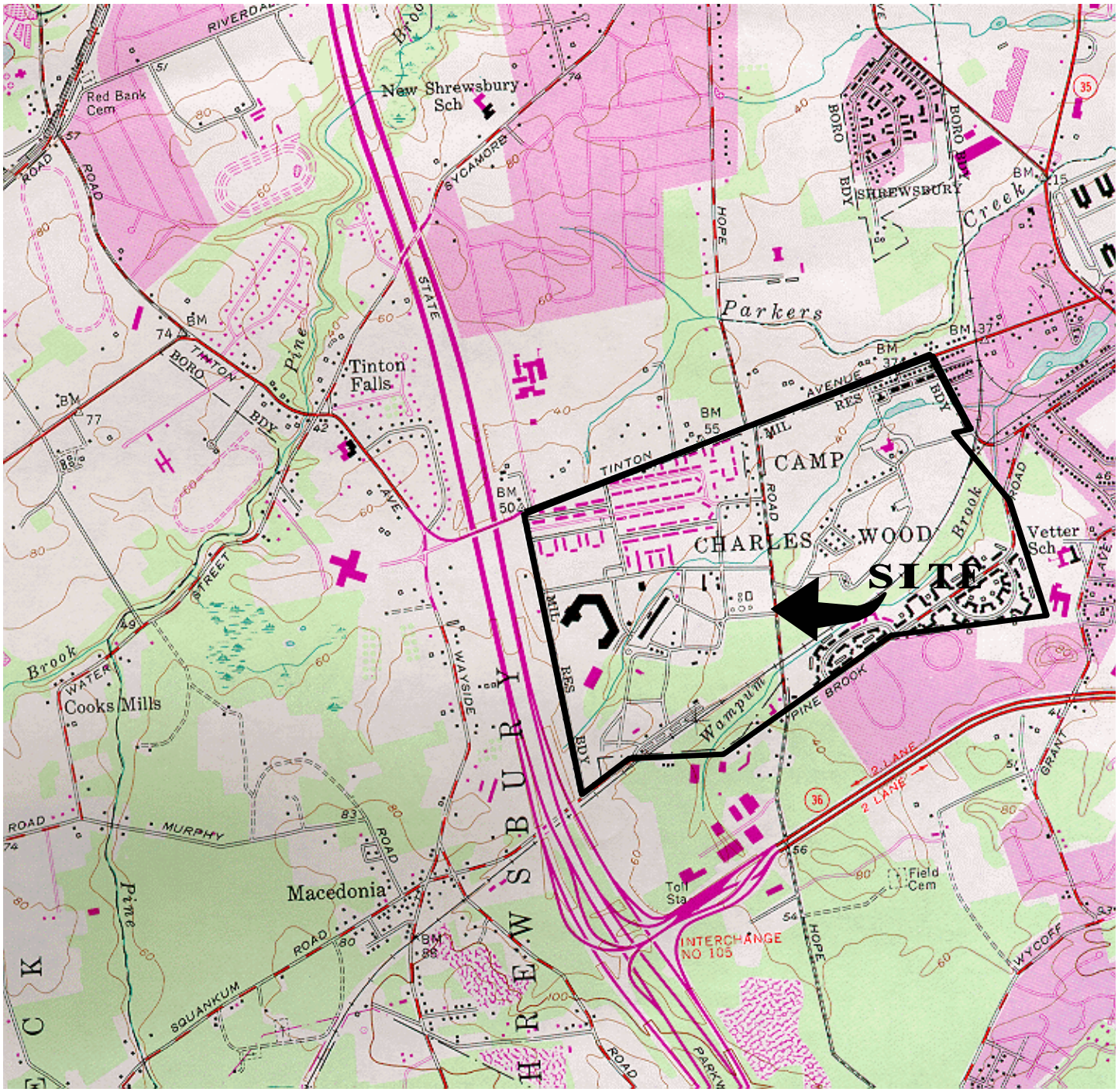
Notes:
Source: State of New Jersey Department of Environmental Protection - Well Permitting and Regulations Section of the Bureau of Water Allocation, Trenton, NJ.
Search date: 6 August 2001.

Well search was performed for a 1-mile radius surrounding the center point of Site 2567, U.S. Army Garrison Fort Monmouth, Fort Monmouth, New Jersey.

2567 Location: latitude = North 40^{o} 17' 45",
longitude = West 74^{o} 04' 46".

***Well Use Codes**
A - Unknown/Well Record Use Only
B - Boring
C - Commercial
D - Domestic (Potable)
E - Recovery/Decontamination Pollution Control/Leachate with Pump Capacity
F - Fire
G - Irrigation
H - Heat Pump/Geothermal (Return Well)
I - Industrial
J - Injection
K - Inclinometer
L - Livestock
M - Monitoring Well (Observation)
N - Public Non Community
O - Oil/Gas Exploration
P - Public Supply
Q - Recharge
R - Replacement (Replacement Codes: 1 - Domestic, 2 - Public Community, 5 - Irrigation)
S - Closed Loop
T - Test
U - Non Public (Supply)
V - Gas Vent
W - Dewatering
X - Agricultural/Horticultural/IrrigationWells
Y - Cathodic Protection
Z - Piezometer

FIGURES



LONG BRANCH, N. J.

40073-C8-TF-024

1954

PHOTOREVISED 1981

DMA 6164 I SE-SERIES V822

QUADRANGLE LOCATION

Mapped, edited and published by the Geological Survey

Figure 2-1
Site Location Map
Site 2567
Fort Monmouth, New Jersey

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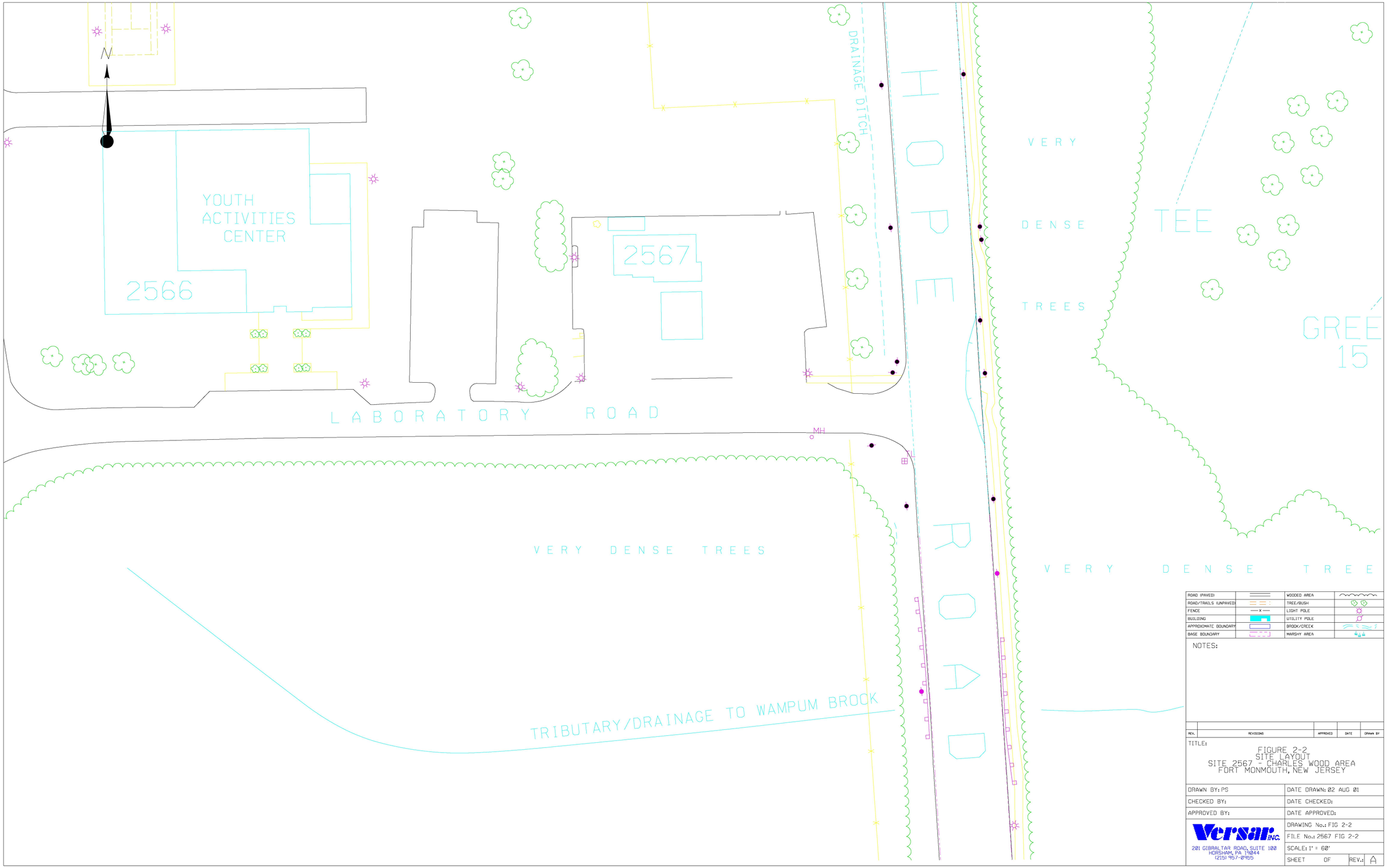

ROAD (PAVED)		WOODED AREA	
ROAD/TRAILS (UNPAVED)		TREE/BUSH	
FENCE	—x—	LIGHT POLE	
BUILDING		UTILITY POLE	
APPROXIMATE BOUNDARY		BROOK/CREEK	
BASE BOUNDARY		MARSHY AREA	

NOTES:

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 2-2
SITE LAYOUT
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: PS	DATE DRAWN: 02 AUG 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIG 2-2
	FILE No.: 2567 FIG 2-2
	SCALE: 1" = 60'
	SHEET OF REV.:

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N

YOUTH ACTIVITIES CENTER

2566

2567

2567-MW4

2567-MW2

2567-MW1

2567-MW3

LABORATORY ROAD

MH

2567-MW7

2567-MW6

2567-MW5

VERY DENSE TREES

TRIBUTARY/DRAINAGE TO WAMPUM BROCK

HOPE ROAD

VERY DENSE TREES

TEE

GREE

15

VERY DENSE TREE

ROAD (PAVED)		WOODED AREA	
ROAD/TRAILS (UNPAVED)		TREE/BUSH	
FENCE	—x—	LIGHT POLE	
BUILDING		UTILITY POLE	
APPROXIMATE BOUNDARY		BROOK/CREEK	
BASE BOUNDARY		MARSHY AREA	

NOTES:

= MONITORING WELL LOCATION

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 2-3
MONITORING WELL LOCATION MAP
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: JM	DATE DRAWN: 02 JUL 01
CHECKED BY:	DATE CHECKED: 02 JUL 01
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 2-3
	FILE No.: FIGURE 2-3
	SCALE: 1" = 60'
	SHEET 1 OF 1 REV.: A

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FORMER LOCATION OF UST
NO. 81515-46
CAPACITY: 550 GALLONS
CONTAINED: WASTE OIL
REMOVED: DECEMBER 1991

FORMER LOCATION OF UST
NO. 81515-33
CAPACITY: 1000 GALLONS
CONTAINED: FUEL OIL NO. 2
REMOVED: DECEMBER 1991

EXCAVATION AREA
(DECEMBER 1991)

2567-MW4

2567-MW2

2567

UST #42
UST #43
UST #44
UST #45

Dispenser
Island

UST NOS. 81515-42,43,44
CAPACITY: 10,000 GALLONS
CONTAINED: GASOLINE
REMOVED: FEBRUARY 1993

UST NO. 81515-56
CAPACITY: 6,000 GALLONS
CONTAINED: GASOLINE
REMOVED: FEBRUARY 1993

2567-MW1

2567-MW3

H O P E

L A B O R A T O R Y R O A D

2567-MW7

2567-MW6

2567-MW5

EXCAVATION AREA
(FEBRUARY 1993)

N

30 15 0 30
SCALE IN FEET

NOTES:

BUILDING
ROAD/CURB
FENCE
MONITORING WELL (CURRENT)
EXCAVATION AREA

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:
FIGURE 2-4
FORMER UST LOCATION MAP
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK	DATE DRAWN: 5 SEP 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 2-4
	FILE No.: 2567 FIGURE 2-4
	SCALE: 1" = 30'
	SHEET 1 OF 1 REV.: A

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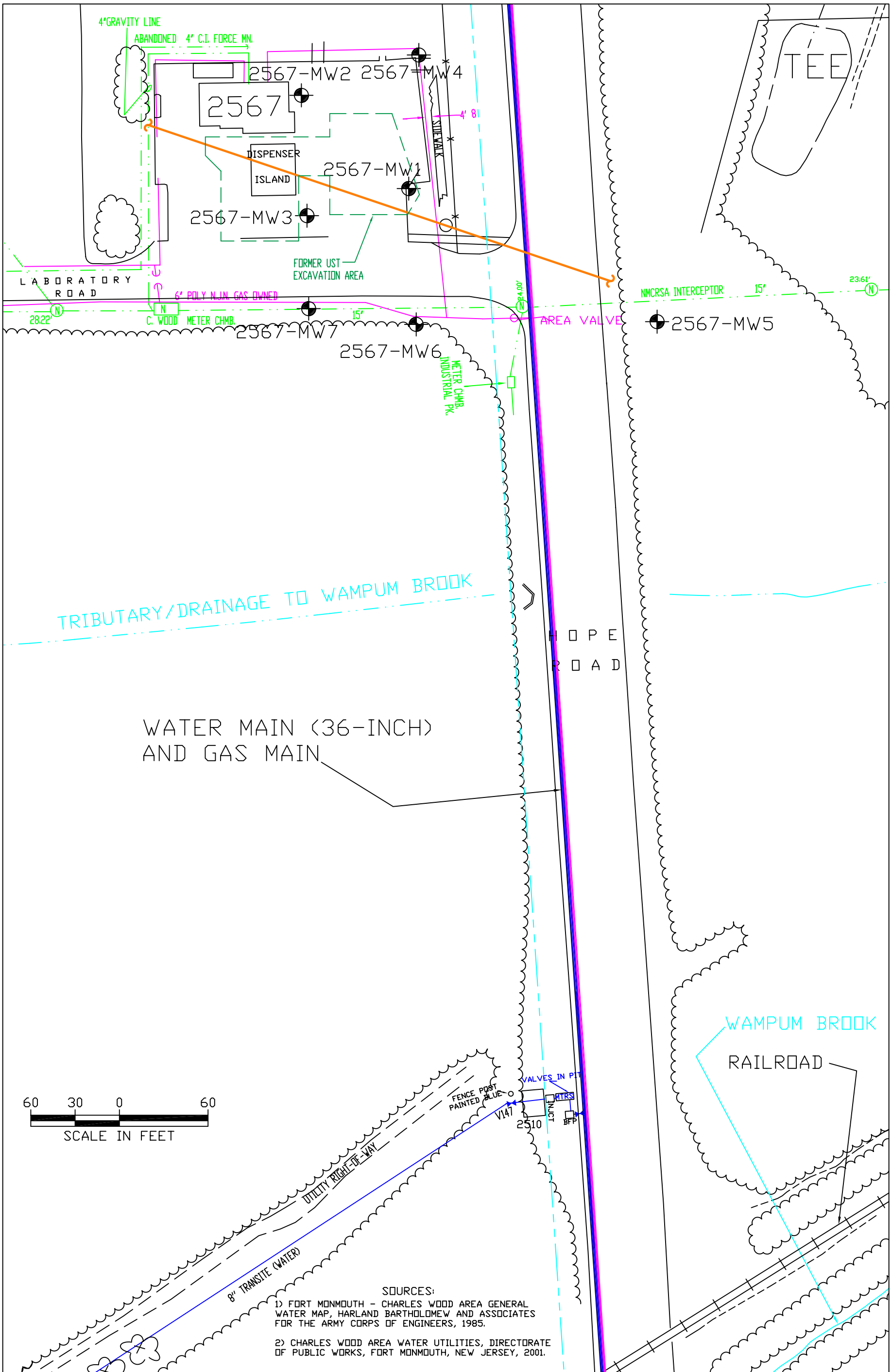
2550 PEARL BUCK ROAD, SUITE 1
BRISTOL, PA 19007
(215) 788-7844


4"GRAVITY LINE
ABANDONED 4" C.I. FORCE MN.
2567-MW2
2567-MW4
2567
4' 8
SIDEWALK
DISPENSER
ISLAND
2567-MW1
2567-MW3
FORMER UST
EXCAVATION AREA
TEE
LABORATORY
ROAD
6" POLY N.G.N. GAS OWNED
28.22'
C. WOOD METER CHMB.
15'
2567-MW7
2567-MW6
24.00'
AREA VALVE
NMCRSA INTERCEPTOR
15'
23.61'
2567-MW5
METER CHMB.
INDUSTRIAL PK.
TRIBUTARY/DRAINAGE TO WAMPUM BROOK
HOPE
ROAD
WATER MAIN (36-INCH)
AND GAS MAIN
WAMPUM BROOK
RAILROAD
VALVES IN PIT
MTRS
TNCT
BFP
2510
V147
FENCE POST
PAINTED BLUE
UTILITY RIGHT-OF-WAY
8" TRANSITE (WATER)
60 30 0 60
SCALE IN FEET
SOURCES:
1) FORT MONMOUTH - CHARLES WOOD AREA GENERAL WATER MAP, HARLAND BARTHOLOMEW AND ASSOCIATES FOR THE ARMY CORPS OF ENGINEERS, 1985.
2) CHARLES WOOD AREA WATER UTILITIES, DIRECTORATE OF PUBLIC WORKS, FORT MONMOUTH, NEW JERSEY, 2001.
NOTES:
BUILDING
ROAD/CURB
FENCE
MONITORING WELL
TREES/VEGETATION
CULVERT
SANITARY SEWER
28.22 N NMCRSA MANHOLE (S) WITH INVERT ELEVATION (FT ABOVE MEAN SEA LEVEL
GAS
WATER
ABANDONED SEWER LINE
SWALE
N
REV. REVISIONS APPROVED DATE DRAWN BY
TITLE:
FIGURE 2-5
UNDERGROUND UTILITIES LOCATION MAP
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 11 DEC 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
DRAWING No.: FIGURE 2-5
FILE No.: 2567 FIGURE 2-5
SCALE: 1" = 60'
SHEET 1 OF 1
REV.: A
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Geologic Map of New Jersey

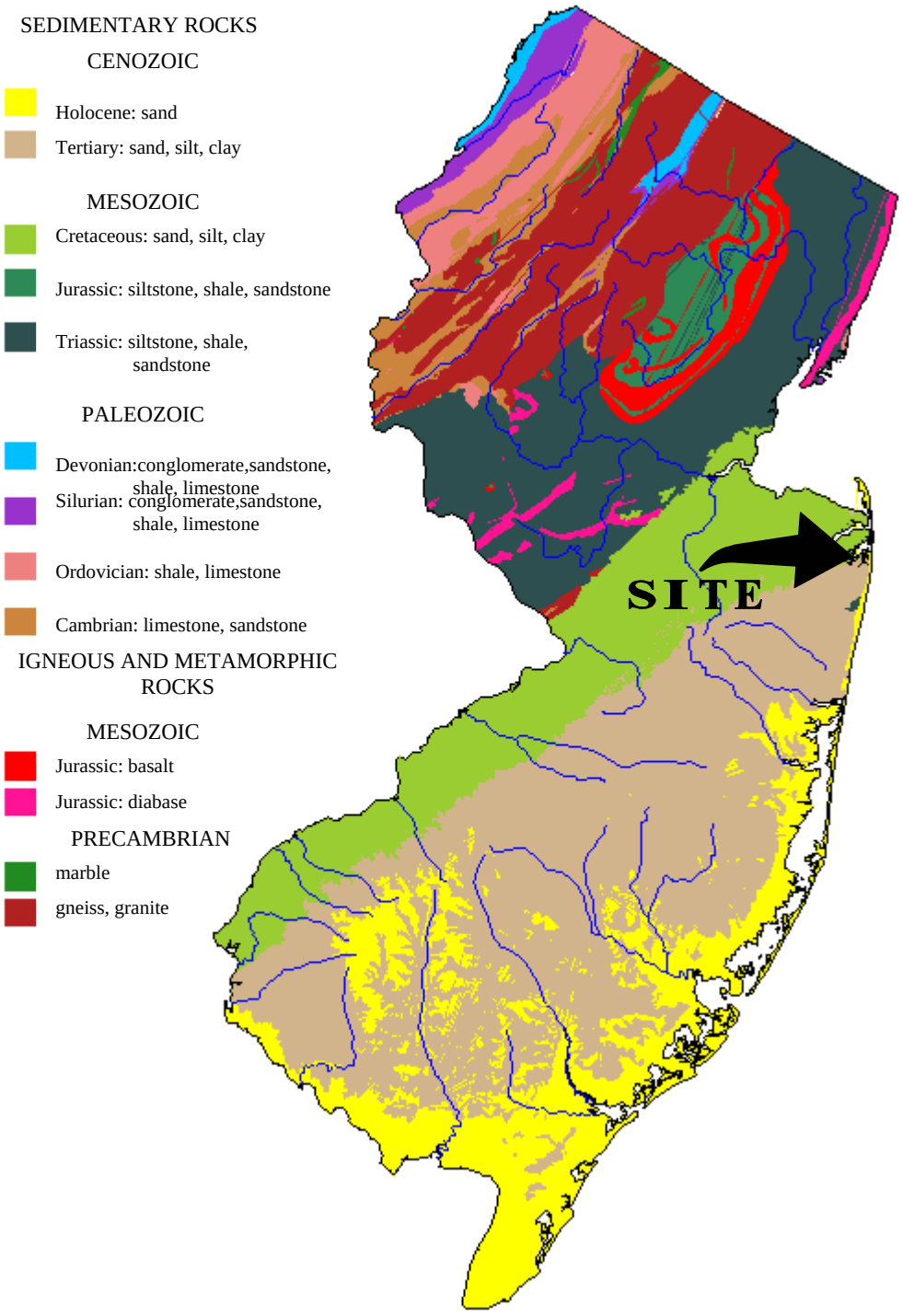

FIGURE 2-6
Geologic Map of New Jersey
Site 2567
Fort Monmouth, New Jersey

Source: New Jersey Geologic Survey, 1994, *Geologic Map of New Jersey*.

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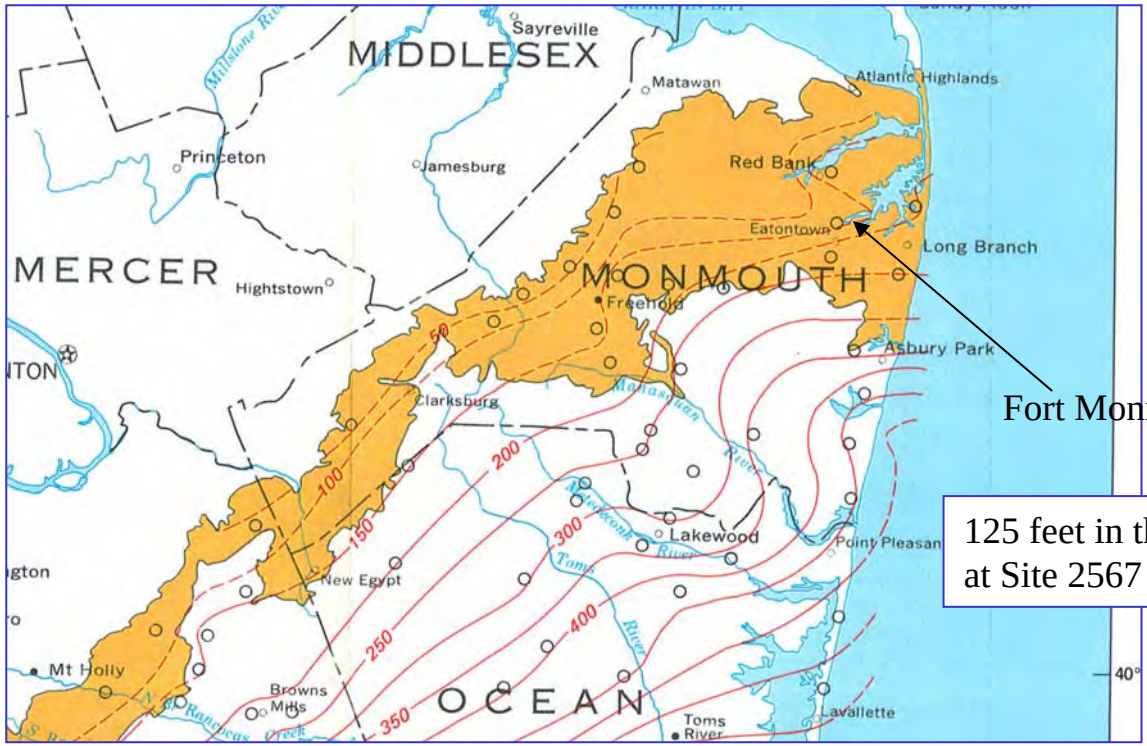

Fort Monmouth

125 feet in thickness at Site 2567

EXPLANATION

Outcrop area of the Navesink Formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, and Manasquan Formation

600 — Line of equal thickness of the composite confining bed Dashed where approximately located. Interval 50 feet

Well location

Source: Zapecza, O. 1989. *Hydrogeologic Framework of the New Jersey Coastal Plain.* USGS Professional Paper 1404-B. U.S. Government Printing Office, Washington, DC.

FIGURE 2-7

Outcrop and Thickness of Composite Confining Unit Site-2567 Fort Monmouth, New Jersey

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US Department of Agriculture
Soil Conservation Service
Soil Survey of Monmouth County, NJ
April 1989

Figure 2-8
Soil Map of Monmouth County
Site 2567
Fort Monmouth, New Jersey

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Horsham, PA 19044
(215) 957-0955

4" GRAVITY LINE

ABANDONED 4" C.I. FORCE MN.

2567-MW2 2567-MW4

2567

A

4' 8

SIDEWALK

DISPENSER ISLAND

2567-MW1

2567-MW3

L A B O R A T O R Y R O A D

FORMER UST EXCAVATION AREA

6" POLY N.J.N. GAS OWNED

28.22'

C. WOOD METER CHMB.

15"

2567-MW7 A'

2567-MW6

METER CHMB. INDUSTRIAL PK.

24.00'

AREA VALVE

NMCRSA INTERCEPTOR 15"

23.61'

2567-MW5 A"

R O P E R O A D

TEE

N

40 20 0 40

SCALE IN FEET

NOTES:

- BUILDING
- ROAD/CURB
- FENCE
- WOODED AREA
- MONITORING WELL
- SANITARY SEWER
- NMCRSA MANHOLE (S) WITH INVERT ELEVATION (FT ABOVE MEAN SEA LEVEL
- GAS
- WATER
- ABANDONED SEWER LINE
- SWALE
- APPROXIMATE GROUNDWATER FLOW DIRECTION

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 4-1
GEOLOGIC CROSS SECTION LOCATION MAP
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK	DATE DRAWN: 5 SEP 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 4-1
	FILE No.: 2567 FIGURE 4-1
	SCALE: 1" = 40'
	SHEET 1 OF 1 REV.: A

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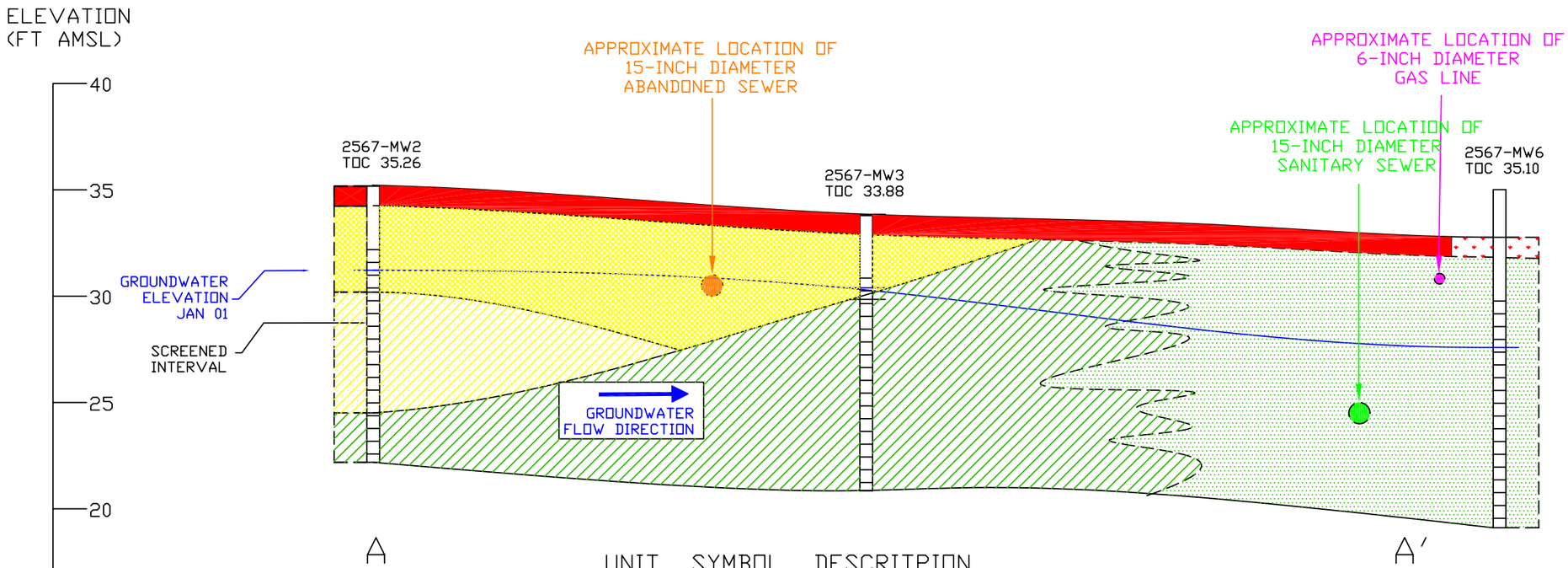

UNIT	SYMBOL	DESCRIPTION
(1)		TOP SOIL/ROOTS
(2)		ASPHALT/BASE STONE
(3)		LIGHT ORANGE SAND - FILL
(4)		LIGHT GREEN SAND - FILL
		TINTON FORMATION
(5)		DARK BROWN/BLACK CLAY WITH SOME FINE SAND
(6)		MEDIUM FINE SAND

NOTES:

1) CROSS SECTION LINE (A TO A') IS SHOWN ON FIGURE 4-1.

2) VERTICAL SCALE: 1" = 6'.
HORIZONTAL SCALE: 1" = 20'.
VERTICAL EXAGGERATION = 3.33.

3) TOC = ELEVATION OF INNER WELL CASING SURVEY MARK (FEET AMSL).

4) EACH OF THE WELLS HAS A DIAMETER OF 4 INCHES, WHICH IS ENLARGED ON THIS DRAWING FOR PRESENTATION.

5) BOUNDARIES ARE DASHED WHERE INFERRED.

6) THE SIZE OF THE UNDERGROUND UTILITY PIPES IS PORTRAYED IN THE VERTICAL SCALE (1"=6')

REV.	REVISIONS	APPROVED	DRAWN BY

TITLE:
FIGURE 4-2
GEOLOGIC CROSS SECTION A-A'
SITE 2567- CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: PS/TJK	DATE DRAWN: 10 AUG 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 4-2
	FILE No.: 2567 FIG 4-2
	SCALE: 1" = 20' (VERT:1"=6)
	SHEET 1 OF 1 REV.: A

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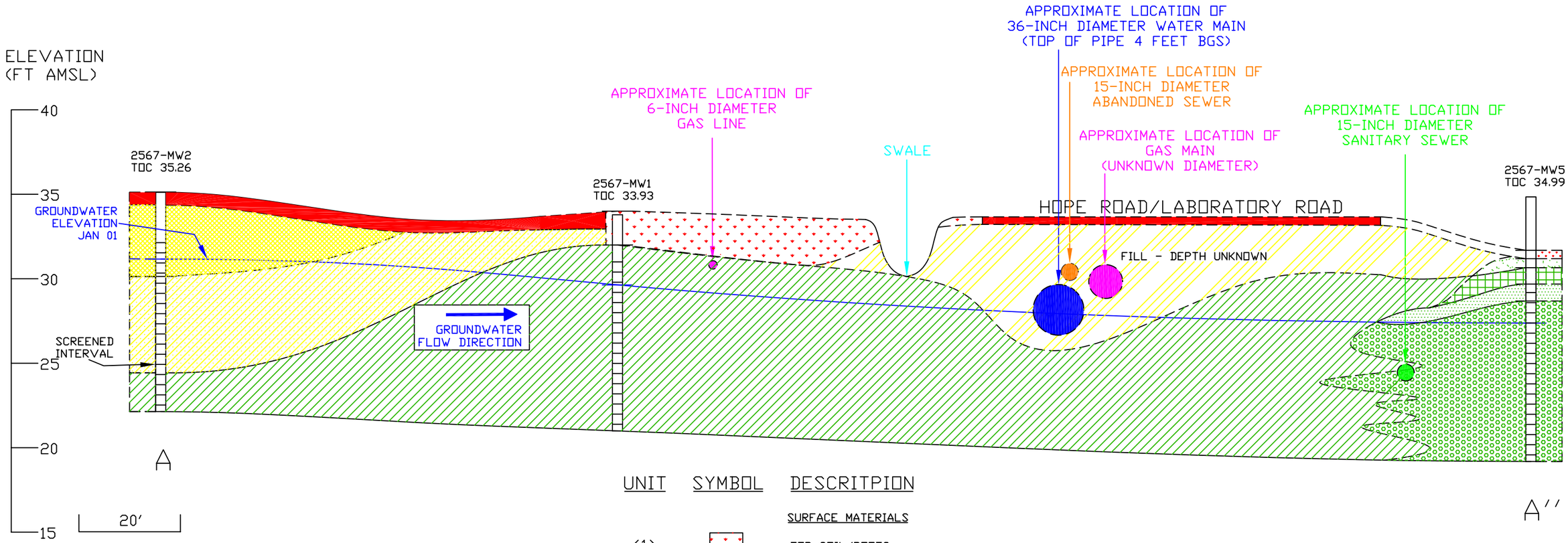

UNIT	SYMBOL	DESCRIPTION
		SURFACE MATERIALS
(1)		TOP SOIL/ROOTS
(2)		ASPHALT/BASE STONE
(3)		LIGHT ORANGE SAND - FILL
(4)		LIGHT GREEN SAND - FILL
(7)		FILL - UNKNOWN DEPTH AND LITHOLOGY
		TINTON FORMATION
(5)		DARK BROWN/BLACK CLAY WITH SOME FINE GREEN SAND
(8)		BROWN FINE SAND
(9)		BLACK, SOFT CLAY
(10)		BROWN FINE SAND AND SILTS
(11)		GRAY MEDIUM SAND WITH WELL-ROUNDED GRAVEL

NOTES:

1) CROSS SECTION LINE (A TO A'') IS SHOWN ON FIGURE 4-1.

2) VERTICAL SCALE: 1" = 6'.
HORIZONTAL SCALE: 1" = 20'.
VERTICAL EXAGGERATION = 3.33.

3) TOC = ELEVATION OF INNER WELL CASING SURVEY MARK (FEET AMSL).

4) EACH OF THE WELLS HAS A DIAMETER OF 4 INCHES, WHICH IS ENLARGED ON THIS DRAWING FOR PRESENTATION.

5) BOUNDARIES ARE DASHED WHERE INFERRED.

6) THE SIZE OF THE UNDERGROUND UTILITY PIPES IS PORTRAYED IN THE VERTICAL SCALE (1"=6')

7) THE SIZE OF THE UNDERGROUND UTILITY PIPES IS REPRESENTED IN THE VERTICAL SCALE (1"=6')

REV.	REVISIONS	APPROVED	DRAWN BY

TITLE:
FIGURE 4-3
GEOLOGIC CROSS SECTION A-A''
SITE 2567- CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: PS/TJK	DATE DRAWN: 10 AUG 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 4-3
	FILE No.: 2567 FIG. 4-3
	SCALE: 1" = 20' (VERT:1"=6')
	SHEET 1 OF 1 REV.: A

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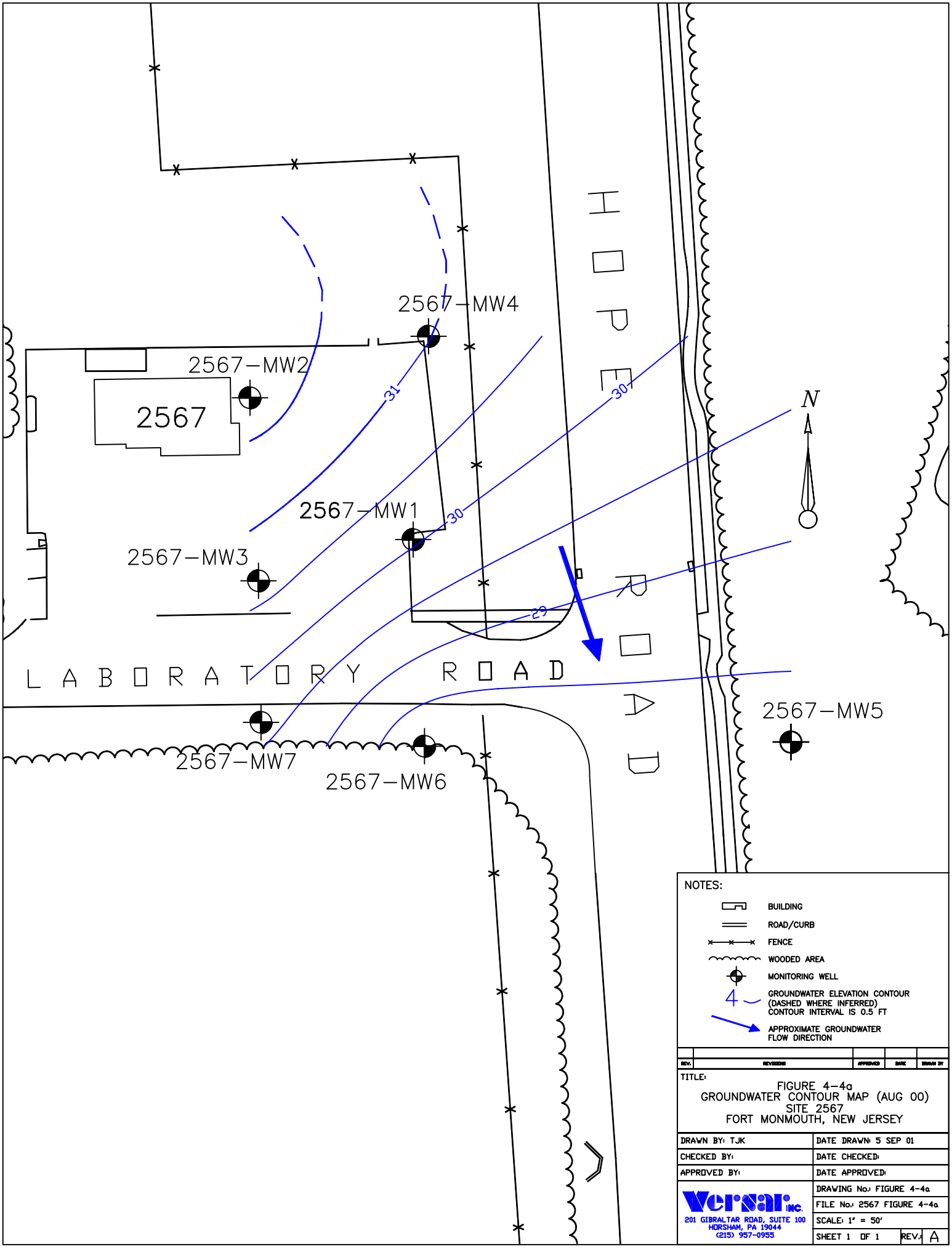
2567–MW4
2567–MW2
2567
31
30
2567–MW1
30
2567–MW3
29
N
L A B O R A T O R Y R O A D
2567–MW5
2567–MW7
2567–MW6
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR
(DASHED WHERE INFERRED)
CONTOUR INTERVAL IS 0.5 FT
APPROXIMATE GROUNDWATER
FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4a
GROUNDWATER CONTOUR MAP (AUG 00)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
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DATE CHECKED:
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DATE APPROVED:
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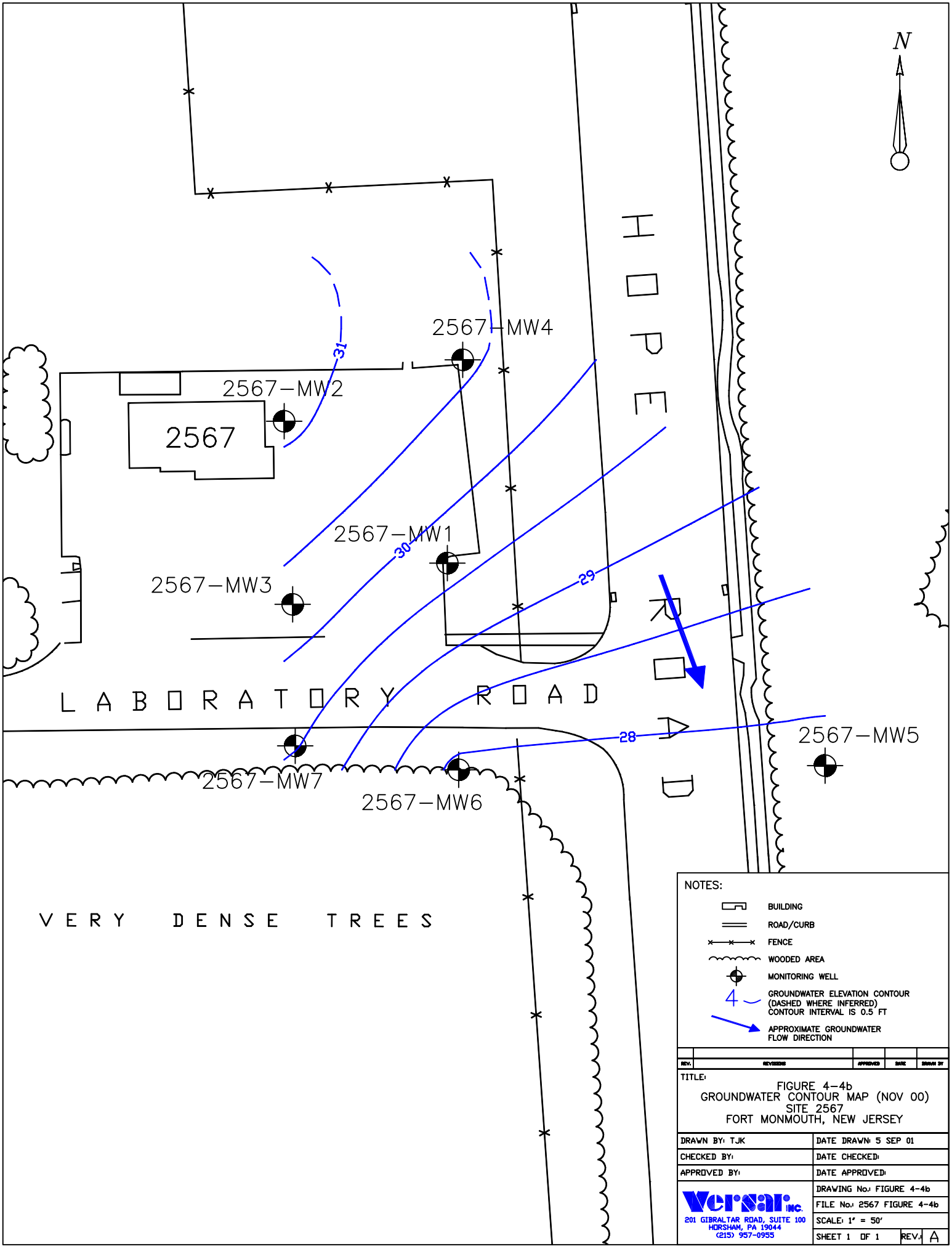
DRAWING No.: FIGURE 4-4a
FILE No.: 2567 FIGURE 4-4a
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
2567–MW1
2567–MW3
2567–MW5
2567–MW7
2567–MW6
31
30
29
28
HOPE ROAD
LABORATORY ROAD
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 0.5 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4b
GROUNDWATER CONTOUR MAP (NOV 00)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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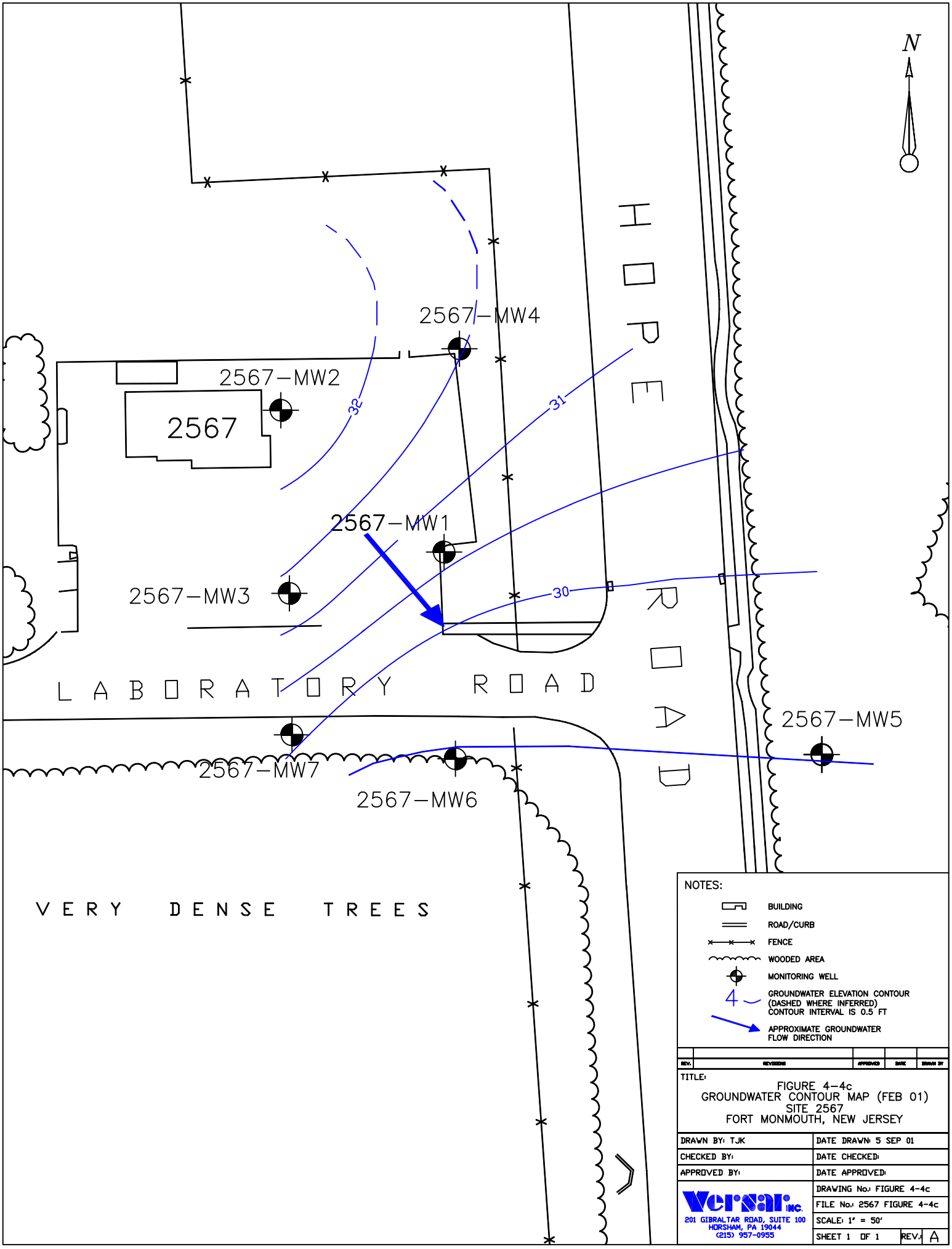
DRAWING No.: FIGURE 4-4b
FILE No.: 2567 FIGURE 4-4b
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
32
31
2567–MW1
2567–MW3
30
HOPE ROAD
LABORATORY ROAD
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR
(DASHED WHERE INFERRED)
CONTOUR INTERVAL IS 0.5 FT
APPROXIMATE GROUNDWATER
FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4c
GROUNDWATER CONTOUR MAP (FEB 01)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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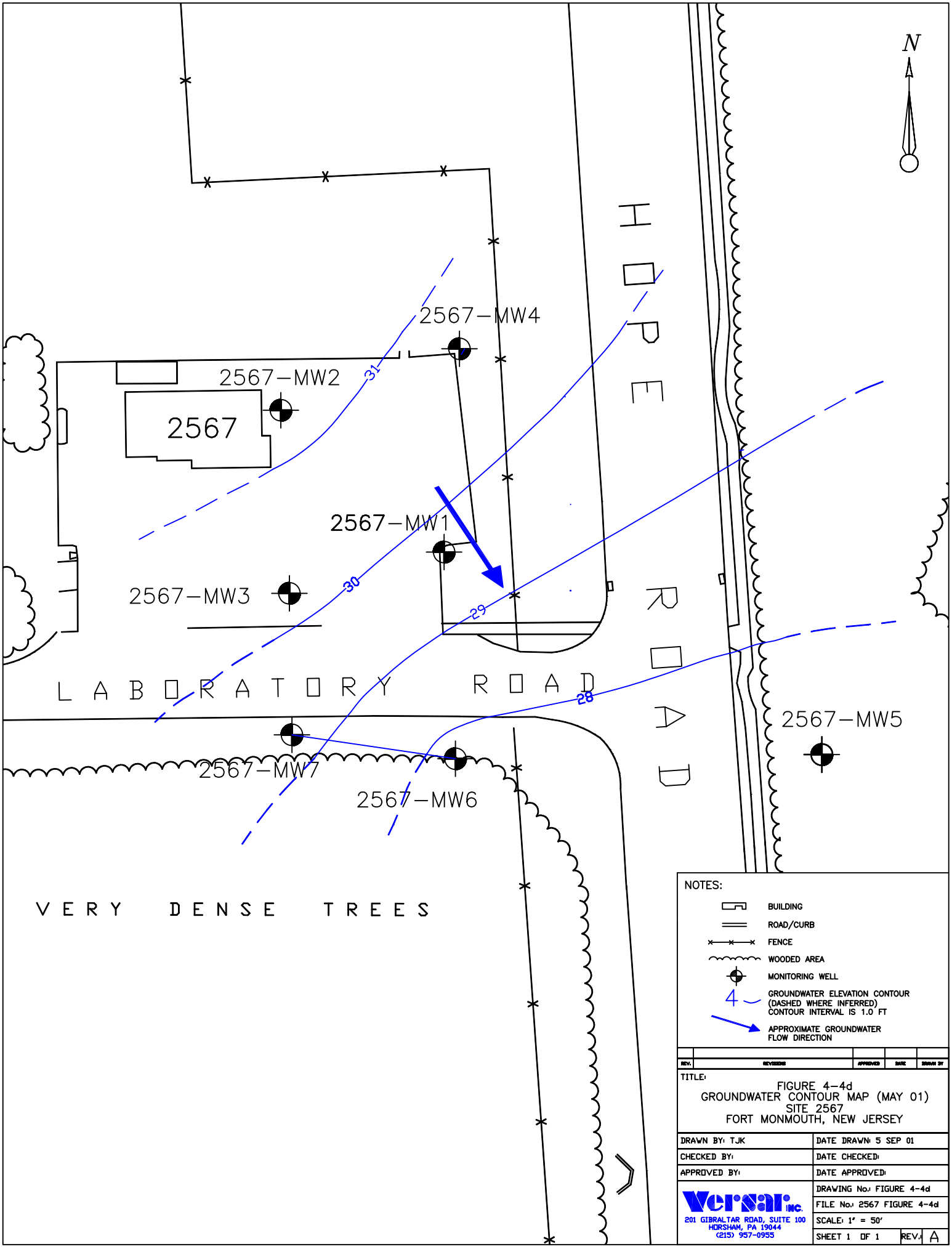
DRAWING No.: FIGURE 4-4c
FILE No.: 2567 FIGURE 4-4c
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
31
2567–MW1
2567–MW3
30
29
28
HOPE ROAD
LABORATORY ROAD
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4d
GROUNDWATER CONTOUR MAP (MAY 01)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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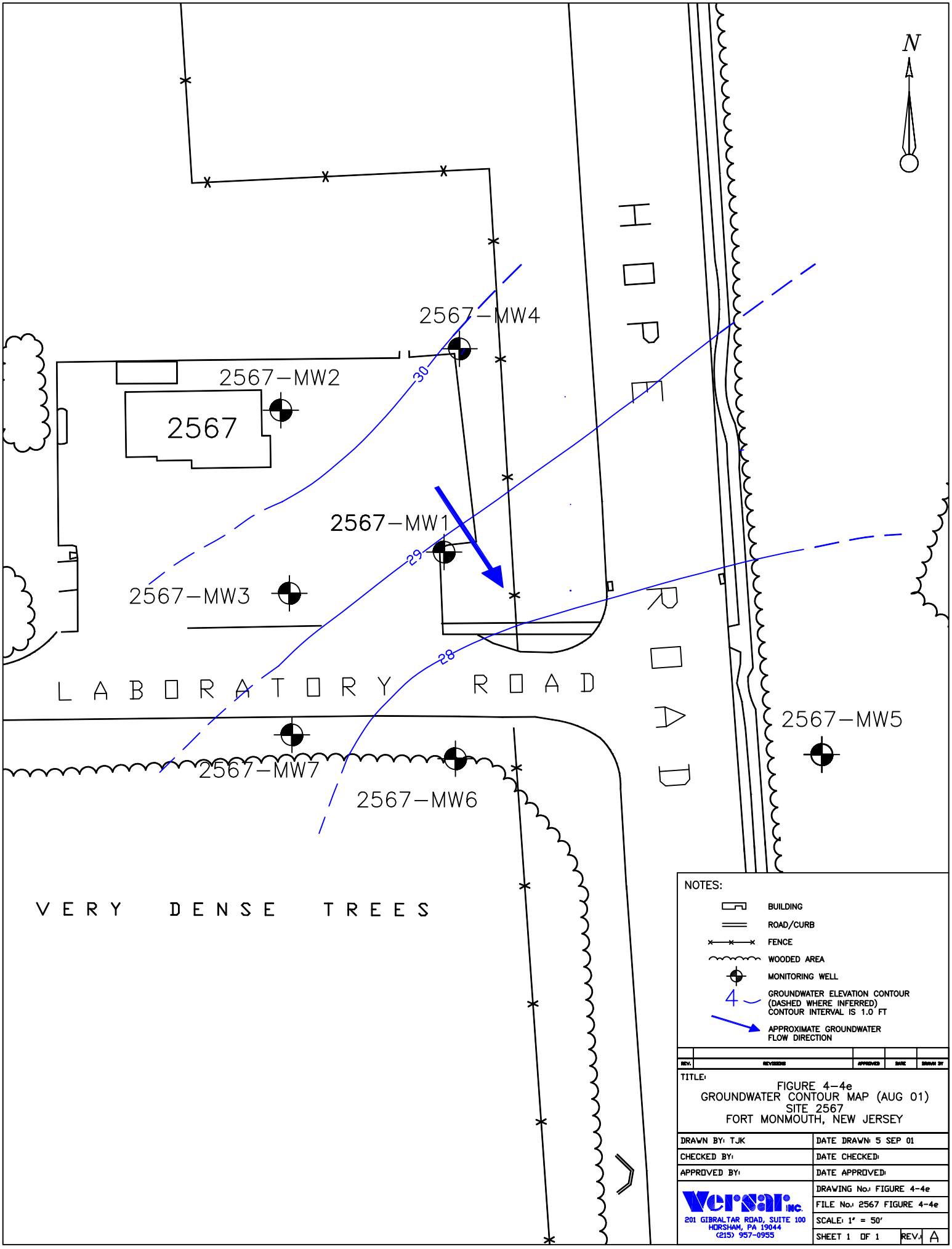
DRAWING No.: FIGURE 4-4d
FILE No.: 2567 FIGURE 4-4d
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A



NOTES:

- BUILDING
- ROAD/CURB
- FENCE
- WOODED AREA
- MONITORING WELL
- 4 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
- APPROXIMATE GROUNDWATER FLOW DIRECTION

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 4–4e
GROUNDWATER CONTOUR MAP (AUG 01)
SITE 2567
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK	DATE DRAWN: 5 SEP 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 4-4e
	FILE No.: 2567 FIGURE 4-4e
	SCALE: 1" = 50'
	SHEET 1 OF 1 REV.: A

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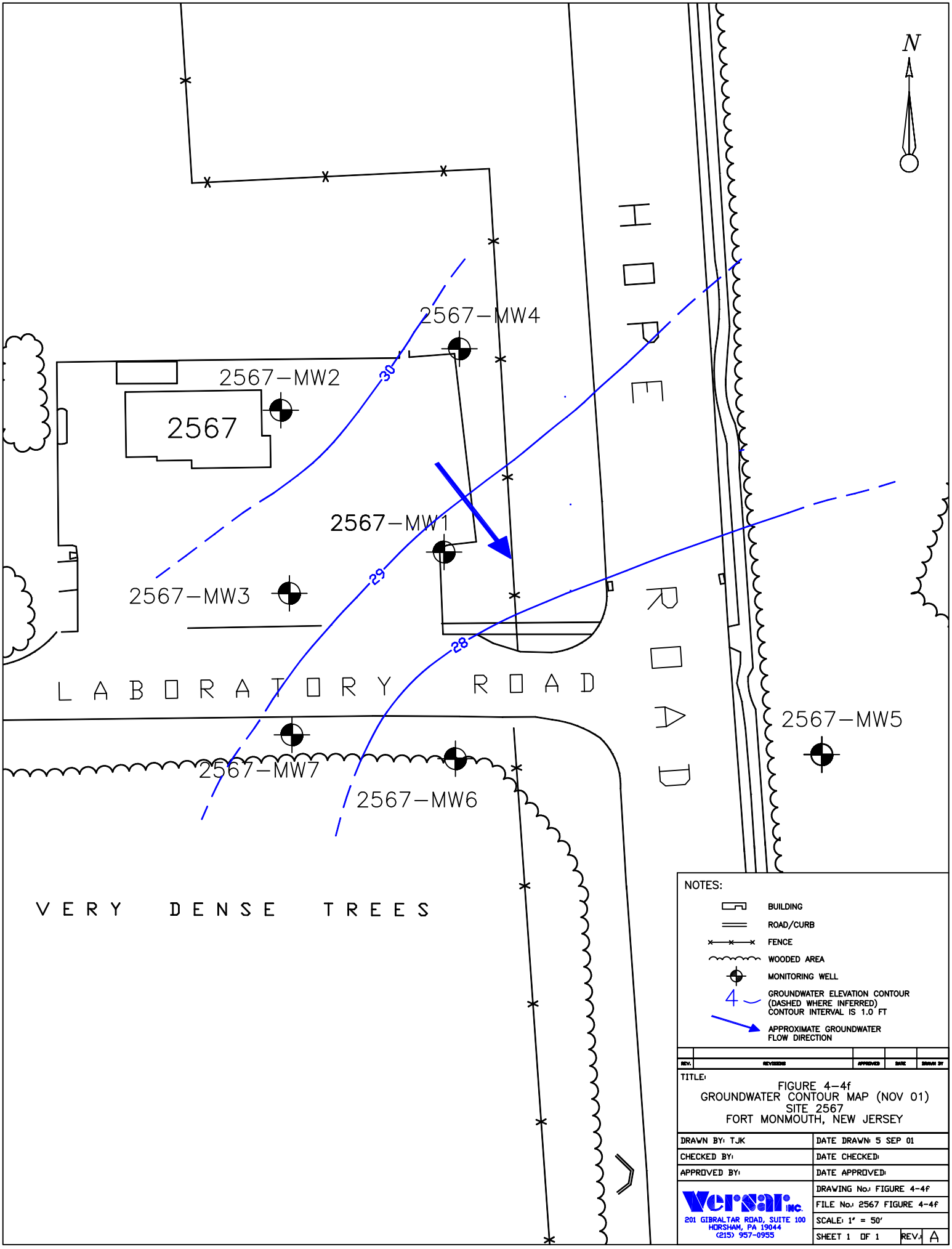

NOTES:

- BUILDING
- ROAD/CURB
- FENCE
- WOODED AREA
- MONITORING WELL
- 4 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
- APPROXIMATE GROUNDWATER FLOW DIRECTION

REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 4–4f
GROUNDWATER CONTOUR MAP (NOV 01)
SITE 2567
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK	DATE DRAWN: 5 SEP 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 4-4f
	FILE No.: 2567 FIGURE 4-4f
	SCALE: 1" = 50'
	SHEET 1 OF 1 REV.: A

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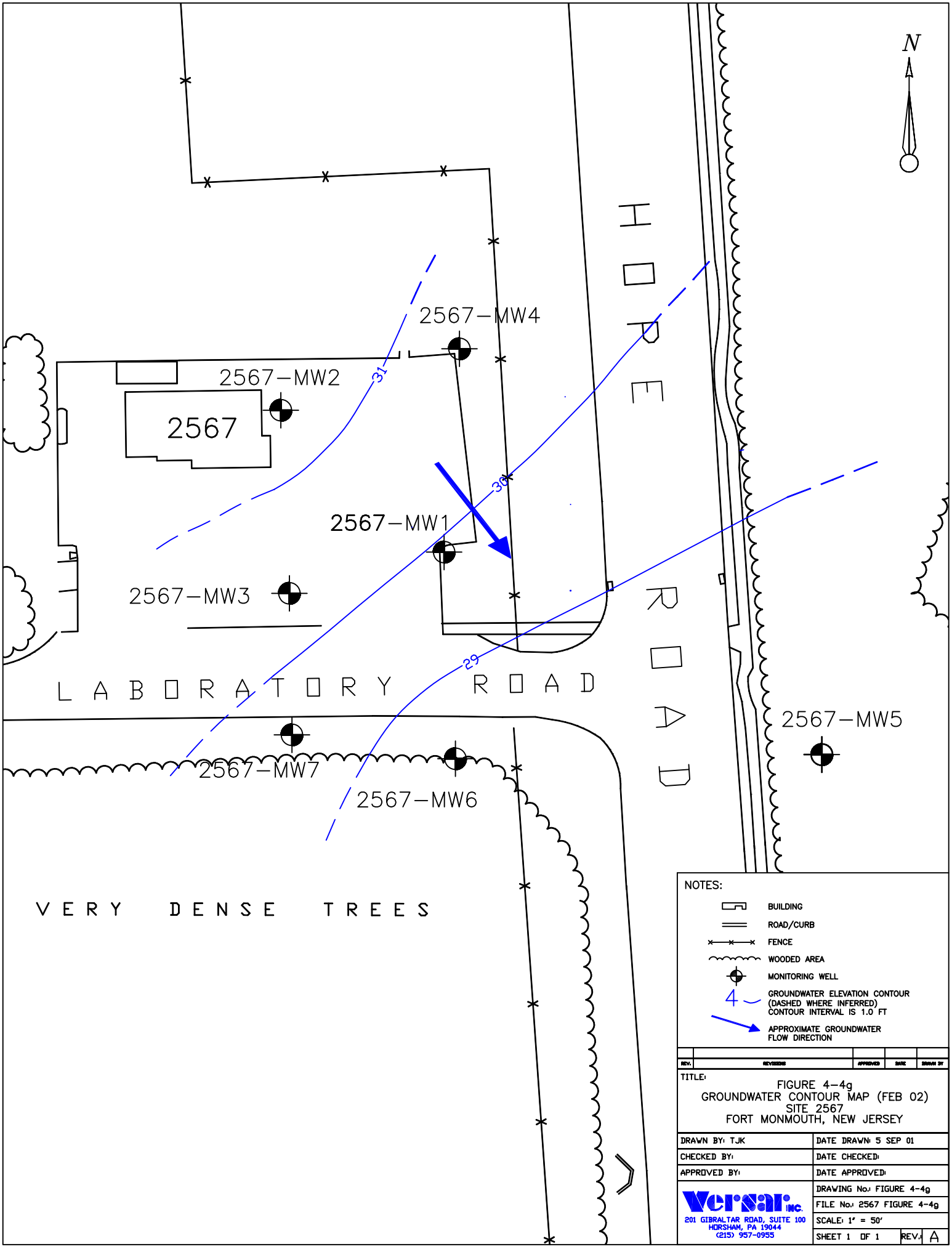
N
2567–MW4
2567–MW2
2567
31
2567–MW1
30
2567–MW3
29
HOPE ROAD
LABORATORY ROAD
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR
(DASHED WHERE INFERRED)
CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER
FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4g
GROUNDWATER CONTOUR MAP (FEB 02)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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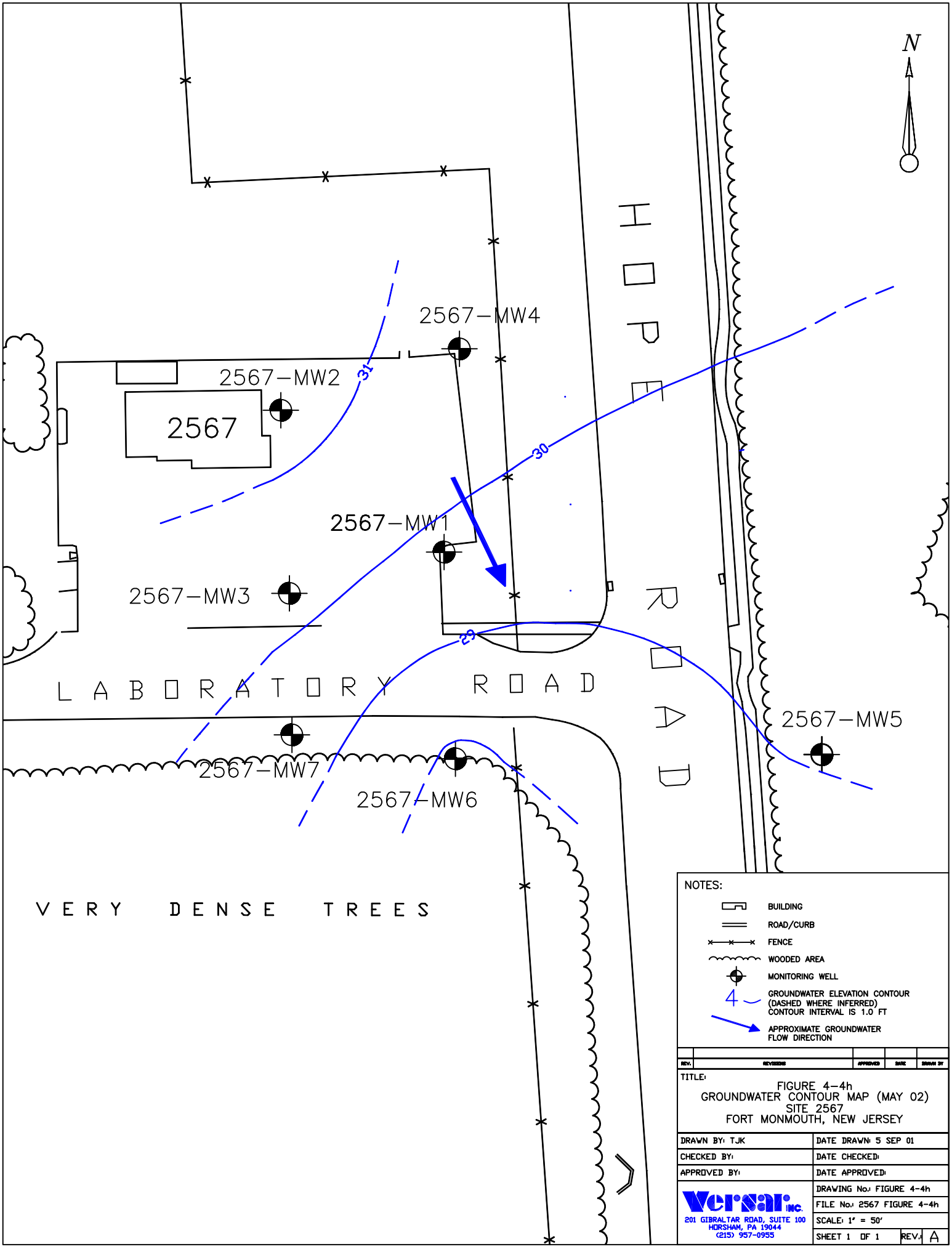
DRAWING No.: FIGURE 4-4g
FILE No.: 2567 FIGURE 4-4g
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
31
30
2567–MW1
2567–MW3
29
HOPE ROAD
LABORATORY ROAD
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR
(DASHED WHERE INFERRED)
CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER
FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4h
GROUNDWATER CONTOUR MAP (MAY 02)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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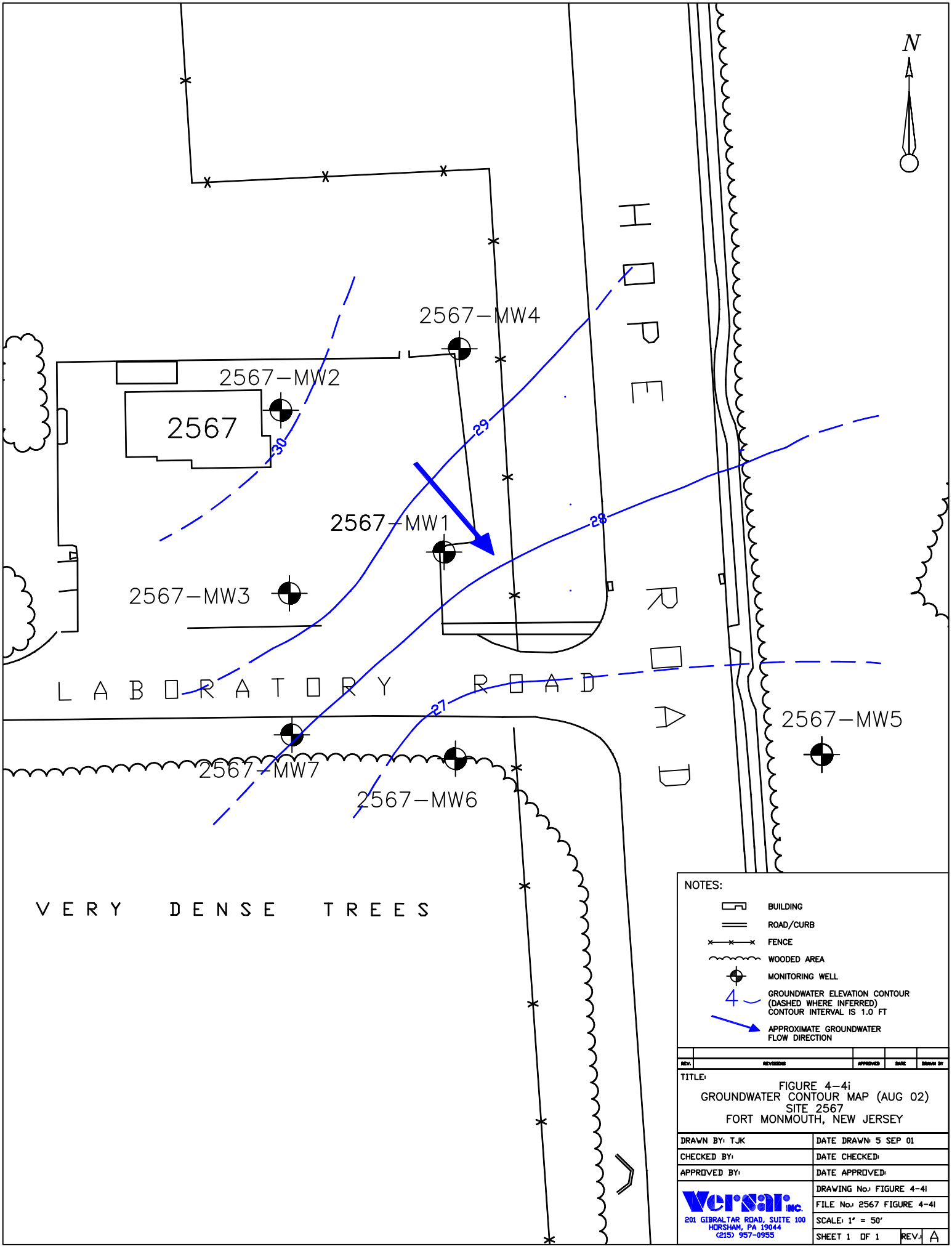
DRAWING No.: FIGURE 4-4h
FILE No.: 2567 FIGURE 4-4h
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
2567–MW1
2567–MW3
2567–MW5
2567–MW7
2567–MW6
30
29
28
27
HOPE ROAD
LABORATORY ROAD
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4-4i
GROUNDWATER CONTOUR MAP (AUG 02)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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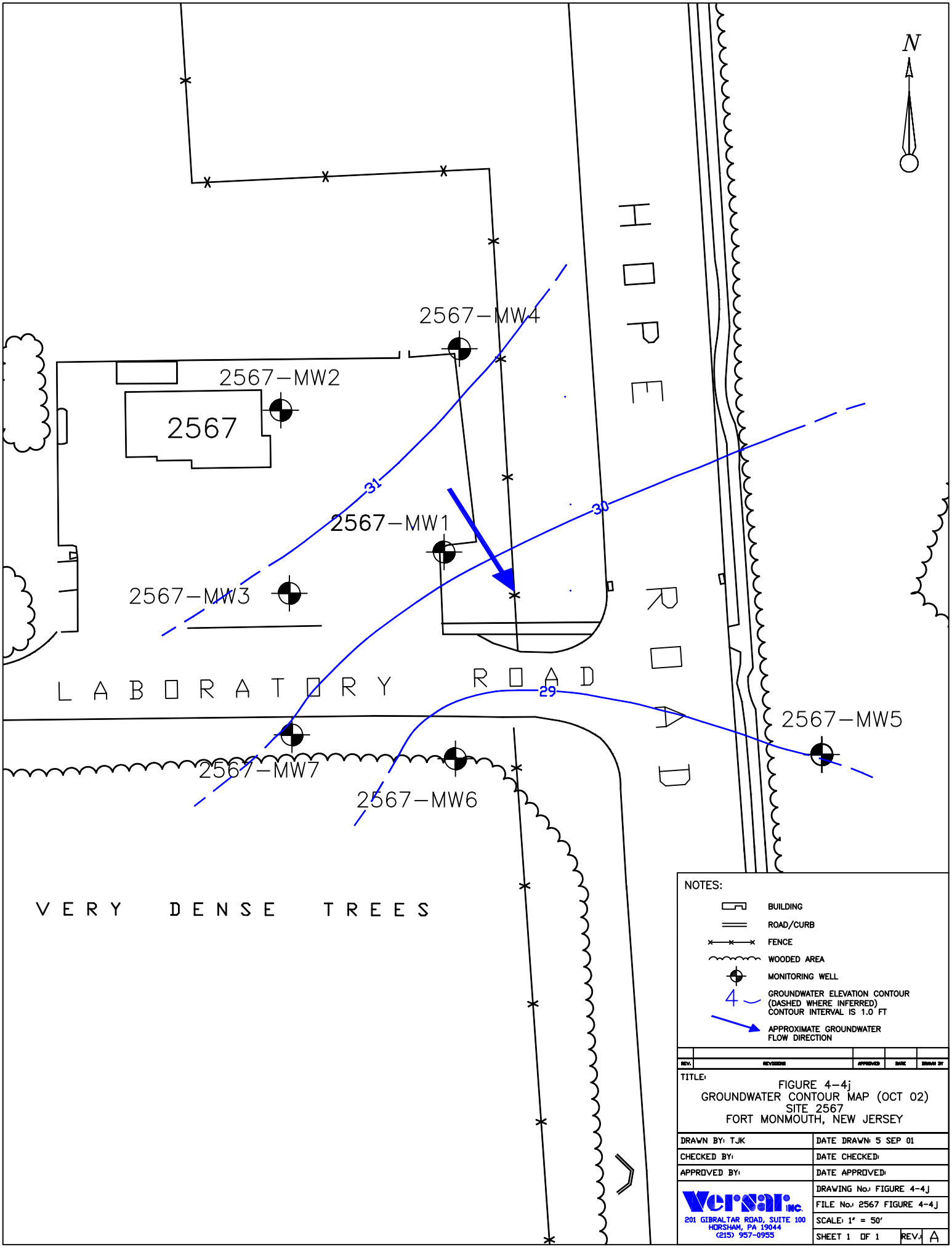
DRAWING No.: FIGURE 4-4I
FILE No.: 2567 FIGURE 4-4I
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
31
2567–MW1
30
2567–MW3
HOPE ROAD
LABORATORY ROAD
29
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4j
GROUNDWATER CONTOUR MAP (OCT 02)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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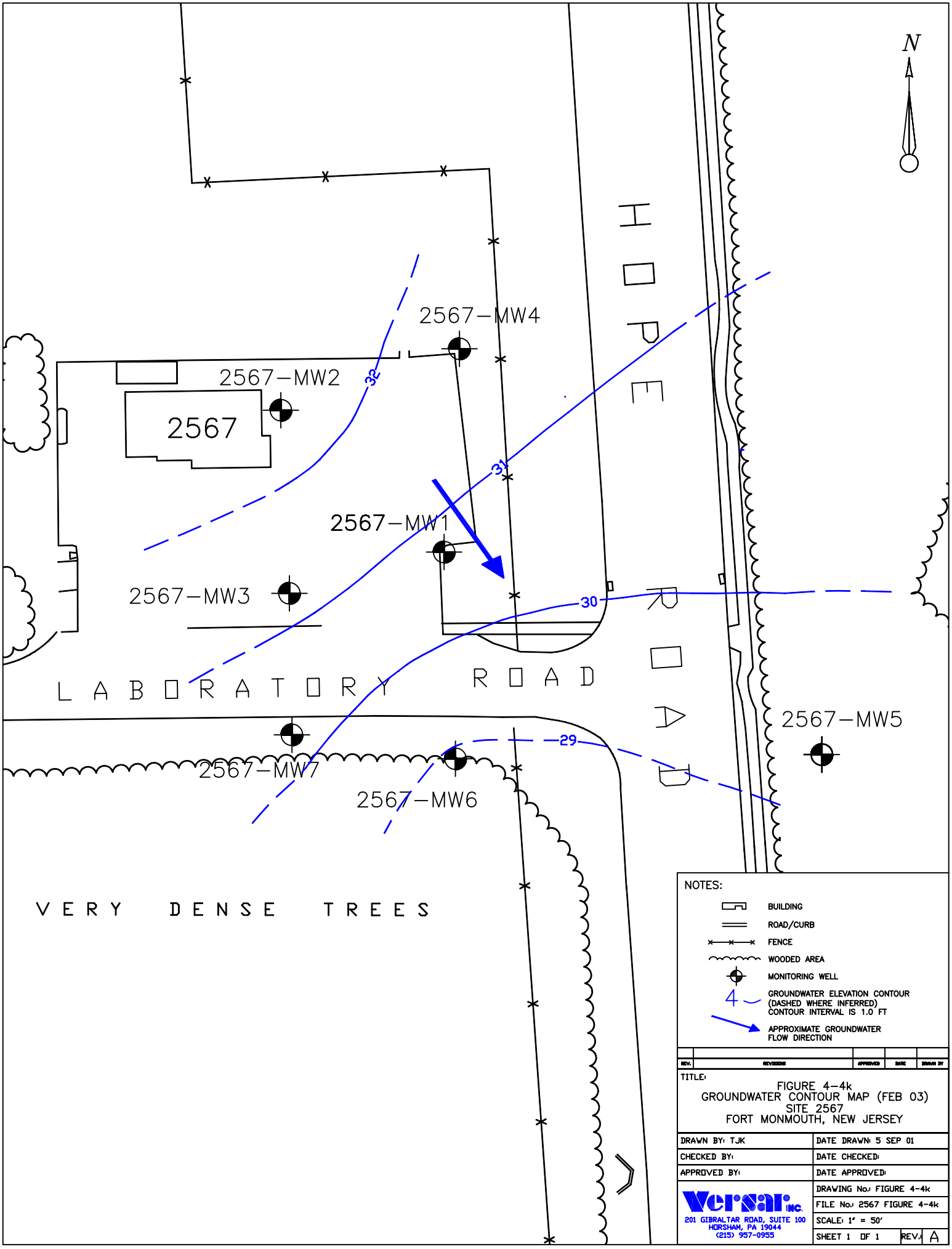
DRAWING No.: FIGURE 4-4J
FILE No.: 2567 FIGURE 4-4J
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
32
31
2567–MW1
2567–MW3
30
HOPE ROAD
LABORATORY ROAD
2567–MW5
29
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4k
GROUNDWATER CONTOUR MAP (FEB 03)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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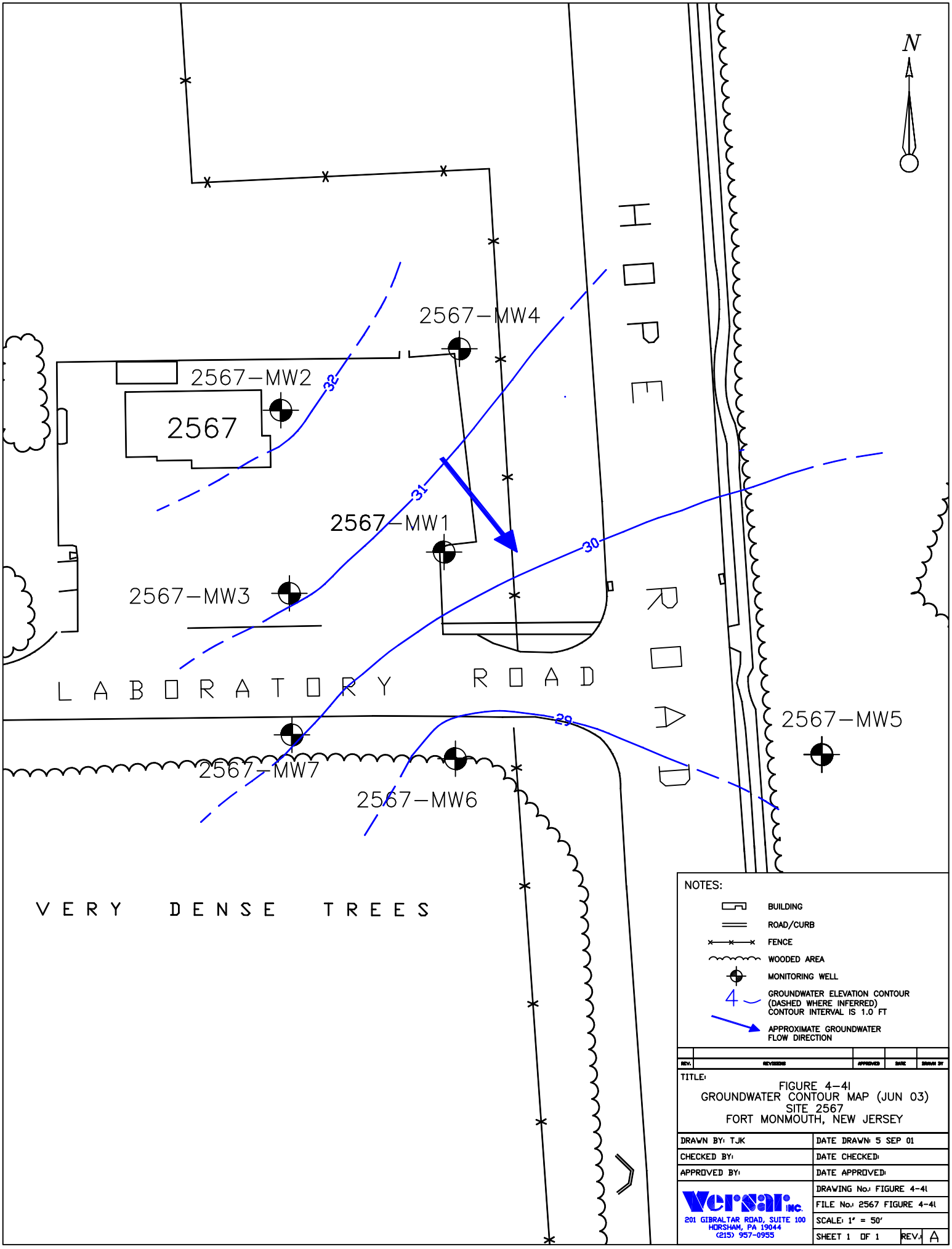
DRAWING No.: FIGURE 4-4k
FILE No.: 2567 FIGURE 4-4k
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
2567–MW1
2567–MW3
2567–MW5
2567–MW7
2567–MW6
32
31
30
29
HOPE ROAD
LABORATORY ROAD
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4-4
GROUNDWATER CONTOUR MAP (JUN 03)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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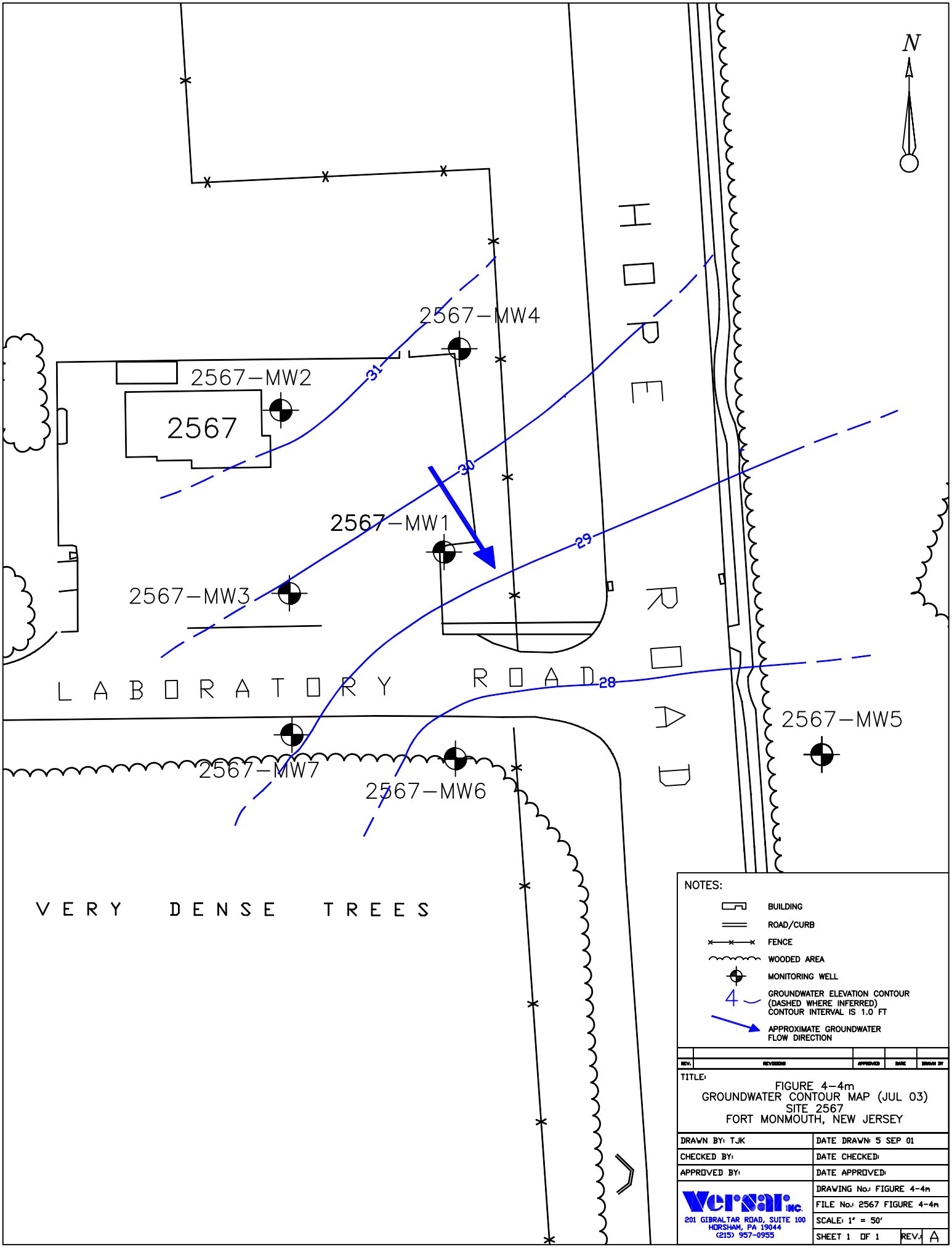
DRAWING No.: FIGURE 4-4
FILE No.: 2567 FIGURE 4-4
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
31
30
2567–MW1
29
2567–MW3
28
2567–MW5
2567–MW7
2567–MW6
HOLMES ROAD
LABORATORY ROAD
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4m
GROUNDWATER CONTOUR MAP (JUL 03)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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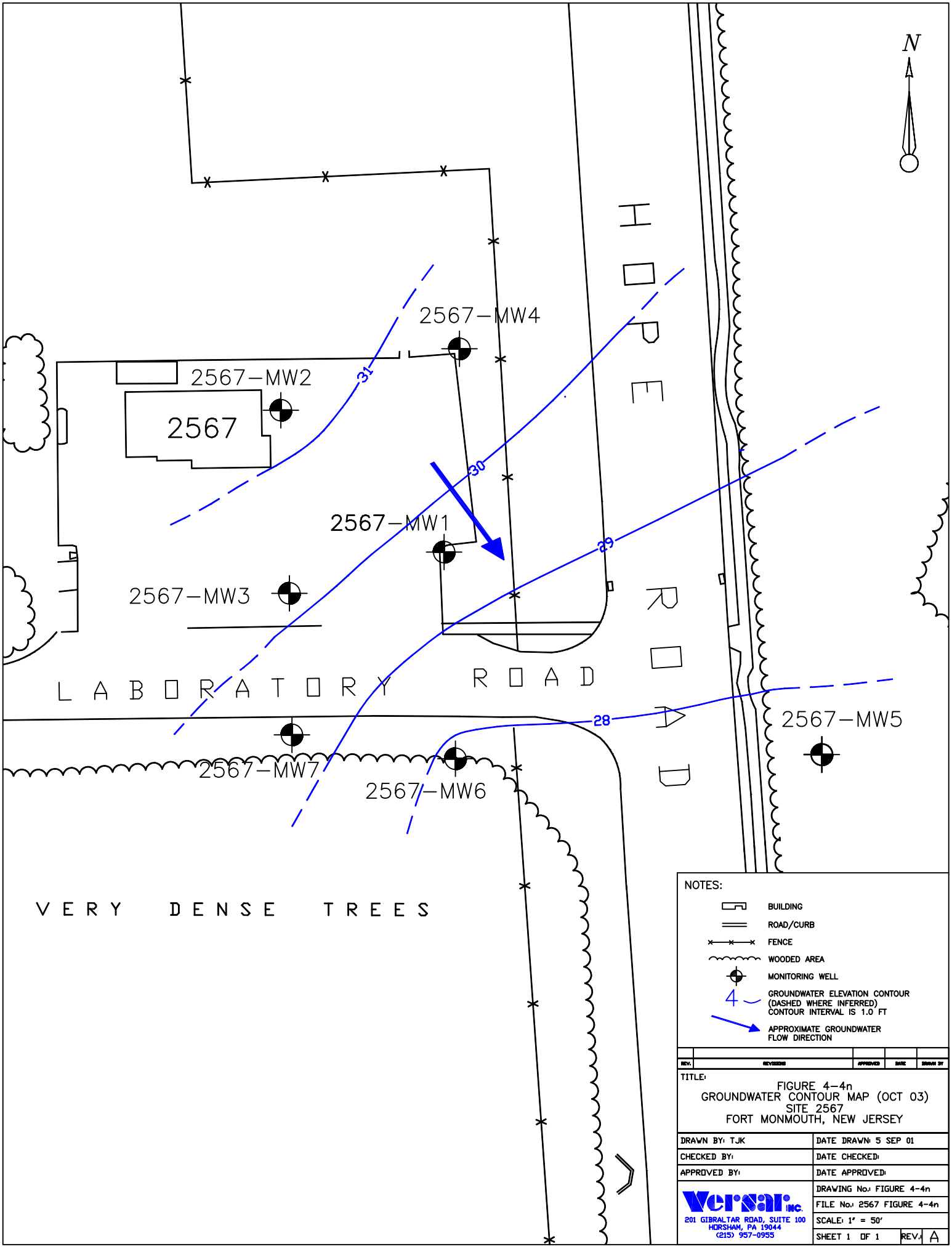
DRAWING No.: FIGURE 4-4m
FILE No.: 2567 FIGURE 4-4m
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
31
30
2567–MW1
29
2567–MW3
HOPE ROAD
LABORATORY ROAD
28
2567–MW5
2567–MW7
2567–MW6
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4n
GROUNDWATER CONTOUR MAP (OCT 03)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
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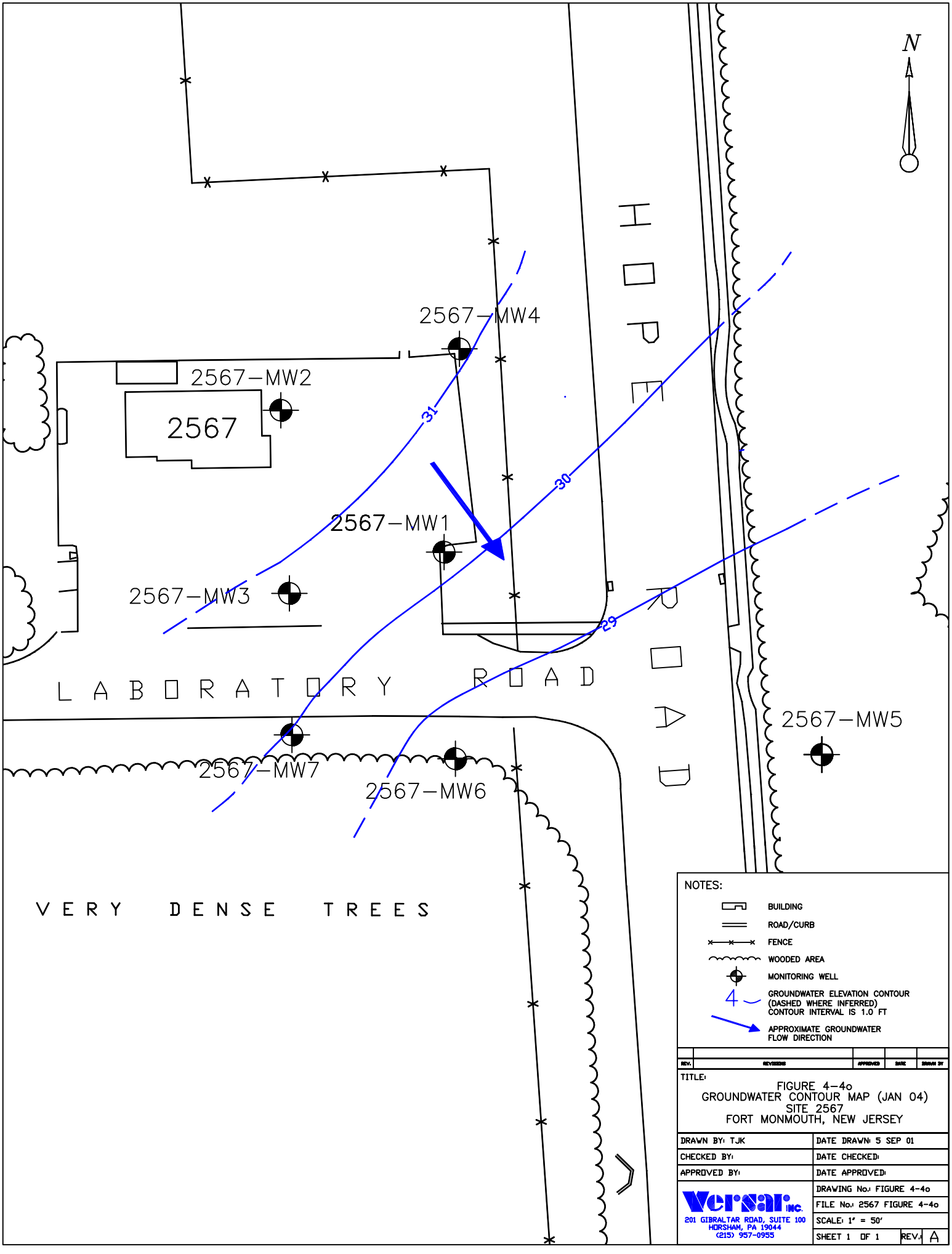
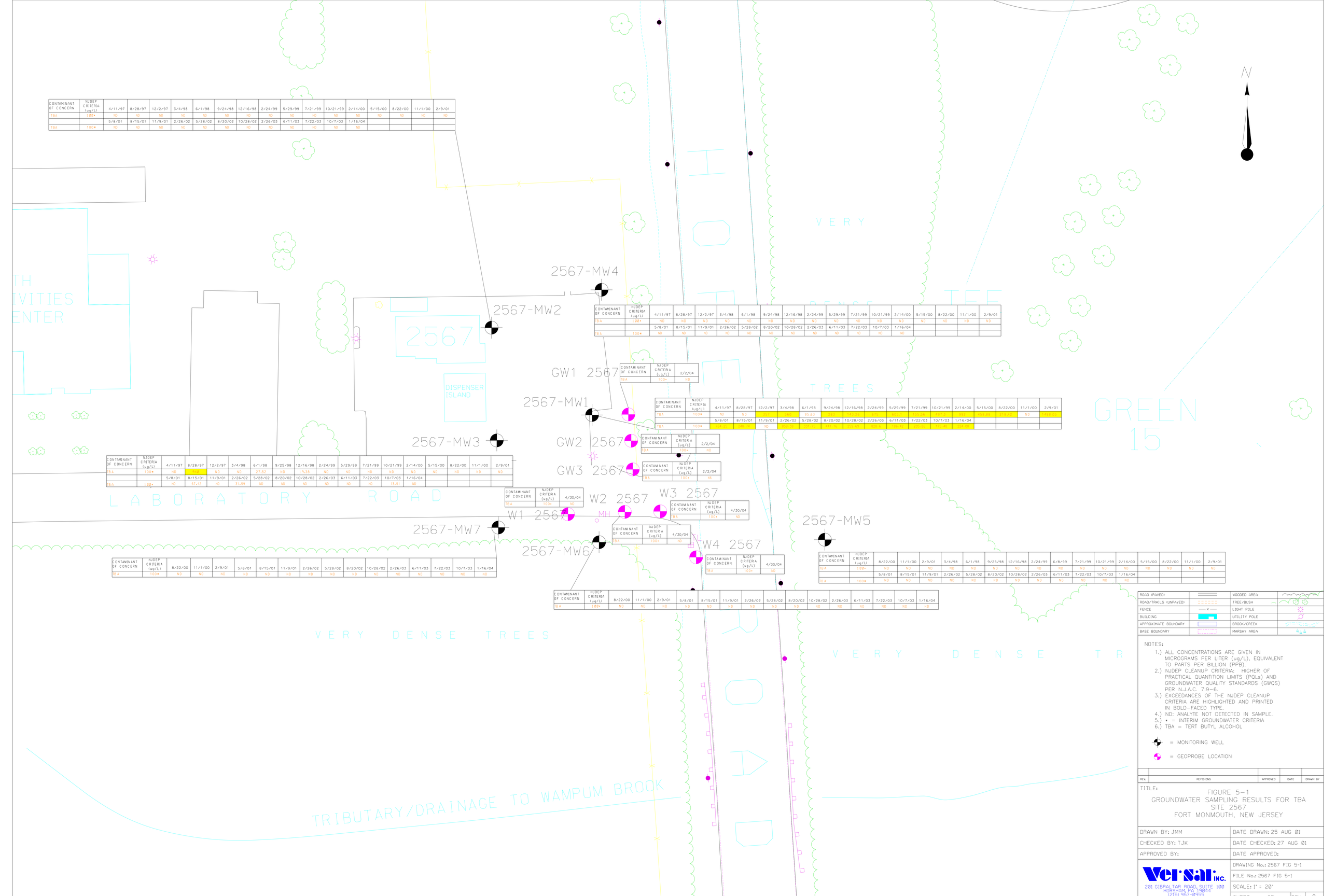
DRAWING No.: FIGURE 4-4n
FILE No.: 2567 FIGURE 4-4n
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A


N
2567–MW4
2567–MW2
2567
2567–MW1
2567–MW3
2567–MW5
2567–MW7
2567–MW6
31
30
29
HOPE ROAD
LABORATORY ROAD
VERY DENSE TREES
NOTES:
BUILDING
ROAD/CURB
FENCE
WOODED AREA
MONITORING WELL
4
GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL IS 1.0 FT
APPROXIMATE GROUNDWATER FLOW DIRECTION
REV.
REVISIONS
APPROVED
DATE
DRAWN BY
TITLE:
FIGURE 4–4o
GROUNDWATER CONTOUR MAP (JAN 04)
SITE 2567
FORT MONMOUTH, NEW JERSEY
DRAWN BY: TJK
DATE DRAWN: 5 SEP 01
CHECKED BY:
DATE CHECKED:
APPROVED BY:
DATE APPROVED:
Versar INC.
201 GIBRALTAR ROAD, SUITE 100
HORSHAM, PA 19044
(215) 957-0955
DRAWING No.: FIGURE 4-4o
FILE No.: 2567 FIGURE 4-4o
SCALE: 1" = 50'
SHEET 1 OF 1
REV.: A



CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/11/97	8/28/97	12/2/97	3/4/98	6/1/98	9/24/98	12/16/98	2/24/99	5/29/99	7/21/99	10/21/99	2/14/00	5/15/00	8/22/00	11/1/00	2/9/01
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04				
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/11/97	8/28/97	12/2/97	3/4/98	6/1/98	9/25/98	12/16/98	2/24/99	5/29/99	7/21/99	10/21/99	2/14/00	5/15/00	8/22/00	11/1/00	2/9/01
TBA	100*	ND	260	ND	ND	27.52	ND	19.38	ND	ND	ND	ND	ND	ND	ND	ND	ND
		5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04				
TBA	100*	ND	67.42	ND	31.59	ND	ND	ND	ND	ND	ND	13.51	ND				

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	8/22/00	11/1/00	2/9/01	5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/11/97	8/28/97	12/2/97	3/4/98	6/1/98	9/24/98	12/16/98	2/24/99	5/29/99	7/21/99	10/21/99	2/14/00	5/15/00	8/22/00	11/1/00	2/9/01
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04				
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	2/2/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/11/97	8/28/97	12/2/97	3/4/98	6/1/98	9/24/98	12/16/98	2/24/99	5/29/99	7/21/99	10/21/99	2/14/00	5/15/00	8/22/00	11/1/00	2/9/01
TBA	100*	ND	ND	ND	ND	29.47	224	1,220	224	1,220	224	1,220	224	153.28	153.42	ND	1,589.05
		5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04				
TBA	100*	786.01	276.21	ND	156.28	124.28	224.28	224.28	224.28	224.28	224.28	224.28	224.28				

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	2/2/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	2/2/04
TBA	100*	46

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/30/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/30/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/30/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	4/30/04
TBA	100*	ND

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	8/22/00	11/1/00	2/9/01	3/4/98	6/1/98	9/25/98	12/16/98	2/24/99	6/8/99	7/21/99	10/21/99	2/14/00	5/15/00	8/22/00	11/1/00	2/9/01
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04				
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				

CONTAMINANT OF CONCERN	NJDEP CRITERIA (ug/L)	8/22/00	11/1/00	2/9/01	5/8/01	8/15/01	11/9/01	2/26/02	5/28/02	8/20/02	10/28/02	2/26/03	6/11/03	7/22/03	10/7/03	1/16/04
TBA	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ROAD (PAVED)		WOODED AREA	
ROAD/TRAILS (UNPAVED)		TREE/BUSH	
FENCE	— x —	LIGHT POLE	
BUILDING		UTILITY POLE	
APPROXIMATE BOUNDARY		BROOK/CREEK	
BASE BOUNDARY		MARSHY AREA	

NOTES:

1.) ALL CONCENTRATIONS ARE GIVEN IN MICROGRAMS PER LITER (ug/L), EQUIVALENT TO PARTS PER BILLION (PPB).
2.) NJDEP CLEANUP CRITERIA: HIGHER OF PRACTICAL QUANTITION LIMITS (PQLs) AND GROUNDWATER QUALITY STANDARDS (GWQS) PER N.J.A.C. 7:9-6.
3.) EXCEEDANCES OF THE NJDEP CLEANUP CRITERIA ARE HIGHLIGHTED AND PRINTED IN BOLD-FACED TYPE.
4.) ND: ANALYTE NOT DETECTED IN SAMPLE.
5.) * = INTERIM GROUNDWATER CRITERIA
6.) TBA = TERT BUTYL ALCOHOL

= MONITORING WELL

= GEOPROBE LOCATION

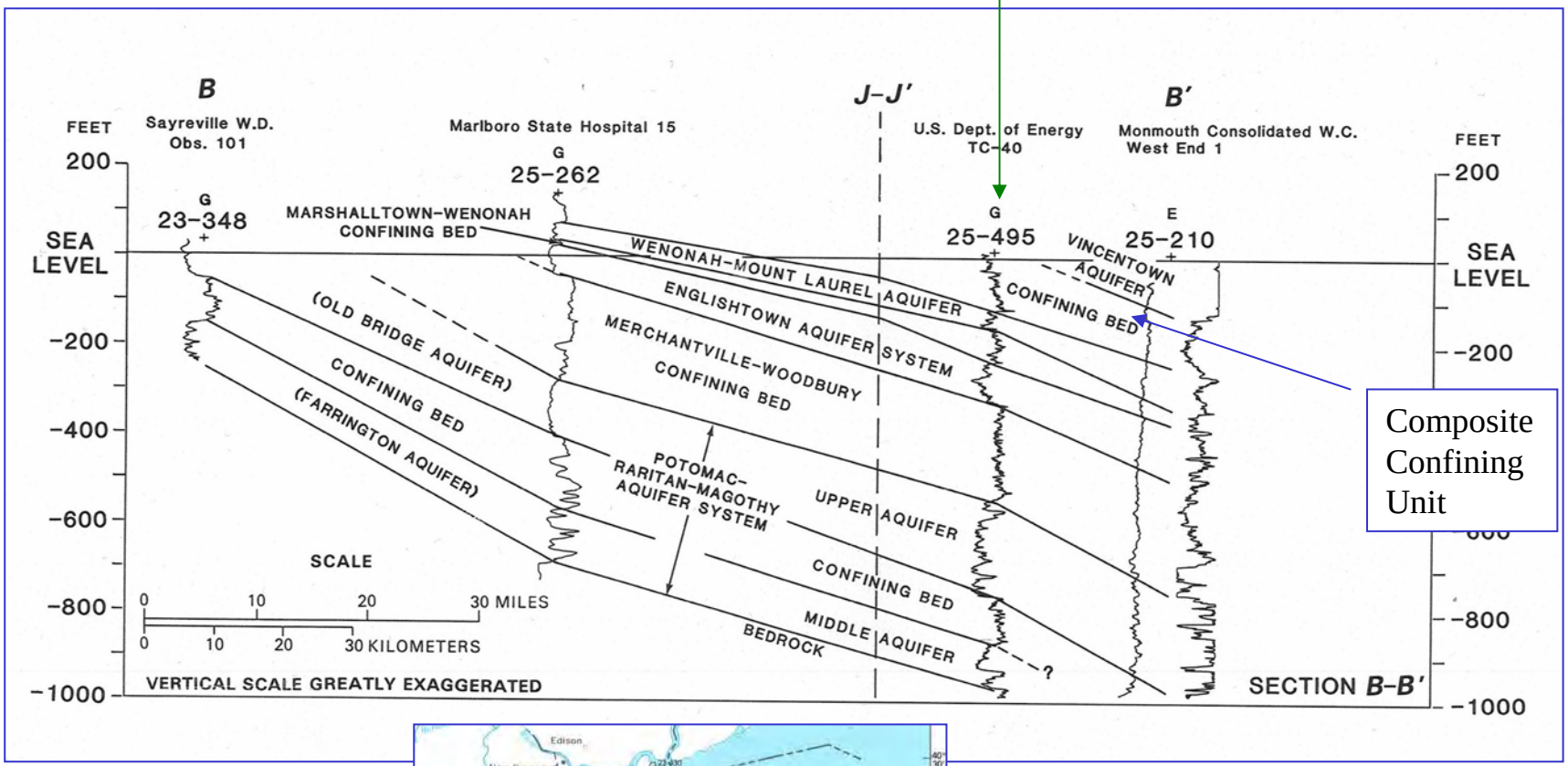
REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:
FIGURE 5-1
GROUNDWATER SAMPLING RESULTS FOR TBA
SITE 2567
FORT MONMOUTH, NEW JERSEY

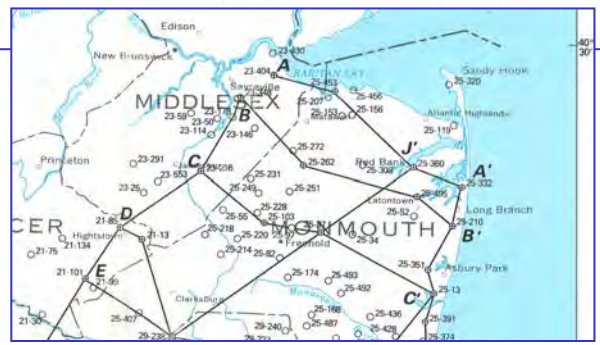
DRAWN BY: JMM	DATE DRAWN: 25 AUG 01
CHECKED BY: TJK	DATE CHECKED: 27 AUG 01
APPROVED BY:	DATE APPROVED:
	DRAWING No.: 2567 FIG 5-1
	FILE No.: 2567 FIG 5-1
	SCALE: 1" = 20'
	SHEET OF REV.:

Versar INC.
201 GIBRALTAR ROAD, SUITE 100
HORSHAM, PA 19044
(215) 957-0955

Fort Monmouth – Charles Wood Area



Composite Confining Unit

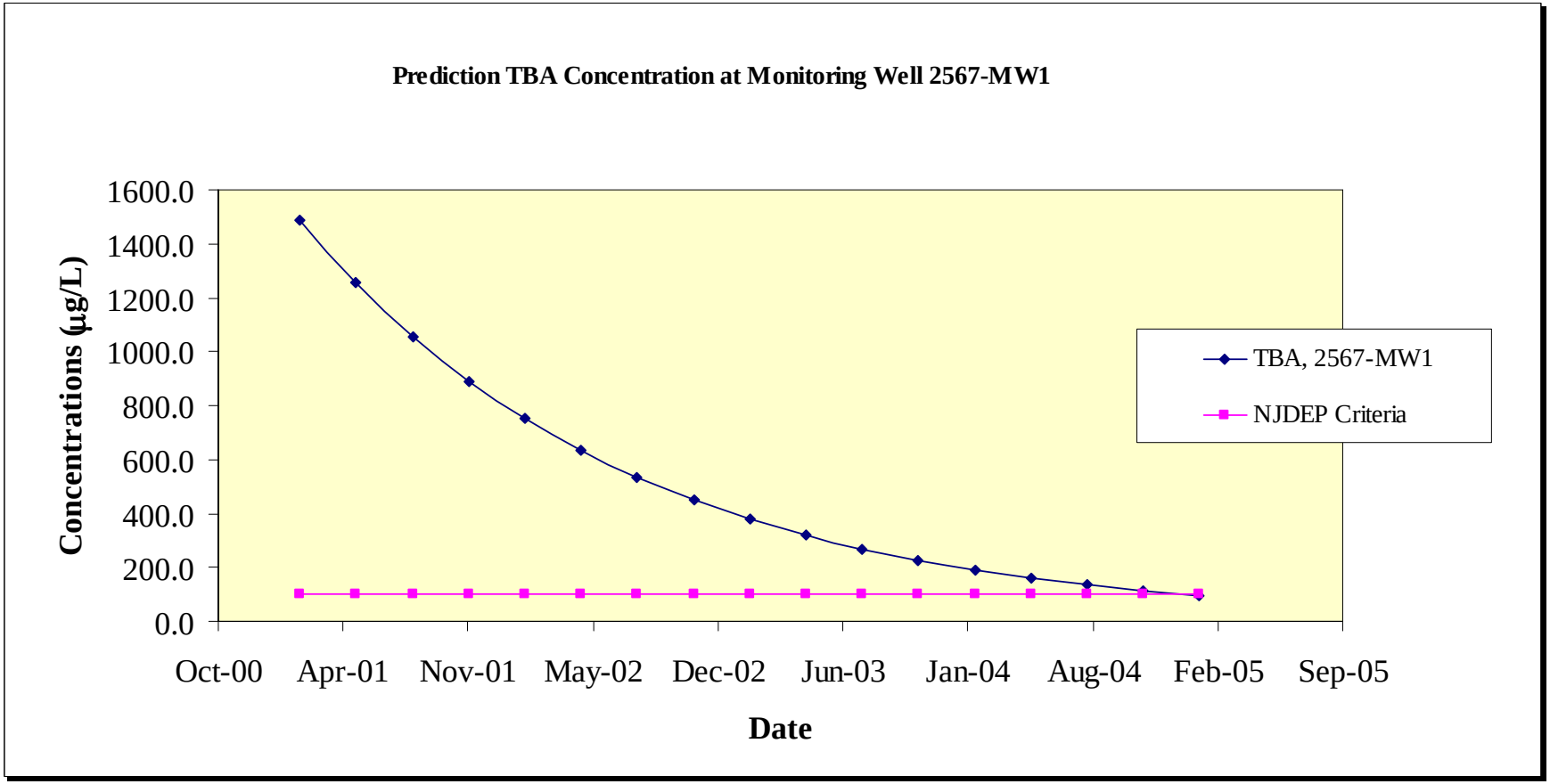


Source: Zapecza, O. 1989. *Hydrogeologic Framework of the New Jersey Coastal Plain.* USGS Professional Paper 1404-B. U.S. Government Printing Office, Washington, DC.

FIGURE 6-1

Geologic Cross-Section B-B'
Site-2567
Fort Monmouth, New Jersey

Versar INC.
2558 Pearl Buck Road, Suite 1
Bristol, PA 19007
(215) 788-7844

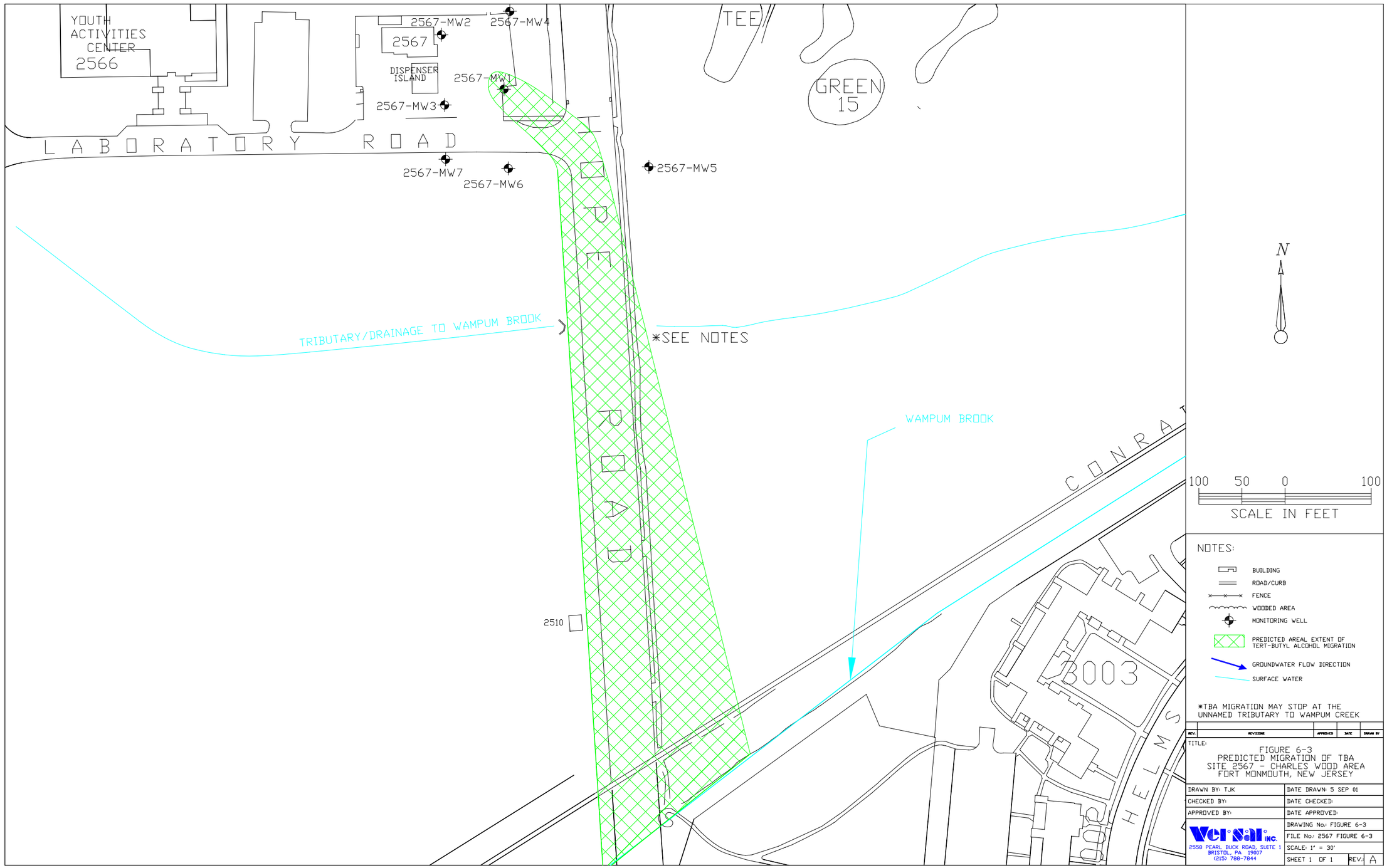


Notes:
1) Concentration is shown in micrograms per liter (ug/L), equivalent to parts per billion
2) Initial TBA concentration at well 2567-MW1 was considered to be 1488.05 ug/L on February 9, 2001.
3) Estimated time for NJDEP compliance is 3.9 years.

FIGURE 6-2

Predicted TBA Concentration
at Well 2567-MW1
Site 2567
Fort Monmouth, New Jersey

Versar INC.
2558 Pearl Buck Road, Suite 1
Bristol, PA 19007
(215) 788-7844



NOTES:

- BUILDING
- ROAD/CURB
- FENCE
- WOODED AREA
- MONITORING WELL
- PREDICTED AREAL EXTENT OF TERT-BUTYL ALCOHOL MIGRATION
- GROUNDWATER FLOW DIRECTION
- SURFACE WATER

*TBA MIGRATION MAY STOP AT THE UNNAMED TRIBUTARY TO WAMPUM CREEK

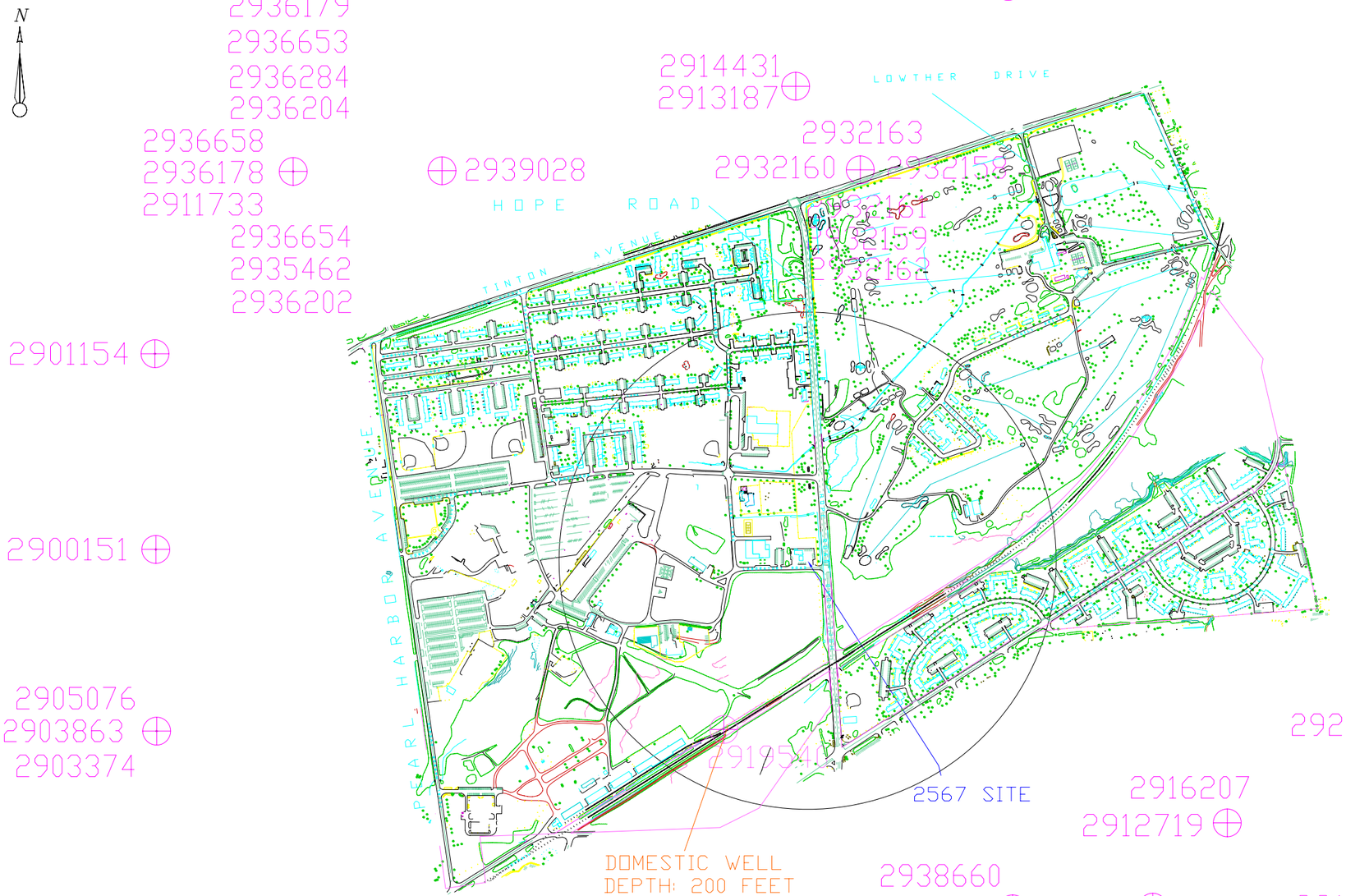
REV.	REVISIONS	APPROVED	DATE	DRAWN BY

TITLE:

FIGURE 6-3
PREDICTED MIGRATION OF TBA
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK	DATE DRAWN: 5 SEP 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIGURE 6-3
	FILE No.: 2567 FIGURE 6-3
	SCALE: 1" = 30'
	SHEET 1 OF 1 REV.: A

Versar, Inc.
2558 PEARL BUCK ROAD, SUITE 1
BRISTOL, PA 19007
(215) 788-7844



NOTES:

DOMESTIC/IRRIGATION WELL WITH PERMIT NUMBER (LOCATION WITHIN 100 FOOT ACCURACY)

CIRCLE PORTRAYS 1800-FOOT DISTANCE FROM SITE. THE WELL SEARCH IDENTIFIED ONE DOMESTIC WELL WITHIN 1800 FEET OF THE 2567 SITE.

TITLE:

FIGURE 6-4
DOMESTIC AND IRRIGATION WELLS
SITE 2567 - CHARLES WOOD AREA
FORT MONMOUTH, NEW JERSEY

DRAWN BY: TJK/PS	DATE DRAWN: 31 AUGUST 01
CHECKED BY:	DATE CHECKED:
APPROVED BY:	DATE APPROVED:
	DRAWING No.: FIG. 6-4
	FILE No.: 2567 FIG. 6-4
	SCALE: 1" = 1000'
	SHEET OF REV.: A

Versar INC.
2558 PEARL BUCK ROAD SUITE 1
BRISTOL, PA 19007
(215) 788-7844

3.6 Parcel 34 – Bldg 2567

3.6.1 Site Description

Bldg 2567 is a combination mini-mart and gasoline station located at the corner of Hope Road and Laboratory Road in the CWA. Bldg 2567 is a one-story building built on slab and is approximately 1,335 square feet in size. The facility sells gasoline and other household commodities to active, reserve, and retired military personnel and their dependents. No automotive repair work is conducted at this site. The gasoline portion of the facility consists of three USTs and two fuel dispensing pumps. Each pump is equipped with six hose attachments for dispensing fuel. All three tanks are 10,000 gallons in capacity and store various grades of unleaded gasoline.

The tanks and piping at the site are constructed of double-walled fiberglass. Continuous leak detection monitoring at the site is accomplished through the use of liquid leak sensors that have been placed in the interstitial spaces of the tanks and piping. Automatic tank gauges have also been installed within the tanks, which continuously monitor the product levels within each tank (28). Additional information pertaining to this parcel can be found in Section 5.2.1.3 and Section 5.4 of the Phase I ECP (1).

3.6.2 Previous Investigations

Bldg 2567 has been investigated under the FTMM IRP and is designated as Site FTMM-58. Four single-walled steel gasoline USTs were replaced by the existing tanks as part of a renovation project that was initiated as a result of one UST failing a tightness test. Tank removals involving these four single-walled steel gasoline USTs included three 10,000-gallon gasoline USTs and one 6,000-gallon gasoline UST. The four gasoline USTs were removed in February 1993. Two other tank removals, one 1,000-gallon heating oil UST and one 550-gallon used oil UST, were also removed as part of the renovation project. The heating oil and used oil USTs were both removed in December 1991.

Approximately 1,000 cubic yards of petroleum-contaminated soil were excavated and stockpiled for off-site disposal. A preliminary assessment was conducted at the site, and five monitoring wells were installed. Groundwater samples have been collected and analyzed for VOA+15 and lead. Benzene, 1,2-DCE, MTBE, and lead were initially detected above NJDEP GWQC.

Subsequently, consecutive quarterly rounds of groundwater samples have been collected for analysis. Benzene, xylenes, tert-butyl alcohol (TBA), and MTBE were detected in two of the five site monitoring wells above NJDEP GWQC. A remedial design that addresses groundwater contamination was submitted to the NJDEP. The remedial approach selected for the Bldg 2567 site involves the use of monitored natural attenuation. A Classification Exception Area (CEA) for site groundwater was filed with the NJDEP. A Geoprobe® investigation was performed in early 2004 to further evaluate site groundwater conditions. An RI report summarizing these findings was prepared

and was submitted to the NJDEP in February 2006. The Army is waiting for NJDEP approval of this document. Currently, as part of a monitoring program, seven groundwater monitoring wells are sampled on a quarterly basis. Due to the installation being selected for closure under the 2005 BRAC program, the cleanup strategy was re-evaluated. The current cleanup strategy includes oxygen release compound (ORC) injections and the continued monitoring of groundwater as a key component of the monitored natural attenuation program. Injection of ORC is subject to requirements pursuant to N.J.A.C 7:26E-4.1(a)4 and N.J.A.C. 7:26E-6.3(c) related to the performance of a pilot study and approval of a permit-by-rule. ORC injections will be performed in 2008. Site closeout is anticipated for 2011.

3.6.3 Site Investigation Sampling

Through previous investigations conducted under the IRP, groundwater VO contamination has been identified in close proximity to Bldg 2567. Per NJDEP guidance and consistent with USEPA policy, the NJDEP recommends investigation of VI where structures are within 100 ft horizontally or vertically of shallow groundwater contamination in excess of GWSLs. In the case of petroleum hydrocarbon contamination (particularly BTEX), a 30-ft distance criterion is utilized (12). Benzene, DCE, and MTBE have been detected in groundwater above the GWSLs proximal to Bldg 2567. Therefore, VI at Bldg 2567 was further evaluated through the collection of near-slab and sub-slab soil gas samples.

See **Table 3.6-1** for a summary of field activities conducted for Parcel 34 as part of this SI and **Figure 3.6-1** for sample locations. A summary of the analytical and sampling program, including sample IDs, collection dates, and analytical parameters, is provided in **Table 3.6-2**.

Table 3.6-1
Parcel 34 Sampling Location, Rationale and Analytical

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
34SG-1 (1 sample)	Sub-slab soil gas	One sub-slab soil gas sample was collected from under Bldg 2567. Because this is a mini-mart associated with an active fueling station, sub-slab soil gas was sampled in lieu of indoor air.	NJDEP – SRWM USEPA TO-15 Method
34SG-2 and 3 (3 samples – includes 1 duplicate sample)	Near-slab soil gas	Two near-slab soil gas samples were collected at Bldg 2567.	NJDEP – SRWM USEPA TO-15 Method

3.6.4 Site Investigation Results

A total of 20 VOs were detected in soil gas samples collected in Parcel 34. Of the 20 VOs detected, one (benzene) exceeded the NJDEP Soil Gas NRS of 26 $\mu g/m^3$ in one near-slab soil gas sample. No constituents were detected above the NJDEP Soil Gas NRS in sub-slab soil gas sample 34SG-1. As presented in **Table 3.6-3**, benzene was detected at concentrations of 28 $\mu g/m^3$ and 36.7 $\mu g/m^3$ in sample 34SG-3 and a duplicate sample collected at this location, respectively.

3.6.5 Summary and Conclusions

One constituent, benzene, exceeded NJDEP Soil Gas NRSs in near-slab soil gas at Parcel 34. No constituents were detected above the NJDEP Soil Gas NRS in sub-slab soil gas. Based on NJDEP VI guidance (12), further evaluation is required if constituents are detected above the NRS in near slab soil gas. Evaluation of indoor air in Bldg 2567 is recommended for Parcel 34.

Table 3.6-2
Parcel 34 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	B\N+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SG	CANISTER	34SG-1	12/13/07	13:40	3.0	3.0		X							
SG	CANISTER	34SG-2	12/13/07	12:10	5.0	5.0		X							
SG	CANISTER	34SG-3	12/13/07	12:50	5.0	5.0		X							
SG	CANISTER	34SG-3 DUPLICATE	12/13/07	13:00	5.0	5.0		X							

X = Sample analyzed for the indicated analytical parameter suite

Table 3.6-3
Fort Monmouth ECP Site Investigation, Parcel 34
Summary of Analytical Parameters Detected Soil Gas (ug/m^3)

		Analytical Results			
	Sample ID:	34SG-1	34SG-2	34SG-3	34SG-3 DUP
	Lab ID:	J79249-17	J79249-18	J79249-15	J79249-16
	Date Sampled:	12/13/07	12/13/07	12/13/07	12/13/07
	Depth (ft. bgs):	3'	5'	5'	5'
Chemical	SG Non-residential[2]	Result	Result	Result	Result
Volatiles					
Acetone	230,000	**58.9**	**271**	**53.4**	<3.3
Benzene	26	**18**	**14**	**36.7**	**28**
Carbon disulfide	51,000	<1.8	**5.0**	**8.7 J**	**12 J**
Cyclohexane	430,000	<2.4	<1.2	**38.6**	**68.5**
Ethanol	NLE	**16**	**46.7**	<5.5	<5.5
Ethylbenzene	74,000	**241**	**186**	**1760**	**1500**
n-Heptane	NLE	**20**	**16**	**190**	**193**
n-Hexane	51,000	**33**	**27**	**298**	**479**
Isopropyl Alcohol	NLE	<2.3	**21**	**<2.9**	<2.9
Methyl ethyl ketone	360,000	**14**	**50.4**	<2.2	<2.2
Propylene	NLE	<2.1	**203**	**277**	**261**
Styrene	73,000	<1.3	<0.64	**24**	**20**
Tertiary Butyl Alcohol	4,600	<2.2	<1.1	**14**	**12 J**
Tetrachloroethylene	36	**20 J**	**22**	<3.3	<3.3
Toluene	360,000	**1590**	**1430**	**10700**	**9310**
1,2,4-Trimethylbenzene	NLE	<1.6	**5.9 J**	**15 J**	**12 J**
2,2,4-Trimethylpentane	NLE	<1.5	<0.75	**1540**	**3280**
Xylenes (m&p)	NLE	**791**	**621**	**6300**	**5170**
o-Xylene	NLE	**146**	**115**	**1210**	**999**
Xylenes (total)	7,700	**938**	**734**	**7510**	**6170**

[1] NJDEP Generic Vapor Intrusion Screening Levels, Soil Gas Screening Levels, Residential, March 2007.

[2] NJDEP Generic Vapor Intrusion Screening Levels, Soil Gas Screening Levels, Nonresidential, March 2007. Results were compare

(a) = Sum of cis-1,2-Dichloroethylene and trans-1,2-Dichloroethylene.

J = Indicates an estimated value.

DUP = Duplicate Sample

NLE = No Limit Established

Bold = Detection

Shaded = Exceedance of SG Nonresidential.

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/m^3)	Criteria	Criteria Value (ug/m3)
34SG-3	SG	5	Benzene	36.7	SG Non-residential	26
34SG-3 DUP	SG	5	Benzene	28	SG Non-residential	26

LEGEND

- Soil-Gas Sample Location
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Building
- IRP Site Boundary
- Installation Boundary

ECP PARCEL CATEGORY DEFINITIONS

2 — Areas where only release or disposal of petroleum products has occurred.

BRAC PARCEL LABEL DEFINITIONS

8(2)PS
- CONTAMINATION DESCRIPTION
  - HS - Hazardous Substance Storage
  - HR - Hazardous Substance Release
  - PS - Petroleum Storage
  - PR - Petroleum Release
  - (P) - Possible Release or Disposal
- CATEGORY NUMBER
- PARCEL NUMBER

N

SCALE:

0 25 50 100 Feet

Base Realignment and Closure 2005

U.S. Army Corps of Engineers

Shaw® Shaw Environmental, Inc.

FIGURE 3.6-1
FORT MONMOUTH ECP
SITE INVESTIGATION

PARCEL 34 SAMPLE LOCATIONS AND CONSTITUENTS OF CONCERN

CHARLES WOOD AREA
FORT MONMOUTH
NEW JERSEY

ArcGIS File: CWA_Fig3_6-1_SI_P34_Exceeds_SampLoc.mxd (7/14/2008 3:55:02 PM)

4.1.5 Vapor Intrusion Investigations

VI is the migration of organic compounds from the subsurface into overlying buildings (11). Soil gas and indoor air samples were collected at five parcels to evaluate the potential for the intrusion of COCs present in groundwater in close proximity to existing facilities. Even though the groundwater VOs identified as COCs in groundwater were the targeted analytes being investigated, samples were analyzed for the comprehensive VO analytical list, which includes the targeted compounds as well as others that have not been detected in groundwater. No groundwater constituents were identified at concentrations greater than applicable comparison criteria in indoor air in the buildings investigated as detailed below in **Section 4.1.5.2**.

4.1.5.1 Soil Gas

A total of 27 soil gas samples contained one or more VOs at concentrations exceeding NJDEP Soil Gas NRS. Parcels at which soil gas constituents were detected at concentrations greater than applicable NJDEP criteria are the following:

- CWA:
    - Parcel 15 – Fourteen soil gas samples contained VOs at concentrations greater than the NJDEP NRSGSLs.
    - Parcel 34 – Two soil gas samples contained VOs at concentrations greater than the NJDEP NRSGSLs.
- MP:
    - Parcel 43 – Five soil gas samples contained VOs at concentrations greater than the NJDEP NRSGSLs.
    - Parcel 50 – Four soil gas samples contained VOs at concentrations greater than the NJDEP NRSGSLs.
    - Parcel 52 – Two soil gas samples contained VOs at concentrations greater than the NJDEP NRSGSLs.

4.1.5.2 Indoor Air

Indoor Air investigations conducted at FTMM revealed one indoor air sample contained two VOs at concentrations greater than the NJDEP Non-Residential Indoor Air Screening Levels (NRIASLs). The compounds benzene and dichloromethane were detected in indoor air at Parcel 43 (Bldg 1122). Neither compound was detected above criteria in soil gas and/or groundwater and both are suspected to be attributable to activities within the building. No VOs were detected above Immediate Action Levels in any indoor air samples, and no VOs were detected at concentrations above the NRIASLs in indoor air samples collected in Parcel 15 (Bldg 2700) or Parcel 50 (Bldg

283). One additional round of indoor air sampling is recommended for Parcels 15, 34, 43, 50, and 52.

4.1.6 Other Investigations

Results of other investigations conducted as part of this SI include the following:

- Substation surface soil investigations conducted at FTMM revealed that all concentrations of PCBs were below NJDEP NRDCSCC. NFA is recommended.

- Sanitary aqueous investigations conducted at FTMM revealed that mercury was not detected in aqueous samples collected from the sanitary sewer system. NFA is recommended.

4.2 Recommendations

Table 4-1 summarizes recommendations for all parcels investigated. Based upon field sampling activities and information collected to date, further evaluation of COCs identified in soil is recommended for the following parcels on MP:

  - Parcel 49
  - Parcel 57
  - Parcel 61
  - Parcel 83

Further evaluation of COCs identified in groundwater is recommended for the following parcels on MP:

  - Parcel 51
  - Parcel 57
  - Parcel 69
  - Parcel 80

COCs identified in Parcel 49 groundwater are recommended to be captured in the existing M-18 CEA.

Sediment is recommended for further evaluation and will be addressed as part of a facility-wide baseline ecological evaluation for the following parcels:

- CWA:

  - Parcel 15
  - Parcel 27
  - Parcel 28

- MP:
    - Parcel 39
    - Parcel 43
    - Parcel 49
    - Parcel 61
    - Parcel 69

One additional round of indoor air sampling is recommended to confirm constituents present in groundwater are not present above applicable criteria in indoor air the following Parcels:

- CWA:
    - Parcel 15
    - Parcel 34
- MP:
    - Parcel 43
    - Parcel 50
    - Parcel 52

NFA is recommended for soil in the following parcels:

- CWA:
    - Parcel 13
    - Parcel 14
    - Parcel 15
    - Parcel 27
    - Parcel 28
- MP:
    - Parcel 38
    - Parcel 39
    - Parcel 51
    - Parcel 69
    - Parcel 70
    - Parcel 76
    - Parcel 79
    - Parcel 80
    - Substation soils

NFA is recommended for groundwater in the following parcels:

- CWA:
    - Parcel 13
    - Parcel 14
    - Parcel 15
    - Parcel 28
- MP:
    - Parcel 76
    - Parcel 79
    - Parcel 83

Table 4-1
Summary of Parcel Recommendations

Parcel	Area	Soil		Groundwater		Sediment		Soil Gas		Indoor Air		Geophysical Surveys		Aqueous Sanitary	
		NFA	Further Evaluation	NFA	Further Evaluation	NFA	Further Evaluation	NFA	Further Evaluation	NFA	Further Evaluation	NFA	Further Evaluation	NFA	Further Evaluation
Parcel 13	CWA	x	-	x	-	-	-	-	-	-	-	x	-	-	-
Parcel 14	CWA	x	-	x	-	-	-	-	-	-	-	x	-	-	-
Parcel 15	CWA	x	-	x	-	-	x	x	-		x	x	-	-	-
Parcel 27	CWA	x	-	-	-	-	x	-	-	-	-	x	-	-	-
Parcel 28	CWA	x	-	x	-	-	x	-	-	-	-	x	-	-	-
Parcel 34	CWA	-	-	-	-	-	-	x	-	-	x	-	-	-	-
Parcel 38	MP	x	-	-	-	-	-	-	-	-	-	-	-	-	-
Parcel 39	MP	x	-	-	-	-	x	-	-	-	-	-	-	-	-
Parcel 43	MP	-	-	-	-	-	x	x	-	-	x	-	-	-	-
Parcel 49	MP	-	x	-	x	-	x	-	-	-	-	-	-	-	-
Parcel 50	MP	-	-	-	-	-	-	x	-	-	x	-	-	-	-
Parcel 51	MP	x	-	-	x	-	-	-	-	-	-	x	-	-	-
Parcel 52	MP	-	-	-	-	-	-	x	-	-	x	-	-	-	-
Parcel 57	MP	-	x	-	x	-	-	-	-	-	-	-	-	-	-
Parcel 61	MP	-	x	-	-	-	x	-	-	-	-	-	-	-	-
Parcel 69	MP	x	-	-	x	-	x	-	-	-	-	-	-	-	-
Parcel 70	MP	x	-	-	-	x	-	-	-	-	-	-	-	-	-
Parcel 76	MP	x	-	x	-	-	-	-	-	-	-	x	-	-	-
Parcel 79	MP	x	-	x	-	-	-	-	-	-	-	x	-	-	-
Parcel 80	MP	x	-	-	x	-	-	-	-	-	-	-	-	-	-
Parcel 83	MP	-	x	x	-	-	-	-	-	-	-	-	-	-	-
Substations	MP	x	-	-	-	-	-	-	-	-	-	-	-	-	-
Sanitary	MP	-	-	-	-	-	-	-	-	-	-	-	-	x	-

FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

DIRECTORATE OF PUBLIC WORKS

PHONE: (732) 532-4359 FAX: (732) 532-6263

WET-CHEM - METALS - ORGANICS - FIELD SAMPLING

CERTIFICATIONS: NJDEP #13461, NYSDOH #11699

ANALYTICAL DATA REPORT
Fort Monmouth Environmental Laboratory
ENVIRONMENTAL DIVISION
Fort Monmouth, New Jersey
PROJECT: 08-65966

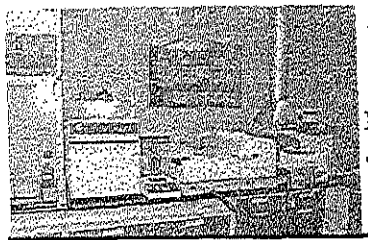
Bldg. 2567

Field Sample Location	Laboratory Sample ID#	Matrix	Date and Time of Collection	Date Received
2567-1, SW Corner 4.5-5'	8036501	Soil	14-Oct-08 13:00	10/14/08
2567-2, South Wall Center 4.5-5'	8036502	Soil	14-Oct-08 13:25	10/14/08
2567-Duplicate 4.5-5'	8036503	Soil	14-Oct-08 13:25	10/14/08
Trip Blank	8036504	Methanol	14-Oct-08	10/14/08
2567-3, NW Corner 4.5-5'	8037301	Soil	17-Oct-08 09:50	10/17/08
2567-4, North Wall Center 4.5-5'	8037302	Soil	17-Oct-08 10:15	10/17/08
2567-5, NE Corner 4.5-5'	8037303	Soil	17-Oct-08 10:45	10/17/08
2567-6, East Wall Center 4.5-5'	8037304	Soil	17-Oct-08 11:00	10/17/08
2567-7, West Wall Center 4.5-5'	8037305	Soil	17-Oct-08 11:20	10/17/08
2567-Duplicate 4.5-5'	8037306	Soil	17-Oct-08 10:45	10/17/08
Trip Blank	8037307	Methanol	17-Oct-08	10/17/08

ANALYSIS:
FORT MONMOUTH ENVIRONMENTAL LAB
VOA+15, % SOLIDS

Jacqueline Hamer/Date 10/28/08
QA/QC Supervisor

CHAIN OF CUSTODY



Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-6263 EMail:appleby@mail1.monmouth.army.mil
NJDEP Certification #13461

Chain of Custody Record

Customer: CHUCK APPLEBY
Phone #: 532-0996
( )DERA ( )OMA (X)Other:_____

Project No: 08-65966
Location: BLDG. 2567
UST # 81515-66

Samplers Name / Company : FRANK ACCORSI / TVS

Lab Sample I.D.	Sample Location	Date	Time	Sample Type	# bottles	Analysis Parameters: VOA'S	Analysis Parameters: % SOLIDS	Analysis Parameters: DEPTH	Analysis Parameters: VOA #	Comments: Remarks / Preservation Method
80305 01	2567-1, SW CORNER	10-14-08	1300	SOIL	2	X	X	4-5	6295	ICE
02	2567-2, SOUTH WALL, CENTER		1325		2	X	X	4-5	6296	
03	2567-DUPLICATE		1325		2	X	X	4-5	6298	
04	TRIP BLANK			-	1	X			6299	

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	10/14/08 1600				
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, ( )Reduced, (X)Standard, ( )Screen / non-certified
Turnaround time: (X)Standard 4 wks, ( )Rush ____ Days, ( )ASAP Verbal ____ Hrs.

Remarks:

SAMPLE RECEIPT FORM

Date Received: 10-14-08 Lab Project ID#: 80.365

Site/Project Name: Bldg 2567 Cooler Temp (deg. C): ICE

Received By: J. Georgina Sign:
(print name)

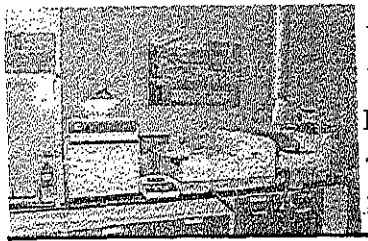
Check the appropriate answer

1. Did the samples come in a cooler? ☒ yes ☐ no ☐ NA
2. Were the chain of custody papers filled out correctly and legibly? ☒ yes ☐ no
3. Did you sign the chain of custody in the appropriate place? ☒ yes ☐ no
4. Did all the labels agree with the chain of custody and in good condition? ☒ yes ☐ no
5. Were the correct containers and/or preservatives used for the tests indicated? ☒ yes ☐ no
6. Was a sufficient amount of sample sent for the tests indicated? ☒ yes ☐ no
7. Were bubbles absent from aqueous VOC sample containers? ☐ yes ☐ no ☒ NA

Fill out the following table for each sample bottle

Sample ID	pH	Preservative	Sample ID	pH	Preservative

Comments:



Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-6263 EMail:appleby@mail1.monmouth.army.mil
NJDEP Certification #13461

Chain of Custody Record

Customer: CHUCK APPLEBY
Phone #: X20986
( )DERA ( )OMA (x)Other:_____
Project No: 08-65966
Location: B. 2567
Samplers Name / Company : FRANK ACCORSI

Lab Sample I.D.	Sample Location	Date	Time	Sample Type	# bottles	Analysis Parameters: VOA TCL	Analysis Parameters: % SOLIDS	Analysis Parameters: DEPTH (FT)	Analysis Parameters: VOA #	Comments: Remarks / Preservation Method
80973 01	2567-3, NW CORNER	10-17-08	0950	SOIL	2	X	X	4.5-5	6297	ICE
02	2567-4, NORTH WALL CENTER		1015			X	X	4.5-5	6300	
03	2567-5, NE CORNER		1045			X	X	4.5-5	6301	
04	2567-6, EAST WALL CENTER		1100			X	X	4.5-5	6302	
05	2567-7, WEST WALL CENTER		1120			X	X	4.5-5	6303	
06	2567-DUPLICATE		1045			X	X	4.5-5	6304	
07	TRIP BLANK		—	AQ.	1	X		—	6305	

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	10-17-08 1230				
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, ( )Reduced, (X)Standard, ( )Screen / non-certified
Turnaround time: ( )Standard 4 wks, ( )Rush ____ Days, ( )ASAP Verbal ____ Hrs.

Remarks:

SAMPLE RECEIPT FORM

Date Received: 10-17-08 Lab Project ID#: 8037B

Site/Project Name: Bixby 2507 Cooler Temp (deg. C): 4.0c

Received By: J. Cerquera Sign: J. Cerquera
(print name)

Check the appropriate answer

1. Did the samples come in a cooler?	☑ yes	☐ no	☐ NA
2. Were the chain of custody papers filled out correctly and legibly?	☑ yes	☐ no	
3. Did you sign the chain of custody in the appropriate place?	☑ yes	☐ no	
4. Did all the labels agree with the chain of custody and in good condition?	☑ yes	☐ no	
5. Were the correct containers and/or preservatives used for the tests indicated?	☑ yes	☐ no	
6. Was a sufficient amount of sample sent for the tests indicated?	☑ yes	☐ no	
7. Were bubbles absent from aqueous VOC sample containers?	☐ yes	☐ no	☑ NA

Fill out the following table for each sample bottle

Sample ID	pH	Preservative	Sample ID	pH	Preservative

Comments: _____

U.S. ARMY - FT. MONMOUTH, NJ

BUILDING 2567-USTs #81515-66, #81515-67, #81515-68

SOIL SAMPLE GPS POSITIONS & COORDINATES

US STATE PLANE 1983, NJ (NY EAST) 2900, NAD 1983 (CONUS)

(IN US SURVEY FEET)

SAMPLE POINTS

POSITION/DESCRIPTION	Y COORDINATE (NORTHING)	X COORDINATE (EASTING)
2567.1 SW CORNER	532960.536	609375.831
2567.2 SOUTH WALL CENTER	532958.508	609394.407
2567.3 NW CORNER	532992.676	609375.626
2567.4 NORTH WALL CENTER	532993.123	609390.603
2567.5 NE CORNER	532992.42	609408.594
2567.6 EAST WALL CENTER	532978.194	609409.61
2567.7 WEST WALL CENTER	532978.728	609375.406

DUPLICATES

Field Duplicate Identification

Sample ID	Lab ID	Field Duplicate
2567-2, South Wall Center	8036502	8036503
2567-5, NE Corner	8037303	8037306

VOLATILE ORGANICS

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEP CERTIFICATION # 13461

Definition of Qualifiers

U: The compound was analyzed for but not detected.

B: Indicates that the compound was found in the associated method blank as well as in the sample.

J: Indicates an estimated value. This flag is used:

(1) When the mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

(2) When estimating the concentration of a tentatively identified compound (TIC), where a 1:1 response is assumed.

D: This flag is used to identify all compounds (target or TIC) that required a dilution.

E: Indicates the compound's concentration exceeds the calibration range of the instrument for that specific analysis.

N: This flag is only used for TICs. It indicates the presumptive evidence of a compound. For a generic characterization of a TIC, such as unknown hydrocarbon, the flag is not used.

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2000	U
107131	Acrylonitrile	2000	U
75650	tert-Butyl alcohol	2000	U
1634044	Methyl-tert-Butyl ether	200	U
108203	Di-isopropyl ether	200	U
75718	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	200	U
108-05-4	Vinyl Acetate	200	U
78-93-3	2-Butanone	200	U
156-59-2	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
75-55-6	1,1,1-Trichloroethane	200	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	200	U
107-06-2	1,2-Dichloroethane	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
110-75-8	2-Chloroethyl vinyl ether	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	200	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	400	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036504

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2277.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2000	U
107131	Acrylonitrile	2000	U
75650	tert-Butyl alcohol	2000	U
1634044	Methyl-tert-Butyl ether	200	U
108203	Di-isopropyl ether	200	U
75718	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	200	U
108-05-4	Vinyl Acetate	200	U
78-93-3	2-Butanone	200	U
156-59-2	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
75-55-6	1,1,1-Trichloroethane	200	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	200	U
107-06-2	1,2-Dichloroethane	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
110-75-8	2-Chloroethyl vinyl ether	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	200	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036504

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2277.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	400	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036504

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2277.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

	CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	000079-20-9	Acetic acid, methyl ester	8.58	480	JND
2.	000554-12-1	Propanoic acid, methyl ester	10.70	1300	JND
3.	000616-38-6	Carbonic acid, dimethyl ester	10.78	1600	JND
4.	000623-42-7	Butanoic acid, methyl ester	12.88	430	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037307

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2281.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2000	U
107131	Acrylonitrile	2000	U
75650	tert-Butyl alcohol	2000	U
1634044	Methyl-tert-Butyl ether	200	U
108203	Di-isopropyl ether	200	U
75718	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	200	U
108-05-4	Vinyl Acetate	200	U
78-93-3	2-Butanone	200	U
156-59-2	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
75-55-6	1,1,1-Trichloroethane	200	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	200	U
107-06-2	1,2-Dichloroethane	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
110-75-8	2-Chloroethyl vinyl ether	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	200	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037307

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2281.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	400	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

2567 TRIP BLANK

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037307

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2281.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.58	500	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	1300	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	1500	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	430	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036503

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VA2276.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 26.84 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2700	U
107131	Acrylonitrile	2700	U
75650	tert-Butyl alcohol	2700	U
1634044	Methyl-tert-Butyl ether	270	U
108203	Di-isopropyl ether	270	U
75718	Dichlorodifluoromethane	270	U
74-87-3	Chloromethane	270	U
75-01-4	Vinyl Chloride	270	U
74-83-9	Bromomethane	270	U
75-00-3	Chloroethane	270	U
75-69-4	Trichlorofluoromethane	270	U
75-35-4	1,1-Dichloroethene	270	U
67-64-1	Acetone	270	U
75-15-0	Carbon Disulfide	270	U
75-09-2	Methylene Chloride	270	U
156-60-5	trans-1,2-Dichloroethene	270	U
75-35-3	1,1-Dichloroethane	270	U
108-05-4	Vinyl Acetate	270	U
78-93-3	2-Butanone	270	U
156-59-2	cis-1,2-Dichloroethene	270	U
67-66-3	Chloroform	270	U
75-55-6	1,1,1-Trichloroethane	270	U
56-23-5	Carbon Tetrachloride	270	U
71-43-2	Benzene	270	U
107-06-2	1,2-Dichloroethane	270	U
79-01-6	Trichloroethene	270	U
78-87-5	1,2-Dichloropropane	270	U
75-27-4	Bromodichloromethane	270	U
110-75-8	2-Chloroethyl vinyl ether	270	U
10061-01-5	cis-1,3-Dichloropropene	270	U
108-10-1	4-Methyl-2-Pentanone	270	U
108-88-3	Toluene	32	JD
10061-02-6	trans-1,3-Dichloropropene	270	U
79-00-5	1,1,2-Trichloroethane	270	U
127-18-4	Tetrachloroethene	270	U
591-78-6	2-Hexanone	270	U
126-48-1	Dibromochloromethane	270	U
108-90-7	Chlorobenzene	270	U
100-41-4	Ethylbenzene	270	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036503

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VA2276.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 26.84 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	540	U
1330-20-7	o-Xylene	270	U
100-42-5	Styrene	270	U
75-25-2	Bromoform	270	U
79-34-5	1,1,2,2-Tetrachloroethane	270	U
541-73-1	1,3-Dichlorobenzene	270	U
106-46-7	1,4-Dichlorobenzene	270	U
95-50-1	1,2-Dichlorobenzene	270	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036503

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VA2276.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 26.84 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

	CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	000079-20-9	Acetic acid, methyl ester	8.58	1200	JND
2.	000554-12-1	Propanoic acid, methyl ester	10.70	1800	JND
3.	000616-38-6	Carbonic acid, dimethyl ester	10.78	2000	JND
4.	000623-42-7	Butanoic acid, methyl ester	12.88	590	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2280.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 23.26 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2600	U
107131	Acrylonitrile	2600	U
75650	tert-Butyl alcohol	2600	U
1634044	Methyl-tert-Butyl ether	260	U
108203	Di-isopropyl ether	260	U
75718	Dichlorodifluoromethane	260	U
74-87-3	Chloromethane	260	U
75-01-4	Vinyl Chloride	260	U
74-83-9	Bromomethane	260	U
75-00-3	Chloroethane	260	U
75-69-4	Trichlorofluoromethane	260	U
75-35-4	1,1-Dichloroethene	260	U
67-64-1	Acetone	260	U
75-15-0	Carbon Disulfide	260	U
75-09-2	Methylene Chloride	260	U
156-60-5	trans-1,2-Dichloroethene	260	U
75-35-3	1,1-Dichloroethane	260	U
108-05-4	Vinyl Acetate	260	U
78-93-3	2-Butanone	260	U
156-59-2	cis-1,2-Dichloroethene	260	U
67-66-3	Chloroform	260	U
75-55-6	1,1,1-Trichloroethane	260	U
56-23-5	Carbon Tetrachloride	260	U
71-43-2	Benzene	260	U
107-06-2	1,2-Dichloroethane	260	U
79-01-6	Trichloroethene	260	U
78-87-5	1,2-Dichloropropane	260	U
75-27-4	Bromodichloromethane	260	U
110-75-8	2-Chloroethyl vinyl ether	260	U
10061-01-5	cis-1,3-Dichloropropene	260	U
108-10-1	4-Methyl-2-Pentanone	260	U
108-88-3	Toluene	260	U
10061-02-6	trans-1,3-Dichloropropene	260	U
79-00-5	1,1,2-Trichloroethane	260	U
127-18-4	Tetrachloroethene	260	U
591-78-6	2-Hexanone	260	U
126-48-1	Dibromochloromethane	260	U
108-90-7	Chlorobenzene	260	U
100-41-4	Ethylbenzene	260	U

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2280.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 23.26 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	520	U
1330-20-7	o-Xylene	260	U
100-42-5	Styrene	260	U
75-25-2	Bromoform	260	U
79-34-5	1,1,2,2-Tetrachloroethane	260	U
541-73-1	1,3-Dichlorobenzene	260	U
106-46-7	1,4-Dichlorobenzene	260	U
95-50-1	1,2-Dichlorobenzene	260	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

2567 DUP

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2280.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 23.26 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

	CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	000079-20-9	Acetic acid, methyl ester	8.58	930	JND
2.	000554-12-1	Propanoic acid, methyl ester	10.70	1800	JND
3.	000616-38-6	Carbonic acid, dimethyl ester	10.78	2000	JND
4.	000623-42-7	Butanoic acid, methyl ester	12.88	570	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-1 SW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036501

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VA2275.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 16.39 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2400	U
107131	Acrylonitrile	2400	U
75650	tert-Butyl alcohol	2400	U
1634044	Methyl-tert-Butyl ether	240	U
108203	Di-isopropyl ether	240	U
75718	Dichlorodifluoromethane	240	U
74-87-3	Chloromethane	240	U
75-01-4	Vinyl Chloride	240	U
74-83-9	Bromomethane	240	U
75-00-3	Chloroethane	240	U
75-69-4	Trichlorofluoromethane	240	U
75-35-4	1,1-Dichloroethene	240	U
67-64-1	Acetone	240	U
75-15-0	Carbon Disulfide	240	U
75-09-2	Methylene Chloride	240	U
156-60-5	trans-1,2-Dichloroethene	240	U
75-35-3	1,1-Dichloroethane	240	U
108-05-4	Vinyl Acetate	240	U
78-93-3	2-Butanone	240	U
156-59-2	cis-1,2-Dichloroethene	240	U
67-66-3	Chloroform	240	U
75-55-6	1,1,1-Trichloroethane	240	U
56-23-5	Carbon Tetrachloride	240	U
71-43-2	Benzene	240	U
107-06-2	1,2-Dichloroethane	240	U
79-01-6	Trichloroethene	240	U
78-87-5	1,2-Dichloropropane	240	U
75-27-4	Bromodichloromethane	240	U
110-75-8	2-Chloroethyl vinyl ether	240	U
10061-01-5	cis-1,3-Dichloropropene	240	U
108-10-1	4-Methyl-2-Pentanone	240	U
108-88-3	Toluene	240	U
10061-02-6	trans-1,3-Dichloropropene	240	U
79-00-5	1,1,2-Trichloroethane	240	U
127-18-4	Tetrachloroethene	240	U
591-78-6	2-Hexanone	240	U
126-48-1	Dibromochloromethane	240	U
108-90-7	Chlorobenzene	240	U
100-41-4	Ethylbenzene	240	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-1 SW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036501

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VA2275.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 16.39 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	490	U
1330-20-7	o-Xylene	240	U
100-42-5	Styrene	240	U
75-25-2	Bromoform	240	U
79-34-5	1,1,2,2-Tetrachloroethane	240	U
541-73-1	1,3-Dichlorobenzene	240	U
106-46-7	1,4-Dichlorobenzene	240	U
95-50-1	1,2-Dichlorobenzene	240	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

567-1 SW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036501

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VA2275.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 16.39 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.58	830	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	1700	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	1900	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	530	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SOUTH WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036502

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2266.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 34.15 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	3000	U
107131	Acrylonitrile	3000	U
75650	tert-Butyl alcohol	3000	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	300	U
75718	Dichlorodifluoromethane	300	U
74-87-3	Chloromethane	300	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	300	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	300	U
75-35-4	1,1-Dichloroethene	300	U
67-64-1	Acetone	300	U
75-15-0	Carbon Disulfide	300	U
75-09-2	Methylene Chloride	300	U
156-60-5	trans-1,2-Dichloroethene	300	U
75-35-3	1,1-Dichloroethane	300	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
156-59-2	cis-1,2-Dichloroethene	300	U
67-66-3	Chloroform	300	U
75-55-6	1,1,1-Trichloroethane	300	U
56-23-5	Carbon Tetrachloride	300	U
71-43-2	Benzene	300	U
107-06-2	1,2-Dichloroethane	300	U
79-01-6	Trichloroethene	300	U
78-87-5	1,2-Dichloropropane	300	U
75-27-4	Bromodichloromethane	300	U
110-75-8	2-Chloroethyl vinyl ether	300	U
10061-01-5	cis-1,3-Dichloropropene	300	U
108-10-1	4-Methyl-2-Pentanone	300	U
108-88-3	Toluene	300	U
10061-02-6	trans-1,3-Dichloropropene	300	U
79-00-5	1,1,2-Trichloroethane	300	U
127-18-4	Tetrachloroethene	300	U
591-78-6	2-Hexanone	300	U
126-48-1	Dibromochloromethane	300	U
108-90-7	Chlorobenzene	300	U
100-41-4	Ethylbenzene	300	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SOUTH WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036502

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2266.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 34.15 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	600	U
1330-20-7	o-Xylene	300	U
100-42-5	Styrene	300	U
75-25-2	Bromoform	300	U
79-34-5	1,1,2,2-Tetrachloroethane	300	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

SOUTH WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: 8036502

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2266.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 34.15 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.59	1900	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	2600	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	2800	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	700	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-3 NW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037301

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2269.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 19.44 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2500	U
107131	Acrylonitrile	2500	U
75650	tert-Butyl alcohol	2500	U
1634044	Methyl-tert-Butyl ether	250	U
108203	Di-isopropyl ether	250	U
75718	Dichlorodifluoromethane	250	U
74-87-3	Chloromethane	250	U
75-01-4	Vinyl Chloride	250	U
74-83-9	Bromomethane	250	U
75-00-3	Chloroethane	250	U
75-69-4	Trichlorofluoromethane	250	U
75-35-4	1,1-Dichloroethene	250	U
67-64-1	Acetone	250	U
75-15-0	Carbon Disulfide	250	U
75-09-2	Methylene Chloride	250	U
156-60-5	trans-1,2-Dichloroethene	250	U
75-35-3	1,1-Dichloroethane	250	U
108-05-4	Vinyl Acetate	250	U
78-93-3	2-Butanone	250	U
156-59-2	cis-1,2-Dichloroethene	250	U
67-66-3	Chloroform	250	U
75-55-6	1,1,1-Trichloroethane	250	U
56-23-5	Carbon Tetrachloride	250	U
71-43-2	Benzene	250	U
107-06-2	1,2-Dichloroethane	250	U
79-01-6	Trichloroethene	250	U
78-87-5	1,2-Dichloropropane	250	U
75-27-4	Bromodichloromethane	250	U
110-75-8	2-Chloroethyl vinyl ether	250	U
10061-01-5	cis-1,3-Dichloropropene	250	U
108-10-1	4-Methyl-2-Pentanone	250	U
108-88-3	Toluene	250	U
10061-02-6	trans-1,3-Dichloropropene	250	U
79-00-5	1,1,2-Trichloroethane	250	U
127-18-4	Tetrachloroethene	250	U
591-78-6	2-Hexanone	250	U
126-48-1	Dibromochloromethane	250	U
108-90-7	Chlorobenzene	250	U
100-41-4	Ethylbenzene	250	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-3 NW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037301

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2269.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 19.44 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	490	U
1330-20-7	o-Xylene	250	U
100-42-5	Styrene	250	U
75-25-2	Bromoform	250	U
79-34-5	1,1,2,2-Tetrachloroethane	250	U
541-73-1	1,3-Dichlorobenzene	250	U
106-46-7	1,4-Dichlorobenzene	250	U
95-50-1	1,2-Dichlorobenzene	250	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

567-3 NW CORNE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037301

Sample wt/vol: 10.1 (g/ml) G Lab File ID: VA2269.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 19.44 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.59	920	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	1800	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.77	2300	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	570	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

NORTH WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037302

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2270.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 31.89 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	C
107028	Acrolein	3000	U
107131	Acrylonitrile	3000	U
75650	tert-Butyl alcohol	3000	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	300	U
75718	Dichlorodifluoromethane	300	U
74-87-3	Chloromethane	300	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	300	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	300	U
75-35-4	1,1-Dichloroethene	300	U
67-64-1	Acetone	300	U
75-15-0	Carbon Disulfide	300	U
75-09-2	Methylene Chloride	300	U
156-60-5	trans-1,2-Dichloroethene	300	U
75-35-3	1,1-Dichloroethane	300	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
156-59-2	cis-1,2-Dichloroethene	300	U
67-66-3	Chloroform	300	U
75-55-6	1,1,1-Trichloroethane	300	U
56-23-5	Carbon Tetrachloride	300	U
71-43-2	Benzene	300	U
107-06-2	1,2-Dichloroethane	300	U
79-01-6	Trichloroethene	300	U
78-87-5	1,2-Dichloropropane	300	U
75-27-4	Bromodichloromethane	300	U
110-75-8	2-Chloroethyl vinyl ether	300	U
10061-01-5	cis-1,3-Dichloropropene	300	U
108-10-1	4-Methyl-2-Pentanone	300	U
108-88-3	Toluene	300	U
10061-02-6	trans-1,3-Dichloropropene	300	U
79-00-5	1,1,2-Trichloroethane	300	U
127-18-4	Tetrachloroethene	300	U
591-78-6	2-Hexanone	300	U
126-48-1	Dibromochloromethane	300	U
108-90-7	Chlorobenzene	300	U
100-41-4	Ethylbenzene	300	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

NORTH WALL CI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037302

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2270.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 31.89 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	590	U
1330-20-7	o-Xylene	300	U
100-42-5	Styrene	300	U
75-25-2	Bromoform	300	U
79-34-5	1,1,2,2-Tetrachloroethane	300	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

NORTH WALL CI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037302

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2270.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 31.89 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.59	1200	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	2200	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	2500	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	690	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-5 NE CORNEI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037303

Sample wt/vol: 10.8 (g/ml) G Lab File ID: VA2271.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 14.13 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2200	U
107131	Acrylonitrile	2200	U
75650	tert-Butyl alcohol	2200	U
1634044	Methyl-tert-Butyl ether	220	U
108203	Di-isopropyl ether	220	U
75718	Dichlorodifluoromethane	220	U
74-87-3	Chloromethane	220	U
75-01-4	Vinyl Chloride	220	U
74-83-9	Bromomethane	220	U
75-00-3	Chloroethane	220	U
75-69-4	Trichlorofluoromethane	220	U
75-35-4	1,1-Dichloroethene	220	U
67-64-1	Acetone	220	U
75-15-0	Carbon Disulfide	220	U
75-09-2	Methylene Chloride	220	U
156-60-5	trans-1,2-Dichloroethene	220	U
75-35-3	1,1-Dichloroethane	220	U
108-05-4	Vinyl Acetate	220	U
78-93-3	2-Butanone	220	U
156-59-2	cis-1,2-Dichloroethene	220	U
67-66-3	Chloroform	220	U
75-55-6	1,1,1-Trichloroethane	220	U
56-23-5	Carbon Tetrachloride	220	U
71-43-2	Benzene	220	U
107-06-2	1,2-Dichloroethane	220	U
79-01-6	Trichloroethene	220	U
78-87-5	1,2-Dichloropropane	220	U
75-27-4	Bromodichloromethane	220	U
110-75-8	2-Chloroethyl vinyl ether	220	U
10061-01-5	cis-1,3-Dichloropropene	220	U
108-10-1	4-Methyl-2-Pentanone	220	U
108-88-3	Toluene	220	U
10061-02-6	trans-1,3-Dichloropropene	220	U
79-00-5	1,1,2-Trichloroethane	220	U
127-18-4	Tetrachloroethene	220	U
591-78-6	2-Hexanone	220	U
126-48-1	Dibromochloromethane	220	U
108-90-7	Chlorobenzene	220	U
100-41-4	Ethylbenzene	220	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

567-5 NE CORNEI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037303

Sample wt/vol: 10.8 (g/ml) G Lab File ID: VA2271.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 14.13 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	430	U
1330-20-7	o-Xylene	220	U
100-42-5	Styrene	220	U
75-25-2	Bromoform	220	U
79-34-5	1,1,2,2-Tetrachloroethane	220	U
541-73-1	1,3-Dichlorobenzene	220	U
106-46-7	1,4-Dichlorobenzene	220	U
95-50-1	1,2-Dichlorobenzene	220	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

567-5 NE CORNEI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037303

Sample wt/vol: 10.8 (g/ml) G Lab File ID: VA2271.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 14.13 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

	CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	000079-20-9	Acetic acid, methyl ester	8.59	940	JND
2.	000554-12-1	Propanoic acid, methyl ester	10.70	1800	JND
3.	000616-38-6	Carbonic acid, dimethyl ester	10.78	2000	JND
4.	000623-42-7	Butanoic acid, methyl ester	12.88	550	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

6 EAST WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037304

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2278.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 20.31 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2500	U
107131	Acrylonitrile	2500	U
75650	tert-Butyl alcohol	2500	U
1634044	Methyl-tert-Butyl ether	250	U
108203	Di-isopropyl ether	250	U
75718	Dichlorodifluoromethane	250	U
74-87-3	Chloromethane	250	U
75-01-4	Vinyl Chloride	250	U
74-83-9	Bromomethane	250	U
75-00-3	Chloroethane	250	U
75-69-4	Trichlorofluoromethane	250	U
75-35-4	1,1-Dichloroethene	250	U
67-64-1	Acetone	250	U
75-15-0	Carbon Disulfide	250	U
75-09-2	Methylene Chloride	250	U
156-60-5	trans-1,2-Dichloroethene	250	U
75-35-3	1,1-Dichloroethane	250	U
108-05-4	Vinyl Acetate	250	U
78-93-3	2-Butanone	250	U
156-59-2	cis-1,2-Dichloroethene	250	U
67-66-3	Chloroform	250	U
75-55-6	1,1,1-Trichloroethane	250	U
56-23-5	Carbon Tetrachloride	250	U
71-43-2	Benzene	250	U
107-06-2	1,2-Dichloroethane	250	U
79-01-6	Trichloroethene	250	U
78-87-5	1,2-Dichloropropane	250	U
75-27-4	Bromodichloromethane	250	U
110-75-8	2-Chloroethyl vinyl ether	250	U
10061-01-5	cis-1,3-Dichloropropene	250	U
108-10-1	4-Methyl-2-Pentanone	250	U
108-88-3	Toluene	250	U
10061-02-6	trans-1,3-Dichloropropene	250	U
79-00-5	1,1,2-Trichloroethane	250	U
127-18-4	Tetrachloroethene	250	U
591-78-6	2-Hexanone	250	U
126-48-1	Dibromochloromethane	250	U
108-90-7	Chlorobenzene	250	U
100-41-4	Ethylbenzene	250	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

6 EAST WALL CEI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037304

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2278.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 20.31 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	110	JD
1330-20-7	o-Xylene	250	U
100-42-5	Styrene	250	U
75-25-2	Bromoform	250	U
79-34-5	1,1,2,2-Tetrachloroethane	250	U
541-73-1	1,3-Dichlorobenzene	250	U
106-46-7	1,4-Dichlorobenzene	250	U
95-50-1	1,2-Dichlorobenzene	250	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

6 EAST WALL CEI

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037304

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2278.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 20.31 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.58	880	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	1800	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	2000	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	570	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

7 WEST WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037305

Sample wt/vol: 10.4 (g/ml) G Lab File ID: VA2279.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 16.79 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2300	U
107131	Acrylonitrile	2300	U
75650	tert-Butyl alcohol	2300	U
1634044	Methyl-tert-Butyl ether	230	U
108203	Di-isopropyl ether	230	U
75718	Dichlorodifluoromethane	230	U
74-87-3	Chloromethane	230	U
75-01-4	Vinyl Chloride	230	U
74-83-9	Bromomethane	230	U
75-00-3	Chloroethane	230	U
75-69-4	Trichlorofluoromethane	230	U
75-35-4	1,1-Dichloroethene	230	U
67-64-1	Acetone	230	U
75-15-0	Carbon Disulfide	230	U
75-09-2	Methylene Chloride	230	U
156-60-5	trans-1,2-Dichloroethene	230	U
75-35-3	1,1-Dichloroethane	230	U
108-05-4	Vinyl Acetate	230	U
78-93-3	2-Butanone	230	U
156-59-2	cis-1,2-Dichloroethene	230	U
67-66-3	Chloroform	230	U
75-55-6	1,1,1-Trichloroethane	230	U
56-23-5	Carbon Tetrachloride	230	U
71-43-2	Benzene	230	U
107-06-2	1,2-Dichloroethane	230	U
79-01-6	Trichloroethene	230	U
78-87-5	1,2-Dichloropropane	230	U
75-27-4	Bromodichloromethane	230	U
110-75-8	2-Chloroethyl vinyl ether	230	U
10061-01-5	cis-1,3-Dichloropropene	230	U
108-10-1	4-Methyl-2-Pentanone	230	U
108-88-3	Toluene	230	U
10061-02-6	trans-1,3-Dichloropropene	230	U
79-00-5	1,1,2-Trichloroethane	230	U
127-18-4	Tetrachloroethene	230	U
591-78-6	2-Hexanone	230	U
126-48-1	Dibromochloromethane	230	U
108-90-7	Chlorobenzene	230	U
100-41-4	Ethylbenzene	230	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

7 WEST WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037305

Sample wt/vol: 10.4 (g/ml) G Lab File ID: VA2279.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 16.79 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	470	U
1330-20-7	o-Xylene	230	U
100-42-5	Styrene	230	U
75-25-2	Bromoform	230	U
79-34-5	1,1,2,2-Tetrachloroethane	230	U
541-73-1	1,3-Dichlorobenzene	230	U
106-46-7	1,4-Dichlorobenzene	230	U
95-50-1	1,2-Dichlorobenzene	230	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

7 WEST WALL CE

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80373

Matrix: (soil/water) SOIL Lab Sample ID: 8037305

Sample wt/vol: 10.4 (g/ml) G Lab File ID: VA2279.D

Level: (low/med) MED Date Received: 10/17/2008

% Moisture: not dec. 16.79 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	8.59	640	JND
2. 000554-12-1	Propanoic acid, methyl ester	10.70	1400	JND
3. 000616-38-6	Carbonic acid, dimethyl ester	10.78	1700	JND
4. 000623-42-7	Butanoic acid, methyl ester	12.88	460	JND

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	2000	U
107131	Acrylonitrile	2000	U
75650	tert-Butyl alcohol	2000	U
1634044	Methyl-tert-Butyl ether	200	U
108203	Di-isopropyl ether	200	U
75718	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl Chloride	200	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	200	U
108-05-4	Vinyl Acetate	200	U
78-93-3	2-Butanone	200	U
156-59-2	cis-1,2-Dichloroethene	200	U
67-66-3	Chloroform	200	U
75-55-6	1,1,1-Trichloroethane	200	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	200	U
107-06-2	1,2-Dichloroethane	200	U
79-01-6	Trichloroethene	200	U
78-87-5	1,2-Dichloropropane	200	U
75-27-4	Bromodichloromethane	200	U
110-75-8	2-Chloroethyl vinyl ether	200	U
10061-01-5	cis-1,3-Dichloropropene	200	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	200	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	200	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	200	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID.

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	400	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID.

MB 10/27/08

Lab Name: FMETL NJDEP # 13461

Project: 08-65966 Case No.: MW Location: SDG No.: 80365

Matrix: (soil/water) SOIL Lab Sample ID: MB 10/27/08

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VA2264.D

Level: (low/med) MED Date Received: 10/14/2008

% Moisture: not dec. 0 Date Analyzed: 10/27/2008

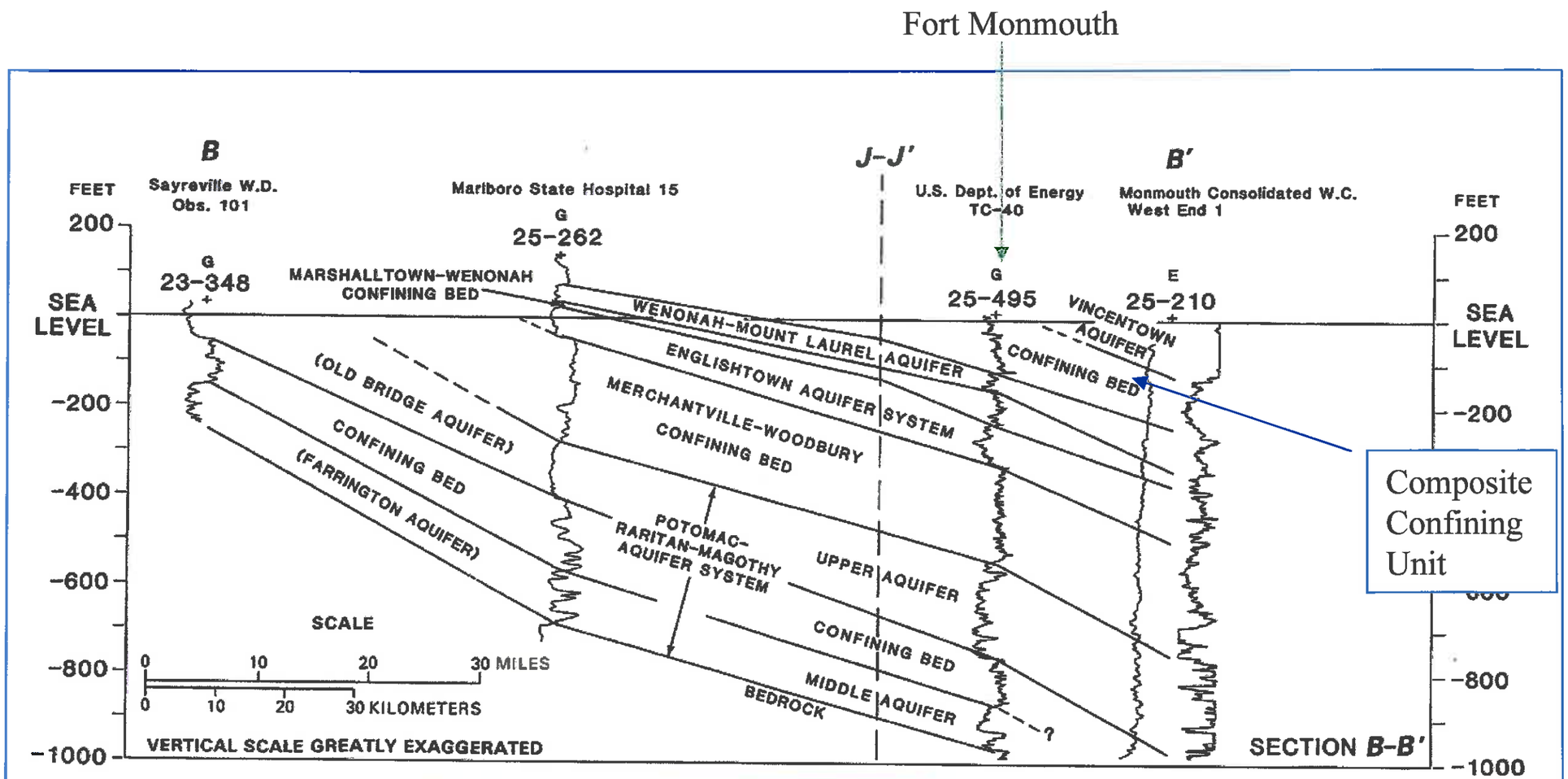
GC Column: Rtx-VMS ID: 0.25 (mm) Dilution Factor: 50.0

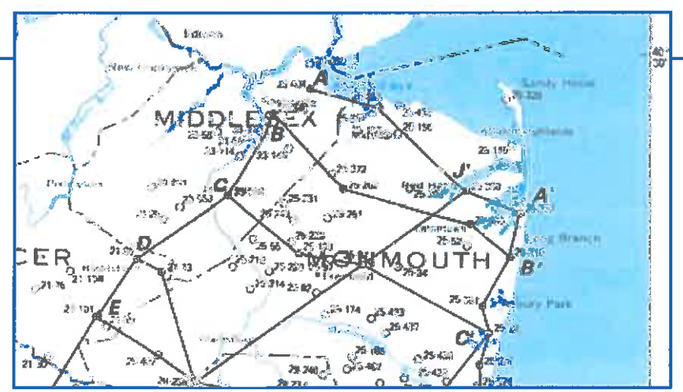
Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 1250 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q





Source: Zapecza, O. 1989. *Hydrogeologic Framework of the New Jersey Coastal Plain.* USGS Professional Paper 1404-B. U.S. Government Printing Office, Washington, DC.

FIGURE 6-1

Regional Geologic Cross-Section
Site 1122 – Main Post
Fort Monmouth, New Jersey

Versar INC.
2558 Pearl Buck Road, Suite 1
Bristol, PA 19007
(215) 788-7844

BEDROCK GEOLOGY OF THE LONG BRANCH QUADRANGLE MONMOUTH COUNTY, NEW JERSEY

by
Scott D. Stanford and Peter J. Sugarman
2010

Excerpt of Cross-Section A-A'

SCALE 1:24 000

1 MILE
7000 FEET
1 KILOMETER

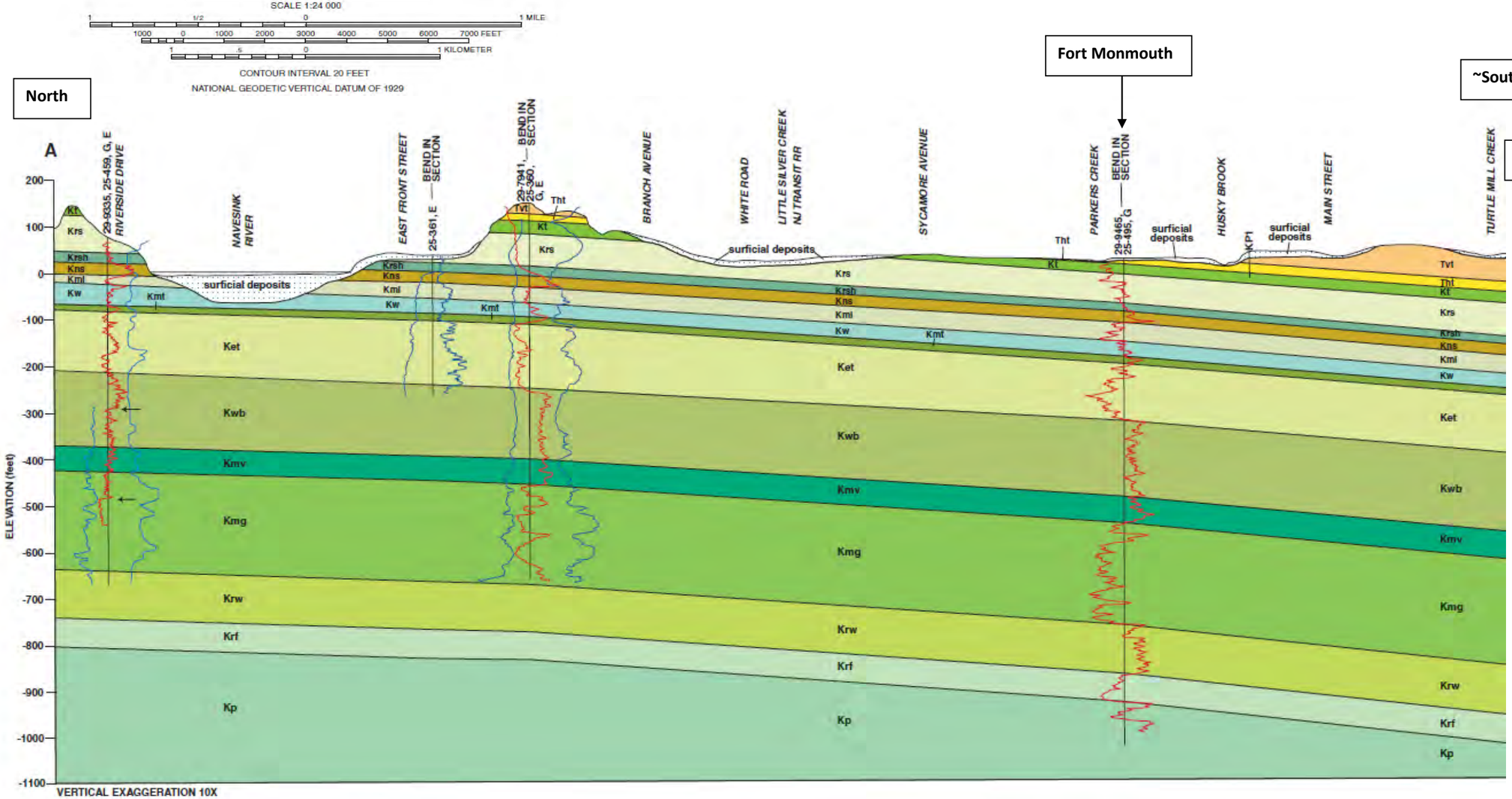
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

North

Fort Monmouth

~South

A' -------->



Original Section A-A' extends to the right

Description of Geologic Units Shown on Cross-Section A-A'

Tvt VINCENTOWN FORMATION—Glauconitic (5-20%) silty medium-to-coarse quartz sand, some fine-to-medium sand, some very coarse sand to very fine pebbles; yellow, reddish-yellow, olive-yellow, olive-brown; unstratified to weakly horizontally stratified. Coarse sands are locally iron-cemented into beds and masses as much as 10 feet thick. Lowermost 10-20 feet of the formation is silty fine-to-medium sand, with more glauconite than upsection. Total thickness of formation is 180 feet. Late Paleocene in age, based on foraminifera (Olsson and Wise, 1987; Miller and others, 2006) and calcareous nannofossils (Sugarman and others, 1991). Unconformably overlies the Hornerstown Formation.

Tht HORNERSTOWN FORMATION—Glauconite (>50%) clay and silty clay; olive, dark green, black where unweathered, olive-brown with brown to reddish-brown mottles where weathered; unstratified. Glauconite occurs primarily in soft grains of fine-to-medium sand size. Thickness is 25 to 30 feet. Early Paleocene in age, based on foraminifera (Olsson and others, 1997; Landman and others, 2004; Miller and others, 2006) and calcareous nannofossils (Sugarman and others, 1991; Miller and others, 2006). Unconformably overlies the Tinton Formation.

Kt TINTON FORMATION—Glauconitic (5-30%) silty medium-to-coarse and fine-to-medium quartz sand; reddish-brown, reddish-yellow, yellowish-brown where weathered, grayish-brown, brown, olive-brown where unweathered; unstratified to weakly horizontally stratified. Commonly iron-cemented into beds and masses as much as 15 feet thick. Uppermost 4-6 feet, just below contact with Hornerstown Formation, is a brown to olive-gray glauconitic clayey-silty fine sand to fine-sandy silt-clay ("New Egypt Formation" of Landman and others, 2004). Total thickness of Tinton is 30 to 40 feet. Late Cretaceous (late Maestrichtian) in age based on foraminifera, nannofossils, and ammonites (Landman and others, 2004) and strontium-isotope ratios (Sugarman and others, 1995). Overlies the Shrewsbury Member of the Red Bank Formation. Contact with Shrewsbury is not exposed in the Long Branch quadrangle. It is gradational over several feet in the Sandy Hook quadrangle, north of the Long Branch quadrangle (Minard, 1969), but may be unconformable in the Marlboro quadrangle, west of the Long Branch quadrangle (Sugarman and Owens, 1996).

Krs RED BANK FORMATION, SHREWSBURY MEMBER—Fine-to-medium quartz sand, minor medium-to-coarse sand, slightly silty, glauconitic (<5%), and micaceous; reddish-yellow, yellow where weathered, light gray and gray where unweathered; unstratified to weakly horizontally bedded; locally iron-cemented. As much as 100 feet thick. Late Cretaceous (late Maestrichtian) in age based on fossils in the underlying Sandy Hook Member; the Shrewsbury Member is unfossiliferous. Grades downward within 2-3 feet to the Red Bank Formation, Sandy Hook Member. On geophysical well logs, transition to Sandy Hook Member is marked by increased gamma-ray intensity and decreased resistance.

Krsh RED BANK FORMATION, SANDY HOOK MEMBER—Fine-sandy clayey silt, micaceous, slightly glauconitic (<5%); brown to yellowish-brown where weathered, dark gray, olive-gray where unweathered; unstratified. Calcareous brachiopod, pelecypod, and gastropod fossils are common. As much as 20 feet thick. Late Cretaceous (late Maestrichtian) in age based on calcareous nannofossils (Sugarman and Owens, 1996), foraminifera (Olsson, 1964; Olsson and Wise, 1987; Owens and others, 1977), and strontium-isotope ratios (Sugarman and others, 1995). Grades downward within 2-3 feet into the Navesink Formation. On geophysical well logs, transition to Navesink is marked by increased gamma-ray intensity and slightly decreased resistance.

Kns NAVESINK FORMATION—Glauconitic (20-50%) clayey-silty fine-to-medium quartz sand to fine-sandy clayey silt; dark gray, gray, grayish-brown, olive-gray where unweathered, brown to yellowish-brown where weathered; unstratified. Glauconite occurs chiefly in soft grains of fine-to-medium sand size. Calcareous brachiopod, pelecypod, and gastropod fossils are common. Late Cretaceous (late Maestrichtian) in age based on calcareous nannofossils and foraminifera (Olsson, 1964; Miller and others, 2006), macrofossils (Sohl, 1977), and strontium-isotope ratios (Sugarman and others, 1995). Unconformably overlies the Mount Laurel Formation. Contact with Mount Laurel is commonly marked by a sharp peak in gamma-ray intensity on geophysical well logs, with reduced intensity in the Mount Laurel.

Description of Geologic Units Shown on Cross-Section A-A' (cont.)

Kml MOUNT LAUREL FORMATION—Glauconitic (3-15%) fine-to-medium quartz sand, minor medium-to-coarse sand, with thin interbeds of clay and silt; yellowish-brown where weathered, olive-gray to olive-brown where unweathered. Sand is unstratified to horizontally bedded to cross-bedded. As much as 50 feet thick in the southern part of the quadrangle; thins to 20 feet to the north. In subsurface only, covered by surficial deposits in the Navesink River estuary and by overlying Coastal Plain formations elsewhere. Late Cretaceous (late Campanian) in age, based on calcareous nannofossils and strontium-isotope ratios (Sugarman and others, 1991; Miller and others, 2006). Grades downward into the Wenonah Formation. On geophysical well logs, transition to Wenonah is generally marked by slightly decreased resistance and increased gamma-ray intensity.

Kw WENONAH FORMATION—Silty fine-to-very-fine quartz sand to fine-sandy clayey silt, micaceous, slightly glauconitic (<5%); yellow, very pale brown where weathered, gray to pale-olive where unweathered; unstratified. As much as 40 feet thick. In subsurface only, covered by surficial deposits in the Navesink River estuary and by overlying Coastal Plain formations elsewhere. Late Cretaceous (late Campanian) in age based on pollen (Wolfe, 1976) and ammonites (Kennedy and Cobban, 1994). Grades downward into the Marshalltown Formation. On geophysical well logs, transition to Marshalltown is marked by increased gamma-ray intensity.

Kmt MARSHALLTOWN FORMATION—Glauconitic (20-50%), slightly micaceous, silty-clayey fine-to-medium quartz sand, to fine-sandy clayey silt; olive-gray to olive-brown; unstratified. Thickness is 15 to 20 feet. In subsurface only. Late Cretaceous (middle Campanian) in age based on calcareous nannofossils, foraminifera, mollusks, and strontium-isotope ratios (Sugarman and others, 1995). Unconformably overlies the Englishtown Formation. On geophysical well logs, contact with Englishtown is marked by decreased gamma-ray intensity and slightly increased resistance.

Ket ENGLISHTOWN FORMATION—Fine-to-medium quartz sand, minor medium-to-coarse sand, with thin interbeds of clay and silt; micaceous and lignitic, with a trace (<1%) of glauconite; white and light gray where weathered, dark gray where unweathered. Sand is unstratified to horizontally bedded to cross-bedded. In subsurface only. As much as 140 feet thick in the eastern part of the quadrangle, thins to 110 feet thick in the west. In the Asbury Park quadrangle to the south of the Long Branch quadrangle, and farther southwest in northern Ocean County, the Englishtown is divided into an upper and lower member based on the presence of a clay-silt facies in the middle of the formation that is distinctive on gamma-ray logs (Nichols, 1977; Sugarman and Owens, 1994; Miller and others, 2006). This facies is not well marked on gamma-ray logs in the Long Branch quadrangle (wells 29-9335, 29-7941, 29-9465, 29-6173, 29-23948, and 29-48307) and so the members are not mapped here. Late Cretaceous (middle to late Campanian) in age, based on pollen (Wolfe, 1976), ostracodes (Gohn, 1992), calcareous nannofossils, and strontium-isotope ratios (Miller and others, 2006). Grades downward into the Woodbury Formation. On geophysical well logs, transition to Woodbury is marked by increased gamma-ray intensity and decreased resistance.

Kwb WOODBURY FORMATION—Clay, silty clay, with minor thin beds of very fine quartz sand, slightly micaceous and lignitic; dark gray and black where unweathered, yellowish-brown to brown where weathered; unstratified. In subsurface only. As much as 240 feet thick in the eastern part of the quadrangle, thins to 160 feet thick in the central and western parts of the quadrangle. Late Cretaceous (early to middle Campanian) based on pollen (Wolfe, 1976), ostracodes (Gohn, 1992), and calcareous nannofossils (Miller and others, 2006). Grades downward into the Merchantville Formation. On geophysical well logs, transition to the Merchantville is marked by slightly increased gamma-ray intensity.

Description of Geologic Units Shown on Cross-Section A-A' (cont.)

Kmv MERCHANTVILLE FORMATION—Glauconitic (20-50%) clayey silt to sandy clayey silt, slightly micaceous; olive, dark gray, black where unweathered, olive-brown to yellowish-brown where weathered; unstratified. Thickness is 40 to 60 feet. In subsurface only. Late Cretaceous (early Campanian to Santonian) in age based on ammonites (Owens and others, 1977) and calcareous nannofossils (Miller and others, 2006). The Cheesequake Formation, a glauconitic clayey silt underlying the Merchantville, is mapped in outcrop in northern Monmouth and eastern Middlesex counties (Sugarman and Owens, 1996; Sugarman and others, 2005; Stanford and Sugarman, 2008) and in the subsurface both west and south of the Long Branch quadrangle (Sugarman and Owens, 1994, 1996). Because it is lithically similar to the Merchantville and cannot be easily distinguished from it on geophysical logs, it is not mapped separately here. If present, it is included here within the Merchantville, or uppermost Magothy Formation.

Kmg MAGOTHY FORMATION—Fine-to-medium quartz sand, some very-fine-to-fine sand and minor medium-to-coarse sand, micaceous, lignitic, and pyrite-bearing in places, with thin interbeds of silt and clay; white to yellow where weathered, light gray to gray where unweathered. Sand is cross-bedded to laminated. As much as 220 feet thick. In subsurface only. Late Cretaceous (Turonian-Santonian) in age, based on pollen (Christopher, 1979, 1982; Miller and others, 2006). Unconformably overlies the Raritan Formation, Woodbridge Clay member. On geophysical well logs, contact with the Woodbridge is marked by increased gamma-ray intensity.

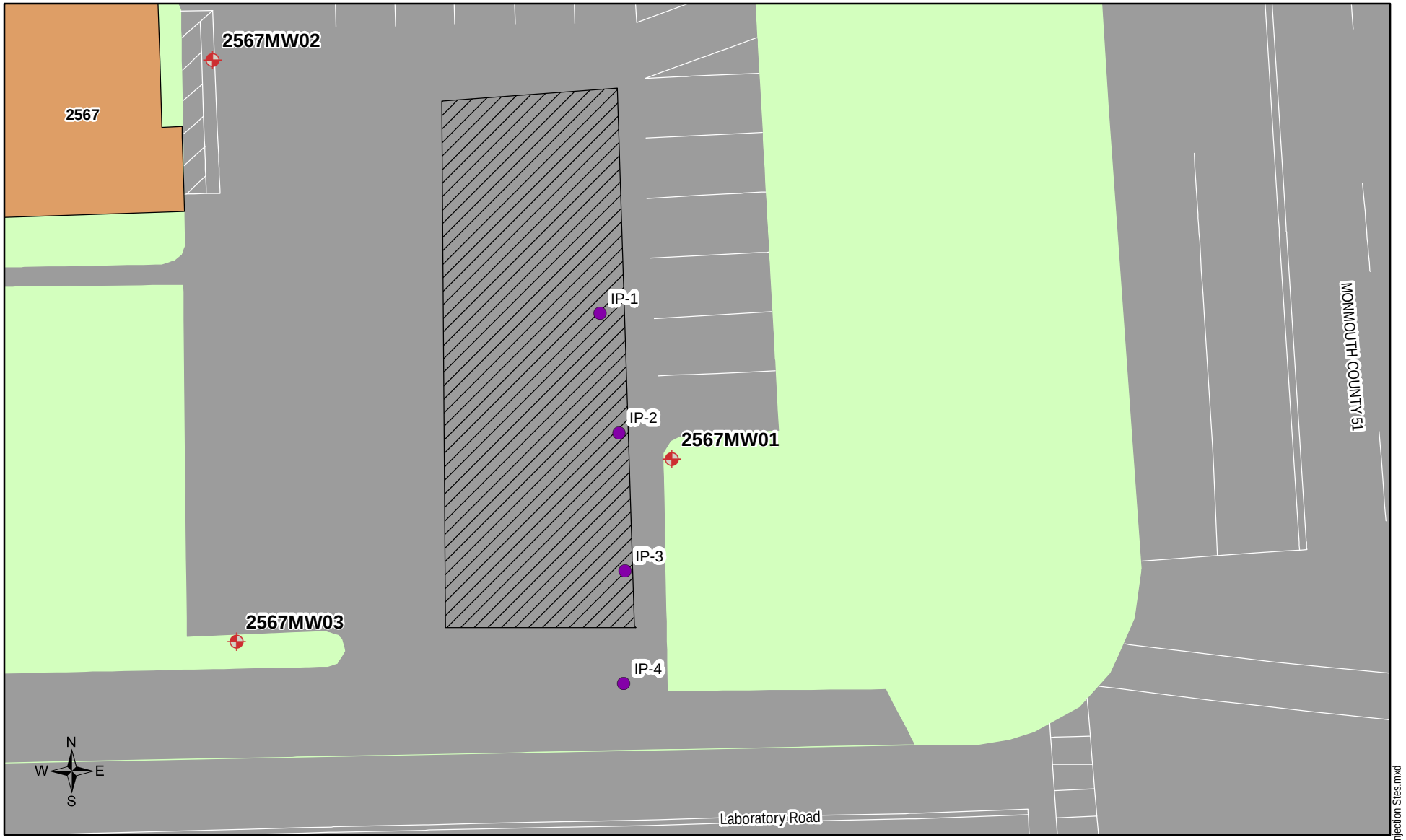
In its outcrop area in eastern Middlesex County the Magothy is divided into 5 members. From bottom to top they include: South Amboy Fire Clay, Old Bridge Sand, Amboy Stoneware Clay, Morgan beds, and Cliffwood beds (Sugarman and others, 2005). The Old Bridge is a thick sand, the other members are interbedded clay-silt and fine sand. These members may extend downdip in the subsurface (Miller and others, 2006). Geophysical well logs in the Long Branch quadrangle (wells 29-21612, 29-23948, 29-21510, 29-9335, 29-7941, 29-9465, and 29-6173) show generally higher gamma-ray intensity and lower resistivity in the uppermost 50 feet of the formation, and again in the lowermost 30-40 feet, than in the middle 100-120 feet. The upper fine-grained beds may correspond to the Amboy Stoneware Clay and Morgan and Cliffwood beds, and the lower fine-grained beds may correspond to the South Amboy Fire Clay. The middle sand may correspond to the Old Bridge Sand.

Krw RARITAN FORMATION, WOODBRIDGE CLAY MEMBER—Clay and silt, micaceous, lignitic, and pyrite-bearing; gray and black where unweathered, white to brown where weathered; with minor thin interbeds and laminas of white, yellow, and light gray very-fine-to-fine quartz sand. As much as 110 feet thick. In subsurface only, penetrated by wells 29-9465 and 29-1921. The driller's log for well 29-2366 in Eatontown reports "weathered bedrock", with no further information, beneath the Magothy Formation, at a depth of 875-891 feet. This depth is anomalously shallow for the basement surface, suggesting that the material may be weathered clay of either the Woodbridge or South Amboy Fire Clay member of the Magothy. The Woodbridge is Late Cretaceous (late Cenomanian) in age based on pollen (Christopher, 1979) and ammonites (Cobban and Kennedy, 1990). Grades downward into the Raritan Formation, Farrington Sand member. Transition to the Farrington is marked by decreased gamma-ray intensity on geophysical well logs.

Krf RARITAN FORMATION, FARRINGTON SAND MEMBER—Fine-to-coarse quartz sand, some coarse-to-very-coarse sand, minor beds of clay and silt; white and yellow where weathered, gray where unweathered. Sands are horizontally bedded to cross-bedded. As much as 60 feet thick. In subsurface only, penetrated in well 29-9465. Late Cretaceous (Cenomanian) in age based on pollen (Christopher, 1979). Unconformably overlies the Potomac Formation. Contact with Potomac is marked by increased gamma-ray intensity on geophysical well logs.

Description of Geologic Units Shown on Cross-Section A-A' (cont.)

Kp POTOMAC FORMATION—Fine-to-medium quartz sand, some coarse-to-very-coarse sand, with beds of clay and silt; white, red, yellow where weathered, gray where unweathered. Sands are horizontally bedded to cross-bedded, clays are in beds as much as 8 feet thick. More than 90 feet thick, full thickness not penetrated in the Long Branch quadrangle. In subsurface only, partially penetrated in well 29-9465. Late Cretaceous (Albian-Cenomanian) based on pollen (Sugarman and Owens, 1996; Miller and others, 2006), which indicates that the Potomac in this area corresponds to the Potomac Formation, unit 3, of Doyle and Robbins (1977).



Injection Point Location Map
First Injection Event
Building 2567, Charles Wood Area
Fort Monmouth, New Jersey
FOUO

0 12.5 25 50 Feet

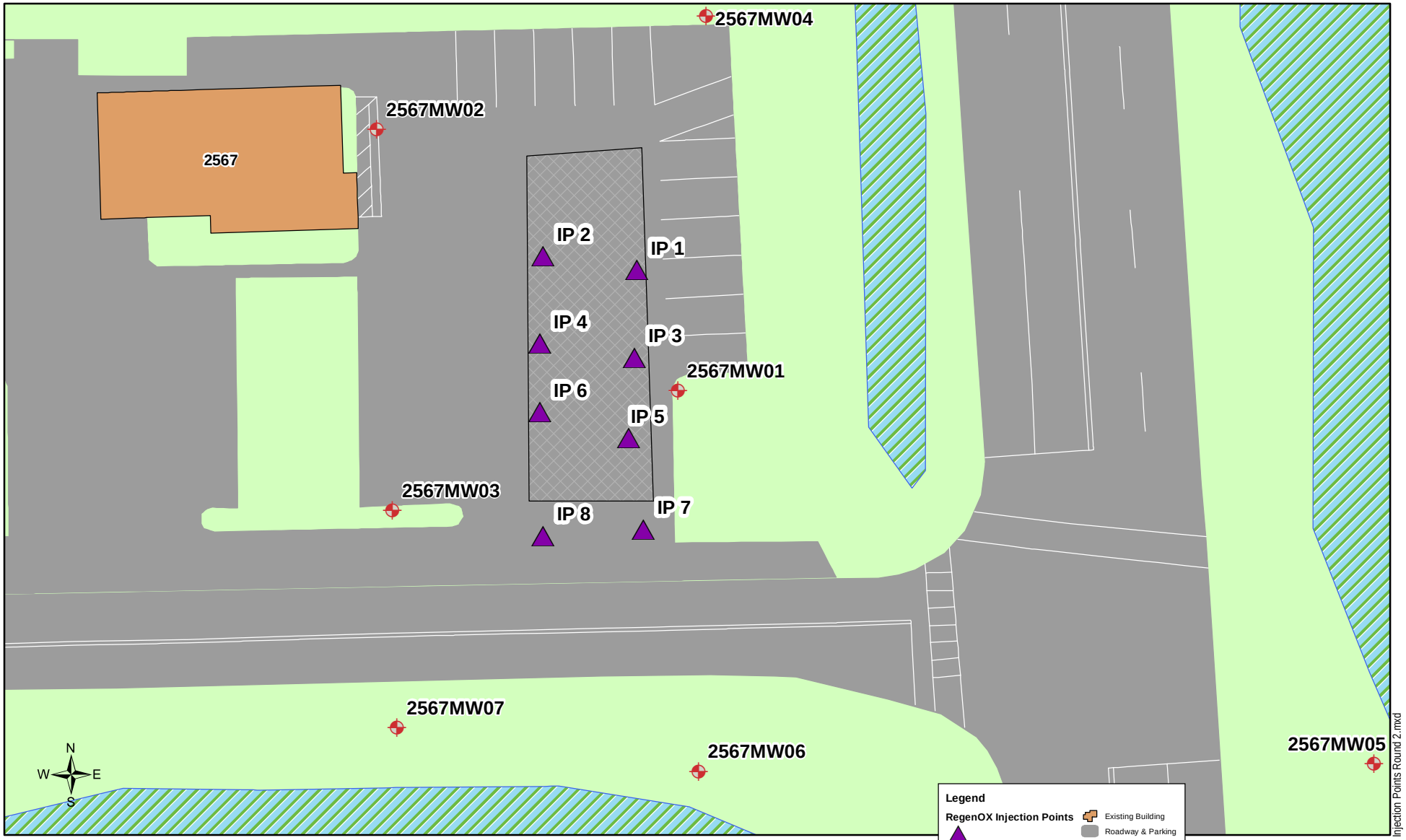
Legend

First Round injection Points
(November 29, 2011 - December 03, 2010)

Monitoring Well - Active
InjectionArea
Existing Building
Roadway & Parking
Post Boundaries

Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: 1 December, 2010
All drawings must be field verified.
New Jersey State Plane Feet, NAD83

May 2, 2011 H:\GIS\GIS Maps\CH\PR05\2567 Injection Stes.mxd

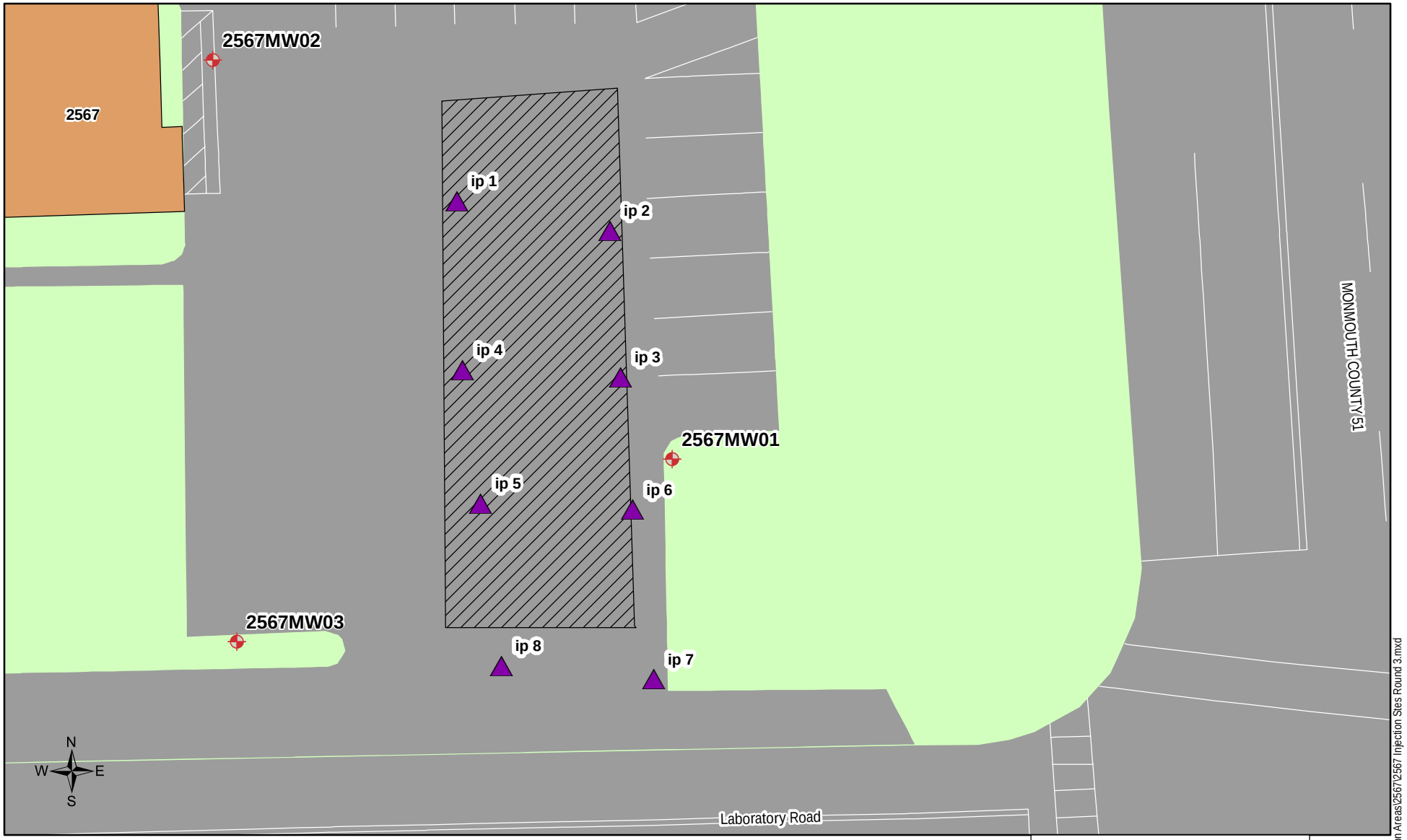


0 15 30 60 Feet

Injection Point Location Map
Second Injection Event
Site 2567; Charles Wood Area
Fort Monmouth, New Jersey
FOUO

Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: April 26, 2011
All drawings must be field verified.
New Jersey State Plane Feet, NAD83

April 26, 2011 H:\GIS\GIS Maps\CHPR052567 Injection Points Round 2.mxd



Injection Point Location Map
Third Injection Event
Building 2567, Charles Wood Area
Fort Monmouth, New Jersey
FOUO

0 12.5 25 50 Feet

Legend

RegenOX Injection Points

June 2011

- Monitoring Well - Active
- InjectionArea
- Existing Building
- Roadway & Parking
- Post Boundaries

Map Created by:
Fort Monmouth Installation GIO, Environmental Division
Fort Monmouth, New Jersey
Date: July 1, 2011
All drawings must be field verified.
New Jersey State Plane Feet, NAD83

July 1, 2011 H:\GIS\GIS Maps\CHVPR16 Injection Areas\2567\2567 Injection Stes Round 3.mxd

APPENDIX A: FTMM-58 Building 2567 UST Gasoline

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 WATER LEVEL MEASUREMENTS AND WELL ASSESSMENT

Monitoring wells located within FTMM-58 were gauged on October 21, 2016. Monitoring well locations as well as other site features are provided in **Figure 1**. Details regarding the water level measurements are provided in **Table 1**. Groundwater elevations in monitoring wells ranged from 26.65 (2567MW05) to 30.58 (2567MW03) feet above mean sea level (amsl). The inferred shallow groundwater flow direction is generally to the southeast, as shown in **Figure 2**.

During the groundwater gauging, the physical condition of FTMM-58 monitoring wells were assessed. The site monitoring wells were found to be in good condition.

2.0 GROUNDWATER SAMPLING

Groundwater samples were collected from three monitoring wells (2567MW01, 2567MW03, and 2567MW05) located at FTMM-58 as part of the annual (fourth quarter) 2016 groundwater sampling event. FTMM-58 is sampled on an annual basis. The groundwater sampling program included measuring the depth to groundwater in monitoring wells prior to sampling and collection of groundwater samples using low-flow purging and sampling (LFPS). Groundwater samples were collected from wells 2567MW01, 2567MW03, and 2567MW05 on October 21, 2016. The groundwater samples were analyzed for only tert-butyl alcohol (TBA) via the United States Environmental Protection Agency (USEPA) Method SW8260C.

The samples were collected in accordance with the New Jersey Department of Environmental Protection (NJDEP) Field Sampling Procedures Manual (FSPM) and the Sampling Analysis Plan (SAP). Field blanks, duplicates, matrix spike, matrix spike duplicate and quality assurance (QA) split samples were collected for every 5% of samples collected per parameter, per matrix, in accordance with the Quality Assurance Project Plan (QAPP). Trip blanks accompanied each cooler each day in which VOCs were collected for laboratory analysis.

Completed LFPS field sheets for each well sampled can be found in **Attachment A**.

Additional monitoring wells were installed in January 2017 to assess benzene contamination in groundwater, in accordance with an NJDEP approved Work Plan; results from these additional investigations will be reported separately.

3.0 HISTORICAL GROUNDWATER SAMPLING RESULTS

Groundwater monitoring has been conducted at FTMM-58 beginning in April 1997. Groundwater monitoring has consisted of sampling for select VOCs, semi-volatile organic compounds (SVOCs), and metals. The four most recent historical quarterly groundwater sampling events consisted of sampling for VOCs and metals.

Tert-butyl alcohol (TBA) was detected in FTMM-58 monitoring well 2567MW01 above the NJDEP Ground Water Quality Standards (GWQS) in March and June 2010, but was not detected in the subsequent groundwater sampling event conducted in September 2010. TBA was also detected in 2567MW03 at a concentration of 486.99 µg/L in September 2010. The NJDEP GWQS for TBA is 100 µg/L.

The November 2011 Remedial Action Progress Report for FTMM-58 prepared by CALIBRE Systems, Inc. stated that in an effort to reduce the TBA exceedances exhibited in monitoring wells 2567MW01 and 2567MW03, *in-situ* chemical oxidation injections would be performed in this area. Three injections of RegenOx®/ORC Advanced™ were conducted between November 2010 and June 2011 under an approved NJDEP Permit by Rule letter dated October 28, 2010.

Antimony was detected in monitoring wells 2567MW01, 2567MW02, 2567MW03, 2567MW04 and 2567MW05 above the NJDEP GWQS in at least one of the last four historical sampling rounds. Lead was also detected above the NJDEP GWQS in the September and June 2010 sampling events. Both antimony and lead were well below the background conditions for each compound and are not related to former site operations. Historical groundwater analytical data are presented in **Table 2**.

During the August 2013 Baseline Sampling Event, seven monitoring wells were sampled for VOCs. No VOCs were detected above their respective NJDEP GWQS during August 2013 sampling event. Results of the August 2013 sampling event are presented in **Table 3.**

The Final August 2013 Baseline Groundwater Sampling Report was accepted by the NJDEP in their February 5, 2015 letter. Based on this approval, five out of the seven groundwater monitoring wells were removed from the long term monitoring (LTM) program including 2567MW02, 2567MW04, 2567MW05, 2567MW06 and 2567MW07. Also, the volatile organic compound list was reduced to TBA only.

During the 2014 sampling event, TBA was detected in only monitoring well 2567MW01, at a concentration of 260 µg/L which is above the NJDEP GWQS of 100 µg/L. Groundwater analytical results from samples collected during the annual (fourth quarter) 2014 groundwater sampling event are presented in **Table 3**.

Based on the annual 2014 results, it was recommended that annual groundwater sampling continue at monitoring wells 2567MW01 and 2567MW03 for TBA. The Annual (Fourth Quarter) 2014 Groundwater Sampling Report was accepted by the NJDEP in their January 26, 2016 letter.

During the 2015 sampling event, TBA was detected above the NJDEP GWQS of 100 µg/L in monitoring well 2567MW01, at a concentration of 240 µg/L. Groundwater analytical results from samples collected during the annual (fourth quarter) 2015 groundwater sampling event are presented in **Table 3**. Based on the annual 2015 results, it was recommended that annual groundwater sampling should continue at monitoring well 2567MW01 for TBA, and that monitoring at 2567MW03 should be discontinued following confirmation of concentrations below the GWQS. In addition, downgradient well 2567MW05 was recommended to be added to the LTM program. The Annual (Fourth Quarter) 2015 Groundwater Sampling Report was accepted by the NJDEP in their November 14, 2016 letter.

4.0 ANNUAL (FOURTH QUARTER) 2016 GROUNDWATER RESULTS

TBA continued to be detected in only monitoring well, 2567MW01, at a concentration of 344 µg/L which is above the NJDEP GWQS of 100 µg/L. Groundwater analytical results from samples collected during the annual (fourth quarter) 2016 groundwater sampling event are presented in **Table 3**. Constituents detected in the groundwater above the NJDEP GWQS during the 2016 Sampling Event are shown on **Figure 3.**

5.0 FINDINGS AND RECOMMENDATIONS

Overall, concentrations of TBA detected at monitoring well 2567MW01 have been decreasing from a high of 829.45 µg/L (June 2010) to 344 µg/L (October 2016); concentrations remain above the NJDEP GWQS (100 µg/L). Based on the collective groundwater analytical results, continued groundwater monitoring for TBA in 2567MW01 and in downgradient well 2567MW05 is recommended. TBA was not detected at monitoring well 2567MW03 during annual monitoring from 2014 through 2016, which confirms that TBA is below the NJDEP GWQS at this location. A review of historical groundwater sampling results is presented in **Table 4**, which also provides the matrix used to determine the status of wells relative to future groundwater sampling and analyses.

It is recommended that the LTM program for groundwater at FTMM-58 be temporarily suspended while the remedial investigation (RI) phase and the field work for the site will be completed in the near future. The LTM of the groundwater to date has provided sufficient understanding of the groundwater chemistry for FTMM-58, and there is minimal benefit to continuing the LTM program while characterization of this site is being completed under the RI process. The collective RI data provides a good characterization of the concentrations of constituents in the groundwater and allow for the evaluation of the groundwater (as a whole) in the RI/FS process. Once the RI Reports (RIR), any necessary feasibility studies (FSs), and proposed plans have been completed and a remedy has been selected under a decision document, a revised LTM program for the groundwater will be submitted for FTMM-58 as appropriate to support the Classification Exemption Areas (CEA).

TABLES

Table 1
Groundwater Gauging Data and Elevations (October 21, 2016) and LFPS Sampling Summary
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Site/Well ID	Installation Date	Well Permit #	Y Coord. (North)	X Coord. (East)	Depth (ft. bgs)	Casing Length (ft)	Screen Length (ft)	TOC Elevation (ft)	Gauge Time	Gauged Depth to Water (ft. TOC)	Gauged Depth to Bottom (ft. TOC)	Calculated Groundwater Elevation (ft)	Date Sampled
Shallow Monitoring Wells													
2567MW01	9/30/1991	29-26925	532956.75	609537.78	13.0	3.0	10.0	32.86	0910	4.17	13.00	28.69	10/21/2016
2567MW02	10/1/1991	29-26926	533016.73	609468.76	13.0	3.0	10.0	34.17	1034	3.98	12.55	30.19	
2567MW03	10/1/1991	29-26927	532929.32	609472.36	13.0	3.0	10.0	32.79	1000	2.21	13.00	30.58	10/21/2016
2567MW04	9/30/1991	29-26928	533042.70	609544.26	12.0	2.0	10.0	32.42	1033	2.21	11.80	30.21	
2567MW05	9/23/1994	29-31783	532871.13	609697.52	12.5	2.5	10.0	33.90	0920	7.25	15.00	26.65	10/21/2016
2567MW06	5/12/2000	29-42585	532869.38	609542.57	13.0	3.0	10.0	34.01	1027	7.31	16.00	26.70	
2567MW07	5/12/2000	29-42586	532879.49	609473.42	13.0	3.0	10.0	35.25	1029	6.08	16.20	29.17	

Notes:
1) The synoptic round of water levels in the wells was collected on October 21, 2016.
2) Information on well permit number, X and Y coordinates, depth, screen length, screen interval and TOC elevation were provided by FTMM in a table in June 2013.
3) ft = feet
4) DTW = depth to water (measured from the top of well casing)
5) DTB = depth to bottom of well (measured from the top of well casing)
6) bgs = below ground surface
7) ppm = parts per million (of VOCs)
8) TOC = Top of Casing
9) Elevation = feet above mean sea level
10) N/A = information not available
11) LFPS = Low-Flow Purging and Sampling

Table 2
Historical Groundwater Analytical Results
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

				2567MW01																									
Round No.	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	51		51 Dup		LF1		LF2		LF2 Dup		LF3		51		LF1		LF1 Dup		LF2		LF2 Dup		LF3		LF3 Dup	
Date Collected				10/26/2009		10/26/2009		3/4/2010		6/9/2010		6/9/2010		9/16/2010		10/26/2009		3/4/2010		3/4/2010		6/8/2010		6/8/2010		9/15/2010		9/15/2010	
ANALYTE / Lab ID				90428.04		90428.03		10069.08		10251.04		10251.03		10395.05		90428.05		10069.04		10069.03		10248.04		10248.03		10392.04		10392.03	
Volatile Organic Compounds (µg/L)																													
Acetone	6,000	NLE	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Benzene	1	5	--	ND		ND		ND		ND		ND		ND		ND		--		--		ND		--		--		--	
2-Butanone	300	NLE	--	ND		ND		--		--		--		--		ND		ND		ND		ND		ND		ND		ND	
Methyl *tert* -butyl ether	70	NLE	--	**0.90**		**0.92**		**1.28**		**1.15**		**1.11**		ND		ND		--		--		ND		--		--		--	
tert -Butyl alcohol	100	NLE	--	**13.13**		**13.13**		**662.11**		**829.45**		**736.09**		ND		ND		--		--		ND		--		--		--	
Toluene	600	1,000	--	ND		ND		ND		ND		ND		ND		ND		--		--		ND		--		--		--	
Xylenes (total)	1,000	10,000	--	ND		ND		ND		ND		ND		ND		ND		--		--		ND		--		--		--	
TICs*	NLE	NLE	--	ND		ND		ND		**9**		**6**		**234**		**15**		ND		ND		ND		ND		**20**		**26**	
Metals (µg/L)																													
Antimony	6	6	20.7	NA		NA		**6.88**	ER	**10.7**		**12.6**		**18.7**		NA		ND		**6.13**	ER	**9.73**	ER	**9.89**	ER	**13.2**		**11.1**	
Arsenic	3	10	89.3	NA		NA		**1.14**	ER	ND		**0.69**	ER	ND		NA		**1.01**	ER	**0.91**	ER	**0.70**	ER	**1.00**	ER	**1.46**	ER	**1.06**	ER
Barium	6,000	2,000	699	NA		NA		**845**		**1120**		**1110**		**885**		NA		**377**		**407**		**340**		**339**		**434**		**443**	
Beryllium	1	4	2.1	NA		NA		ND		**0.06**	ER	**0.07**	ER	ND		NA		ND		ND		**0.136**	ER	**0.15**	ER	ND		ND	
Cadmium	4	5	9.5	NA		NA		ND		ND		ND		ND		NA		ND		ND		ND		ND		--		--	
Chromium	70	100	191	NA		NA		ND		ND		ND		ND		NA		ND		ND		ND		ND		ND		ND	
Copper	1,300	1,300 **	65.6	NA		NA		ND		ND		ND		**1.54**	ER	NA		ND		ND		ND		ND		**3.02**	ER	**2.32**	ER
Lead	5	15	22.7	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Mercury	2	2	0.26	NA		NA		ND		ND		ND		ND		NA		ND		ND		ND		ND		**0.08**	ER	**0.08**	ER
Nickel	100	NLE	187	NA		NA		**1.02**	ER	ND		ND		ND		NA		ND		ND		ND		ND		**1.07**	ER	**1.63**	ER
Selenium	40	50	29.6	NA		NA		NR		NR		NR		ND		NA		NR		NR		NR		NR		**1.96**		ND	
Thallium	2	2	5.5	NA		NA		ND		ND		ND		ND		NA		ND		ND		ND		ND		ND		ND	

Notes:

Shaded cells = concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs and SVOCs. No individual compound can exceed 100 µg/L.

** Value is the USEPA Action Level.

NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S. Environmental Protection Agency Maximum Contaminant Level (2012)

LF = Low-flow sampling method used to collect sample

< = Analyte does not exceed the detection limit shown

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

NA = Not analyzed

ND = Not detected

NLE = No limit established

ER = Estimated Result

LF = Low flow sampling method used to collect sample

DUP = field duplicate sample

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

Table 2
Historical Groundwater Analytical Results
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

				2567MW03	2567MW03						2567MW04						2567MW05											
Round No.	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	51	LF1		LF2		LF3		51	LF1		LF2		LF3		51	LF1		LF1 Dup		LF2		LF3		LF3 Dup	
Date Collected				10/26/2009	3/5/2010		6/9/2010		9/15/2010		10/26/2009	3/4/2010		6/8/2010		9/15/2010		10/26/2009	3/5/2010		3/5/2010		6/8/2010		9/16/2010		9/16/2010	
ANALYTE / Lab ID				90428.06	10073.05		10251.05		10392.08		90428.07	10069.05		10248.05		10392.05		90428.08	10073.04		10073.03		10248.08		10395.04		10395.03	
Volatile Organic Compounds (µg/L)																												
Acetone	6,000	NLE	--	ND	ND		ND		ND		ND	ND		ND		ND		ND	ND		ND		ND		ND		ND	
Benzene	1	5	--	ND	ND		ND		ND		ND	--		--		--		ND	--		--		--		--		--	
2-Butanone	300	NLE	--	ND	ND		ND		ND		ND	ND		ND		ND		ND	ND		ND		ND		ND		ND	
Methyl *tert* -butyl ether	70	NLE	--	**0.74**	**0.42**	J	**0.25**	J	**1.26**		ND	ND		ND		ND		ND	--		--		--		--		--	
tert -Butyl alcohol	100	NLE	--	ND	ND		ND		**486.99**		ND	--		--		--		ND	--		--		--		--		--	
Toluene	600	1,000	--	ND	ND		ND		ND		ND	--		--		--		ND	ND		ND		ND		ND		ND	
Xylenes (total)	1,000	10,000	--	ND	ND		ND		ND		ND	--		--		--		ND	--		--		--		--		--	
TICs*	NLE	NLE	--	**227**	**53**		**5**		**18**		ND	ND		ND		ND		ND	ND		ND		ND		ND		ND	
Metals (µg/L)																												
Antimony	6	6	20.7	NA	ND		**9.45**	ER	**16.5**		NA	**5.51**	ER	**6.42**		**8.64**	ER	NA	ND		ND		ND		ND		**7.31**	ER
Arsenic	3	10	89.3	NA	ND		ND		--		NA	**2.37**	ER	**1.80**	ER	**2.22**	ER	NA	ND		**0.71**	ER	**1.30**	ER	**2.57**	ER	**2.41**	ER
Barium	6,000	2,000	699	NA	**195**		**382**		**1120**		NA	**74.3**		**136**		**175**		NA	**105**		**106**		**49.5**		**41.5**		**38.1**	
Beryllium	1	4	2.1	NA	ND		**0.04**	ER	ND		NA	**0.38**	ER	**0.32**	ER	**0.20**	ER	NA	**0.24**	ER	**0.20**	ER	**0.44**	ER	**0.36**	ER	**0.33**	ER
Cadmium	4	5	9.5	NA	ND		ND		--		NA	**0.58**	ER	ND		ND		NA	**1.48**	ER	**1.36**	ER	ND		ND		ND	
Chromium	70	100	191	NA	ND		ND		ND		NA	**1.78**	ER	ND		ND		NA	ND		ND		**11.4**		**7.39**		**6.77**	
Copper	1,300	1,300 **	65.6	NA	ND		ND		**2.46**	ER	NA	**1.39**	ER	ND		**2.15**	ER	NA	**5.22**		**5.22**		**16.6**		**13.1**		**12.5**	
Lead	5	15	22.7	ND	ND		ND		ND		ND	ND		ND		ND		ND	ND		ND		**11.9**		**7.02**		**6.19**	
Mercury	2	2	0.26	NA	ND		ND		**0.07**	ER	NA	ND		ND		**0.07**	ER	NA	ND		ND		ND		ND		ND	
Nickel	100	NLE	187	NA	ND		ND		**3.11**	ER	NA	**11.4**		**10.9**		**3.7**	ER	NA	**11.1**		**11.7**		**6.93**		**6.1**	ER	**5.34**	
Selenium	40	50	29.6	NA	NR		NR		ND		NA	NR		NR		ND		NA	NR		NR		NR		**1.7**		ND	
Thallium	2	2	5.5	NA	ND		ND		ND		NA	ND		ND		ND		NA	ND		ND		ND		ND		ND	

Notes:

Shaded cells = concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs and SVOCs. No individual compound can exceed 100 µg/L.

** Value is the USEPA Action Level.

NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S. Environmental Protection Agency Maximum Contaminant Level (2012)

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NA = Not analyzed

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NLE = No limit established

ER = Estimated Result

LF = Low flow sampling method used to collect sample

DUP = field duplicate sample

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

Table 2
Historical Groundwater Analytical Results
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

				2567MW07	2567MW07					
Round No.	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	38	LF1		LF2		LF3	
Date Collected				10/26/2009	3/4/2010		6/8/2010		9/15/2010	
ANALYTE / Lab ID				90428.10	10069.07		10248.07		10392.07	
Volatile Organic Compounds (µg/L)										
Acetone	6,000	NLE	--	ND	ND		ND		ND	
Benzene	1	5	--	ND	--		--		--	
2-Butanone	300	NLE	--	ND	--		--		--	
Methyl *tert* -butyl ether	70	NLE	--	ND	ND		ND		ND	
tert -Butyl alcohol	100	NLE	--	ND	ND		ND		ND	
Toluene	600	1,000	--	ND	--		--		--	
Xylenes (total)	1,000	10,000	--	ND	--		--		--	
TICs*	NLE	NLE	--	ND	ND		ND		ND	
Metals (µg/L)										
Antimony	6	6	20.7	NA	ND		**5.50**	ER	**7.47**	ER
Arsenic	3	10	89.3	NA	**0.64**	ER	**2.71**	ER	**8.20**	
Barium	6,000	2,000	699	NA	**223**		**71.5**		**172**	
Beryllium	1	4	2.1	NA	**0.22**	ER	**0.19**	ER	**0.04**	ER
Cadmium	4	5	9.5	NA	ND		ND		ND	
Chromium	70	100	191	NA	ND		ND		ND	
Copper	1,300	1,300 **	65.6	NA	**4.06**	ER	**2.15**	ER	**2.39**	ER
Lead	5	15	22.7	**3.05**	ND		ND		ND	
Mercury	2	2	0.26	NA	NA		ND		**0.06**	ER
Nickel	100	NLE	187	NA	**15.6**		**5.22**		**9.89**	
Selenium	40	50	29.6	NA	NR		NR		**1.43**	
Thallium	2	2	5.5	NA	ND		ND		ND	

Notes:

Shaded cells = concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs and SVOCs. No individual compound can exceed 100 µg/L.

** Value is the USEPA Action Level.

NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S. Environmental Protection Agency Maximum Contaminant Level (2012)

LF = Low-flow sampling method used to collect sample

< = Analyte does not exceed the detection limit shown

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

NA = Not analyzed

ND = Not detected

NLE = No limit established

ER = Estimated Result

LF = Low flow sampling method used to collect sample

DUP = field duplicate sample

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW01				2567MW02
Sample ID		FTMM-58-GW-2567MW01-8.33	FTMM-58-GW-2567MW01-8.73_2014-Q4	FTMM-58-GW-2567MW01-8.3_4Q2015	FTMM-58-GW-2567MW01-8.6	FTMM-58-GW-2567MW02-8.06
Sample Date		8/29/2013	10/2/2014	11/25/2015	10/21/2016	8/29/2013
Sample Round		1				1
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 1	< 1	NA	NA	< 1
1,1,1-Trichloroethane	30	< 1	< 1	NA	NA	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1	NA	NA	< 1
1,1,2-Trichloroethane	3	< 1	< 1	NA	NA	< 1
1,1-Dichloroethane	50	< 1	< 1	NA	NA	< 1
1,1-Dichloroethene	1	< 1	< 1	NA	NA	< 1
1,1-Dichloropropene	100	< 1	< 1	NA	NA	< 1
1,2,3-Trichlorobenzene	100	< 1	< 1	NA	NA	< 1
1,2,3-Trichloropropane	0.03	< 1	< 1	NA	NA	< 1
1,2,4-Trichlorobenzene	9	< 1	< 1	NA	NA	< 1
1,2,4-Trimethylbenzene	100	< 1	< 1	NA	NA	< 1
1,2-Dibromo-3-chloropropane	0.02	< 1	< 1	NA	NA	< 1
1,2-Dibromoethane	0.03	< 1	< 1	NA	NA	< 1
1,2-Dichlorobenzene	600	< 1	< 1	NA	NA	< 1
1,2-Dichloroethane	2	< 1	< 1	NA	NA	< 1
1,2-Dichloropropane	1	< 1	< 1	NA	NA	< 1
1,3,5-Trimethylbenzene	100	< 1	< 1	NA	NA	< 1
1,3-Dichlorobenzene	600	< 1	< 1	NA	NA	< 1
1,3-Dichloropropane	100	< 1	< 1	NA	NA	< 1
1,4-Dichlorobenzene	75	< 1	< 1	NA	NA	< 1
2,2-Dichloropropane	100	< 1	< 1	NA	NA	< 1
2-Chlorotoluene	100	< 1	< 1	NA	NA	< 1
Acetone	6,000	**2.5 J**	**1.7 J**	NA	NA	**2.9 J**
Benzene	1	< 1	< 1	NA	NA	< 1
Bromobenzene	100	< 1	< 1	NA	NA	< 1
Bromochloromethane	100	< 1	< 1	NA	NA	< 1
Bromodichloromethane	1	< 1	< 1	NA	NA	< 1
Bromoform	4	< 1	< 1	NA	NA	< 1
Carbon tetrachloride	1	< 1	< 1	NA	NA	< 1
Chlorobenzene	50	< 1	< 1	NA	NA	< 1
Chlorodibromomethane	1	< 1	< 1	NA	NA	< 1
Chloroethane	5	< 1	< 1	NA	NA	< 1
Chloroform	70	< 1	< 1	NA	NA	< 1
Cis-1,2-Dichloroethene	70	< 1	< 1	NA	NA	< 1
Cis-1,3-Dichloropropene	1	< 1	< 1	NA	NA	< 1
Cymene	100	< 1	< 1	NA	NA	< 1
Dichlorodifluoromethane	1,000	< 1	< 1	NA	NA	< 1
Ethyl benzene	700	< 1	< 1	NA	NA	< 1
Hexachlorobutadiene	1	< 1	< 1	NA	NA	< 1
Isopropylbenzene	700	< 1	< 1	NA	NA	< 1
Meta/Para Xylene	1,000	< 2	< 2	NA	NA	< 2
Methyl bromide	10	< 1	< 1	NA	NA	< 1
Methyl butyl ketone	300	< 5	< 5	NA	NA	< 5
Methyl chloride	100	< 1	< 1	NA	NA	< 1
Methyl ethyl ketone	300	< 1	< 1	NA	NA	< 1
Methyl isobutyl ketone	100	< 1	< 1	NA	NA	< 1
Methyl Tertbutyl Ether	70	**0.34 J**	**0.8 J**	NA	NA	< 1

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW01				2567MW02
Sample ID		FTMM-58-GW-2567MW01-8.33	FTMM-58-GW-2567MW01-8.73_2014-Q4	FTMM-58-GW-2567MW01-8.3_4Q2015	FTMM-58-GW-2567MW01-8.6	FTMM-58-GW-2567MW02-8.06
Sample Date		8/29/2013	10/2/2014	11/25/2015	10/21/2016	8/29/2013
Sample Round		1				1
Filtered		Total	Total	Total	Total	Total
Methylene chloride	3	< 1	< 1	NA	NA	< 1
Naphthalene	300	< 1	< 1	NA	NA	< 1
n-Butylbenzene	100	< 1	< 1	NA	NA	< 1
Ortho Xylene	1,000	< 1	< 1	NA	NA	< 1
p-Chlorotoluene	100	< 1	< 1	NA	NA	< 1
Propylbenzene	100	< 1	< 1	NA	NA	< 1
sec-Butylbenzene	100	< 1	< 1	NA	NA	< 1
Styrene	100	< 1	< 1	NA	NA	< 1
Tert Butyl Alcohol	100	NA	**260**	**240**	**344**	NA
tert-Butylbenzene	100	< 1	< 1	NA	NA	< 1
Tetrachloroethene	1	< 1	< 1	NA	NA	< 1
Toluene	600	< 1	< 1	NA	NA	< 1
Total Xylenes	1,000	< 3	NA	NA	NA	< 3
Trans-1,2-Dichloroethene	100	< 1	< 1	NA	NA	< 1
Trans-1,3-Dichloropropene	1	< 1	< 1	NA	NA	< 1
Trichloroethene	1	< 1	< 1	NA	NA	< 1
Trichlorofluoromethane	2,000	< 1	< 1	NA	NA	< 1
Vinyl chloride	1	< 1	< 1	NA	NA	< 1
TIC VOCs (µg/l)						
Total TIC, Volatile	500	ND	NA	NA	NA	ND
TIC VOCs (µg/l)						
TIC Unknown	NLE	NA	NA	NA	NA	NA

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW03				
Sample ID		FTMM-58-GW-2567MW03-10.5	FTMM-58-GW-2567MW03-10.5LF	FTMM-58-GW-2567MW03-5.11	FTMM-58-GW-2567MW03-8.03_2014-Q4	FTMM-58-GW-2567MW03-8_4Q2015
Sample Date		8/29/2013	8/29/2013	8/29/2013	10/2/2014	11/25/2015
Sample Round		1	1	1		
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 1	< 1	< 1	< 1	NA
1,1,1-Trichloroethane	30	< 1	< 1	< 1	< 1	NA
1,1,2,2-Tetrachloroethane	1	< 1	< 1	< 1	< 1	NA
1,1,2-Trichloroethane	3	< 1	< 1	< 1	< 1	NA
1,1-Dichloroethane	50	< 1	< 1	< 1	< 1	NA
1,1-Dichloroethene	1	< 1	< 1	< 1	< 1	NA
1,1-Dichloropropene	100	< 1	< 1	< 1	< 1	NA
1,2,3-Trichlorobenzene	100	< 1	< 1	< 1	< 1	NA
1,2,3-Trichloropropane	0.03	< 1	< 1	< 1	< 1	NA
1,2,4-Trichlorobenzene	9	< 1	< 1	< 1	< 1	NA
1,2,4-Trimethylbenzene	100	< 1	< 1	< 1	< 1	NA
1,2-Dibromo-3-chloropropane	0.02	< 1	< 1	< 1	< 1	NA
1,2-Dibromoethane	0.03	< 1	< 1	< 1	< 1	NA
1,2-Dichlorobenzene	600	< 1	< 1	< 1	< 1	NA
1,2-Dichloroethane	2	< 1	< 1	< 1	< 1	NA
1,2-Dichloropropane	1	< 1	< 1	< 1	< 1	NA
1,3,5-Trimethylbenzene	100	< 1	< 1	< 1	< 1	NA
1,3-Dichlorobenzene	600	< 1	< 1	< 1	< 1	NA
1,3-Dichloropropane	100	< 1	< 1	< 1	< 1	NA
1,4-Dichlorobenzene	75	< 1	< 1	< 1	< 1	NA
2,2-Dichloropropane	100	< 1	< 1	< 1	< 1	NA
2-Chlorotoluene	100	< 1	< 1	< 1	< 1	NA
Acetone	6,000	**2.8 J**	< 5	**3.5 BJ**	< 5	NA
Benzene	1	< 1	< 1	< 1	< 1	NA
Bromobenzene	100	< 1	< 1	< 1	< 1	NA
Bromochloromethane	100	< 1	< 1	< 1	< 1	NA
Bromodichloromethane	1	< 1	< 1	< 1	< 1	NA
Bromoform	4	< 1	< 1	< 1	< 1	NA
Carbon tetrachloride	1	< 1	< 1	< 1	< 1	NA
Chlorobenzene	50	< 1	< 1	< 1	< 1	NA
Chlorodibromomethane	1	< 1	< 1	< 1	< 1	NA
Chloroethane	5	< 1	< 1	< 1	< 1	NA
Chloroform	70	< 1	< 1	< 1	< 1	NA
Cis-1,2-Dichloroethene	70	< 1	< 1	< 1	< 1	NA
Cis-1,3-Dichloropropene	1	< 1	< 1	< 1	< 1	NA
Cymene	100	< 1	< 1	< 1	< 1	NA
Dichlorodifluoromethane	1,000	< 1	< 1	< 1	< 1	NA
Ethyl benzene	700	< 1	< 1	< 1	< 1	NA
Hexachlorobutadiene	1	< 1	< 1	< 1	< 1	NA
Isopropylbenzene	700	< 1	< 1	< 1	**2 J**	NA
Meta/Para Xylene	1,000	< 2	< 2	< 2	< 2	NA
Methyl bromide	10	< 1	< 1	< 1	< 1	NA
Methyl butyl ketone	300	< 5	< 5	< 5	< 5	NA
Methyl chloride	100	< 1	< 1	< 1	< 1	NA
Methyl ethyl ketone	300	< 1	< 1	< 1	< 1	NA
Methyl isobutyl ketone	100	< 1	< 1	< 1	< 1	NA
Methyl Tertbutyl Ether	70	< 1	**0.3 J**	< 1	< 1	NA

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW03				
Sample ID		FTMM-58-GW-2567MW03-10.5	FTMM-58-GW-2567MW03-10.5LF	FTMM-58-GW-2567MW03-5.11	FTMM-58-GW-2567MW03-8.03_2014-Q4	FTMM-58-GW-2567MW03-8_4Q2015
Sample Date		8/29/2013	8/29/2013	8/29/2013	10/2/2014	11/25/2015
Sample Round		1	1	1		
Filtered		Total	Total	Total	Total	Total
Methylene chloride	3	< 1	< 1	< 1	< 1	NA
Naphthalene	300	< 1	< 1	< 1	< 1	NA
n-Butylbenzene	100	< 1	< 1	< 1	< 1	NA
Ortho Xylene	1,000	< 1	< 1	< 1	< 1	NA
p-Chlorotoluene	100	< 1	< 1	< 1	< 1	NA
Propylbenzene	100	< 1	< 1	< 1	**1.9 J**	NA
sec-Butylbenzene	100	< 1	< 1	< 1	< 1	NA
Styrene	100	< 1	< 1	< 1	< 1	NA
Tert Butyl Alcohol	100	NA	NA	NA	< 20	< 20
tert-Butylbenzene	100	< 1	< 1	< 1	< 1	NA
Tetrachloroethene	1	< 1	< 1	< 1	< 1	NA
Toluene	600	< 1	< 1	< 1	< 1	NA
Total Xylenes	1,000	< 3	< 3	< 3	NA	NA
Trans-1,2-Dichloroethene	100	< 1	< 1	< 1	< 1	NA
Trans-1,3-Dichloropropene	1	< 1	< 1	< 1	< 1	NA
Trichloroethene	1	< 1	< 1	< 1	< 1	NA
Trichlorofluoromethane	2,000	< 1	< 1	< 1	< 1	NA
Vinyl chloride	1	< 1	< 1	< 1	< 1	NA
TIC VOCs (µg/l)						
Total TIC, Volatile	500	ND	ND	ND	NA	NA
TIC VOCs (µg/l)						
TIC Unknown	NLE	NA	NA	NA	**10.1 J**	NA

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW03	2567MW04
Sample ID		FTMM-58-GW-2567MW03-8	FTMM-58-GW-2567MW04-7.09
Sample Date		10/21/2016	8/29/2013
Sample Round			1
Filtered		Total	Total
Volatile Organic Compounds (µg/l)			
1,1,1,2-Tetrachloroethane	1	NA	< 1
1,1,1-Trichloroethane	30	NA	< 1
1,1,2,2-Tetrachloroethane	1	NA	< 1
1,1,2-Trichloroethane	3	NA	< 1
1,1-Dichloroethane	50	NA	< 1
1,1-Dichloroethene	1	NA	< 1
1,1-Dichloropropene	100	NA	< 1
1,2,3-Trichlorobenzene	100	NA	< 1
1,2,3-Trichloropropane	0.03	NA	< 1
1,2,4-Trichlorobenzene	9	NA	< 1
1,2,4-Trimethylbenzene	100	NA	< 1
1,2-Dibromo-3-chloropropane	0.02	NA	< 1
1,2-Dibromoethane	0.03	NA	< 1
1,2-Dichlorobenzene	600	NA	< 1
1,2-Dichloroethane	2	NA	< 1
1,2-Dichloropropane	1	NA	< 1
1,3,5-Trimethylbenzene	100	NA	< 1
1,3-Dichlorobenzene	600	NA	< 1
1,3-Dichloropropane	100	NA	< 1
1,4-Dichlorobenzene	75	NA	< 1
2,2-Dichloropropane	100	NA	< 1
2-Chlorotoluene	100	NA	< 1
Acetone	6,000	NA	**2.8 J**
Benzene	1	NA	< 1
Bromobenzene	100	NA	< 1
Bromochloromethane	100	NA	< 1
Bromodichloromethane	1	NA	< 1
Bromoform	4	NA	< 1
Carbon tetrachloride	1	NA	< 1
Chlorobenzene	50	NA	< 1
Chlorodibromomethane	1	NA	< 1
Chloroethane	5	NA	< 1
Chloroform	70	NA	< 1
Cis-1,2-Dichloroethene	70	NA	< 1
Cis-1,3-Dichloropropene	1	NA	< 1
Cymene	100	NA	< 1
Dichlorodifluoromethane	1,000	NA	< 1
Ethyl benzene	700	NA	< 1
Hexachlorobutadiene	1	NA	< 1
Isopropylbenzene	700	NA	< 1
Meta/Para Xylene	1,000	NA	< 2
Methyl bromide	10	NA	< 1
Methyl butyl ketone	300	NA	< 5
Methyl chloride	100	NA	< 1
Methyl ethyl ketone	300	NA	< 1
Methyl isobutyl ketone	100	NA	< 1
Methyl Tertbutyl Ether	70	NA	< 1

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
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Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW03	2567MW04
Sample ID		FTMM-58-GW-2567MW03-8	FTMM-58-GW-2567MW04-7.09
Sample Date		10/21/2016	8/29/2013
Sample Round			1
Filtered		Total	Total
Methylene chloride	3	NA	< 1
Naphthalene	300	NA	< 1
n-Butylbenzene	100	NA	< 1
Ortho Xylene	1,000	NA	< 1
p-Chlorotoluene	100	NA	< 1
Propylbenzene	100	NA	< 1
sec-Butylbenzene	100	NA	< 1
Styrene	100	NA	< 1
Tert Butyl Alcohol	100	< 8.3	NA
tert-Butylbenzene	100	NA	< 1
Tetrachloroethene	1	NA	< 1
Toluene	600	NA	< 1
Total Xylenes	1,000	NA	< 3
Trans-1,2-Dichloroethene	100	NA	< 1
Trans-1,3-Dichloropropene	1	NA	< 1
Trichloroethene	1	NA	< 1
Trichlorofluoromethane	2,000	NA	< 1
Vinyl chloride	1	NA	< 1
TIC VOCs (µg/l)			
Total TIC, Volatile	500	NA	ND
TIC VOCs (µg/l)			
TIC Unknown	NLE	NA	NA

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJ Ground Water Quality Criteria	2567MW05			2567MW06	2567MW07
Sample ID		FTMM-58-GW-2567MW05-9.65	FTMM-58-GW-2567MW105-9	FTMM-58-GW-2567MW05-11	FTMM-58-GW-2567MW06-11.48	FTMM-58-GW-2567MW07-10.99
Sample Date		8/29/2013	8/29/2013	10/21/2016	8/29/2013	8/29/2013
Sample Round		1	1		1	1
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 1	< 1	NA	< 1	< 1
1,1,1-Trichloroethane	30	< 1	< 1	NA	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1	NA	< 1	< 1
1,1,2-Trichloroethane	3	< 1	< 1	NA	< 1	< 1
1,1-Dichloroethane	50	< 1	< 1	NA	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1	NA	< 1	< 1
1,1-Dichloropropene	100	< 1	< 1	NA	< 1	< 1
1,2,3-Trichlorobenzene	100	< 1	< 1	NA	< 1	< 1
1,2,3-Trichloropropane	0.03	< 1	< 1	NA	< 1	< 1
1,2,4-Trichlorobenzene	9	< 1	< 1	NA	< 1	< 1
1,2,4-Trimethylbenzene	100	< 1	< 1	NA	< 1	< 1
1,2-Dibromo-3-chloropropane	0.02	< 1	< 1	NA	< 1	< 1
1,2-Dibromoethane	0.03	< 1	< 1	NA	< 1	< 1
1,2-Dichlorobenzene	600	< 1	< 1	NA	< 1	< 1
1,2-Dichloroethane	2	< 1	< 1	NA	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1	NA	< 1	< 1
1,3,5-Trimethylbenzene	100	< 1	< 1	NA	< 1	< 1
1,3-Dichlorobenzene	600	< 1	< 1	NA	< 1	< 1
1,3-Dichloropropane	100	< 1	< 1	NA	< 1	< 1
1,4-Dichlorobenzene	75	< 1	< 1	NA	< 1	< 1
2,2-Dichloropropane	100	< 1	< 1	NA	< 1	< 1
2-Chlorotoluene	100	< 1	< 1	NA	< 1	< 1
Acetone	6,000	**2.9 J**	**2.7 J**	NA	**2.1 J**	**3.3 J**
Benzene	1	< 1	< 1	NA	< 1	< 1
Bromobenzene	100	< 1	< 1	NA	< 1	< 1
Bromochloromethane	100	< 1	< 1	NA	< 1	< 1
Bromodichloromethane	1	< 1	< 1	NA	< 1	< 1
Bromoform	4	< 1	< 1	NA	< 1	< 1
Carbon tetrachloride	1	< 1	< 1	NA	< 1	< 1
Chlorobenzene	50	< 1	< 1	NA	< 1	< 1
Chlorodibromomethane	1	< 1	< 1	NA	< 1	< 1
Chloroethane	5	< 1	< 1	NA	< 1	< 1
Chloroform	70	< 1	< 1	NA	< 1	< 1
Cis-1,2-Dichloroethene	70	< 1	< 1	NA	< 1	< 1
Cis-1,3-Dichloropropene	1	< 1	< 1	NA	< 1	< 1
Cymene	100	< 1	< 1	NA	< 1	< 1
Dichlorodifluoromethane	1,000	< 1	< 1	NA	< 1	< 1
Ethyl benzene	700	< 1	< 1	NA	< 1	< 1
Hexachlorobutadiene	1	< 1	< 1	NA	< 1	< 1
Isopropylbenzene	700	< 1	< 1	NA	< 1	< 1
Meta/Para Xylene	1,000	< 2	< 2	NA	< 2	< 2
Methyl bromide	10	< 1	< 1	NA	< 1	< 1
Methyl butyl ketone	300	< 5	< 5	NA	< 5	< 5
Methyl chloride	100	< 1	< 1	NA	< 1	< 1
Methyl ethyl ketone	300	< 1	< 1	NA	< 1	< 1
Methyl isobutyl ketone	100	< 1	< 1	NA	< 1	< 1
Methyl Tertbutyl Ether	70	< 1	< 1	NA	< 1	< 1

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
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Loc ID	NJ Ground Water Quality Criteria	2567MW05			2567MW06	2567MW07
Sample ID		FTMM-58-GW-2567MW05-9.65	FTMM-58-GW-2567MW105-9	FTMM-58-GW-2567MW05-11	FTMM-58-GW-2567MW06-11.48	FTMM-58-GW-2567MW07-10.99
Sample Date		8/29/2013	8/29/2013	10/21/2016	8/29/2013	8/29/2013
Sample Round		1	1		1	1
Filtered		Total	Total	Total	Total	Total
Methylene chloride	3	< 1	< 1	NA	< 1	< 1
Naphthalene	300	< 1	< 1	NA	< 1	< 1
n-Butylbenzene	100	< 1	< 1	NA	< 1	< 1
Ortho Xylene	1,000	< 1	< 1	NA	< 1	< 1
p-Chlorotoluene	100	< 1	< 1	NA	< 1	< 1
Propylbenzene	100	< 1	< 1	NA	< 1	< 1
sec-Butylbenzene	100	< 1	< 1	NA	< 1	< 1
Styrene	100	< 1	< 1	NA	< 1	< 1
Tert Butyl Alcohol	100	NA	NA	< 8.3	NA	NA
tert-Butylbenzene	100	< 1	< 1	NA	< 1	< 1
Tetrachloroethene	1	< 1	< 1	NA	< 1	< 1
Toluene	600	< 1	< 1	NA	< 1	< 1
Total Xylenes	1,000	< 3	< 3	NA	< 3	< 3
Trans-1,2-Dichloroethene	100	< 1	< 1	NA	< 1	< 1
Trans-1,3-Dichloropropene	1	< 1	< 1	NA	< 1	< 1
Trichloroethene	1	< 1	< 1	NA	< 1	< 1
Trichlorofluoromethane	2,000	< 1	< 1	NA	< 1	< 1
Vinyl chloride	1	< 1	< 1	NA	< 1	< 1
TIC VOCs (µg/l)						
Total TIC, Volatile	500	ND	ND	NA	ND	ND
TIC VOCs (µg/l)						
TIC Unknown	NLE	NA	NA	NA	NA	NA

Table 3
Groundwater Sampling Results - 2013, 2014, 2015, and 2016
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Footnote:
1) All historical data collected prior to 2013 are reported as provided by others.
2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.
3) NLE = no limit established.
4) ND = not detected in any background sample, no background concentration available.
5) Bold chemical detection.
6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.
B = Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.
R = Rejected, data validation rejected the results.
U = non-detect, i.e. not detected at or above this value.
U-DL = Elevated sample detection limit due to difficult sample matrix.
U-ND = Analyte not detected in sample, but no detection or reporting limit provided.
E (or ER) = Estimated result.
J = estimated detected value due to a concentration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.
D = Results from dilution of sample.
J-DL = Elevated sample detection limit due to difficult sample matrix.
JN = Tentatively identified compound, estimated concentration.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.
- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria ####

NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

NJDEP Interim Generic GWQC values are presented for the NJ GWQS where there is not a XXXXX or a NJDEP Interim Specific GWQC. Available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

10) Criteria action level source document and web address.
- The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010
http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf

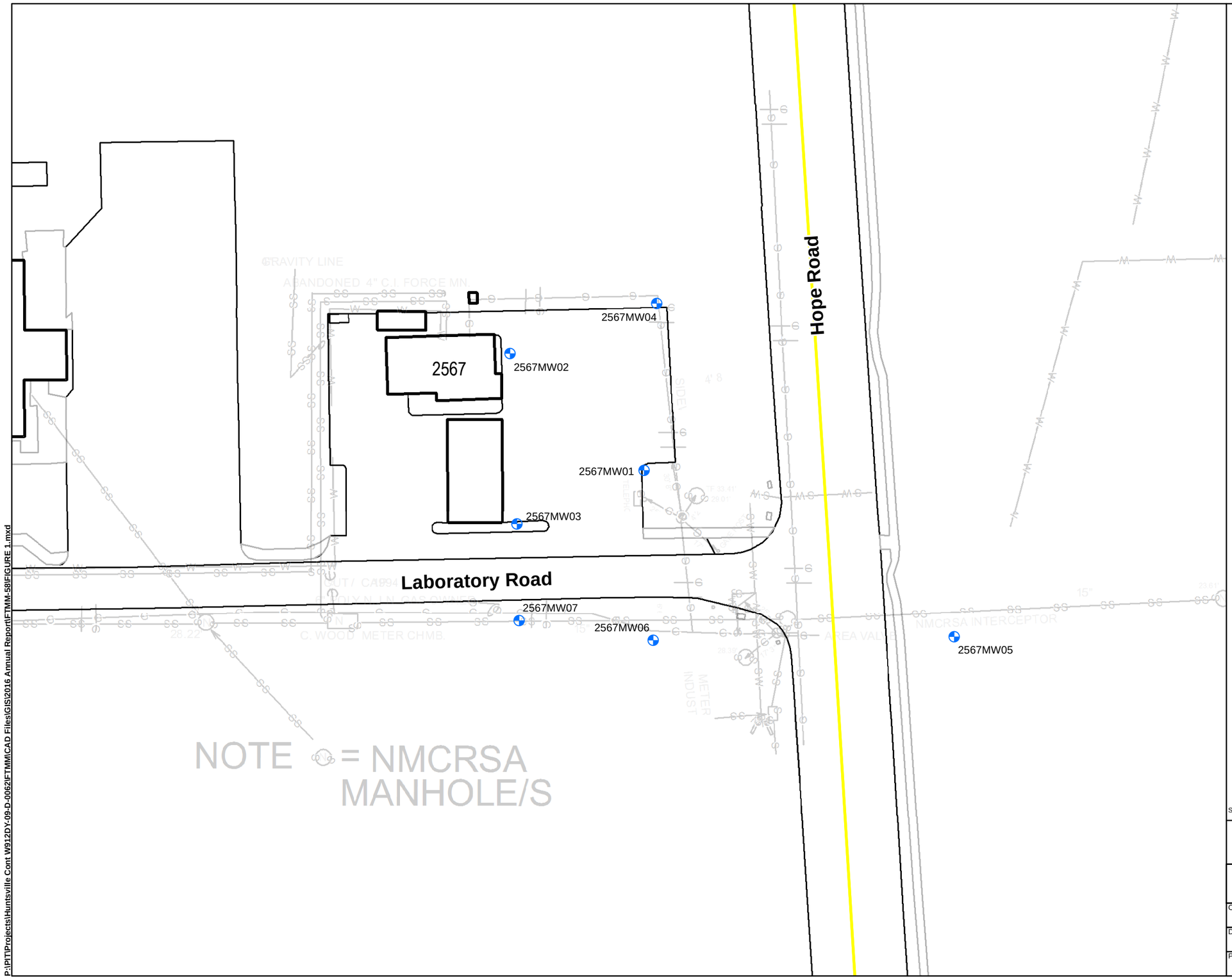
Table 4
Review of Historical Groundwater Sampling Results
Site FTMM-58 Building 2567 UST Gasoline
Annual (Fourth Quarter) 2016 Groundwater Sampling Report
Fort Monmouth, New Jersey

Site Name/ Well ID	Interpretation of Historical and 2016 Results [1]			2016 Evaluation				Retain Analyte/Well (Yes or No)	Rationale
	Chem Class / Analyte	Does it Exceed NJDEP GWQS (Yes or No) (If Yes, identify compound)	Do Metals Exceed FTMM Background Concentration (Yes or No) (If Yes, identify Metal)	Seasonal Effect?[2] (Y/N)	Anomaly? (Y/N)	Exceedance part of overall trend? (Y/N)	Well needed for sentinel purposes? (Y/N)		
FTMM-58, B2567									
2567MW01	VOC	TBA	N/A	N/A	N/A	N/A	NO	Yes	
2567MW03		NO	N/A	N/A	N/A	N/A	NO	NO	
2567MW05		NO	N/A	N/A	N/A	N/A	Yes	Yes	Well will be retained as a downgradient well.

Notes

1. Has any of the analyte compounds exceeded the NJDEP GWQS in the 2015 data and the 4 previous quarterly data rounds or 3 previous annual rounds?
   a. If yes then keep analyte in LTM list
   b. If no then remove this analyte from LTM list
   c. a and b above may be occasionally superseded on a case-by-case basis, depending on site conditions.
2. Has any of the analyte compounds exceeded the NJDEP GWQS seasonally (winter spring vs. summer fall)?
3. TBA - Tert-butyl-alcohol
4. N/A - Not applicable
5. Per the 2/5/15 NJDEP approval letter of the Final 2013 Baseline Groundwater Report, groundwater monitoring wells 2567MW02, 2567MW04, 2567MW05, 2567MW06 and 2567MW07 were removed from the long-term monitoring sampling program and the volatile organic compound list has been reduced to TBA only.
6. Per the 11/14/16 NJDEP approval letter of the Final Annual (Fourth Quarter) 2015 Groundwater Sampling Report, groundwater monitoring well 2567MW03 was removed from the long-term monitoring sampling program following the 4th quarter 2016 sampling event.

FIGURES



LEGEND:

- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

NOTE:

Monitoring wells installed in 2017 not shown.

DRAFT

N

1 inch = 50 feet

0 25 50 100 Feet

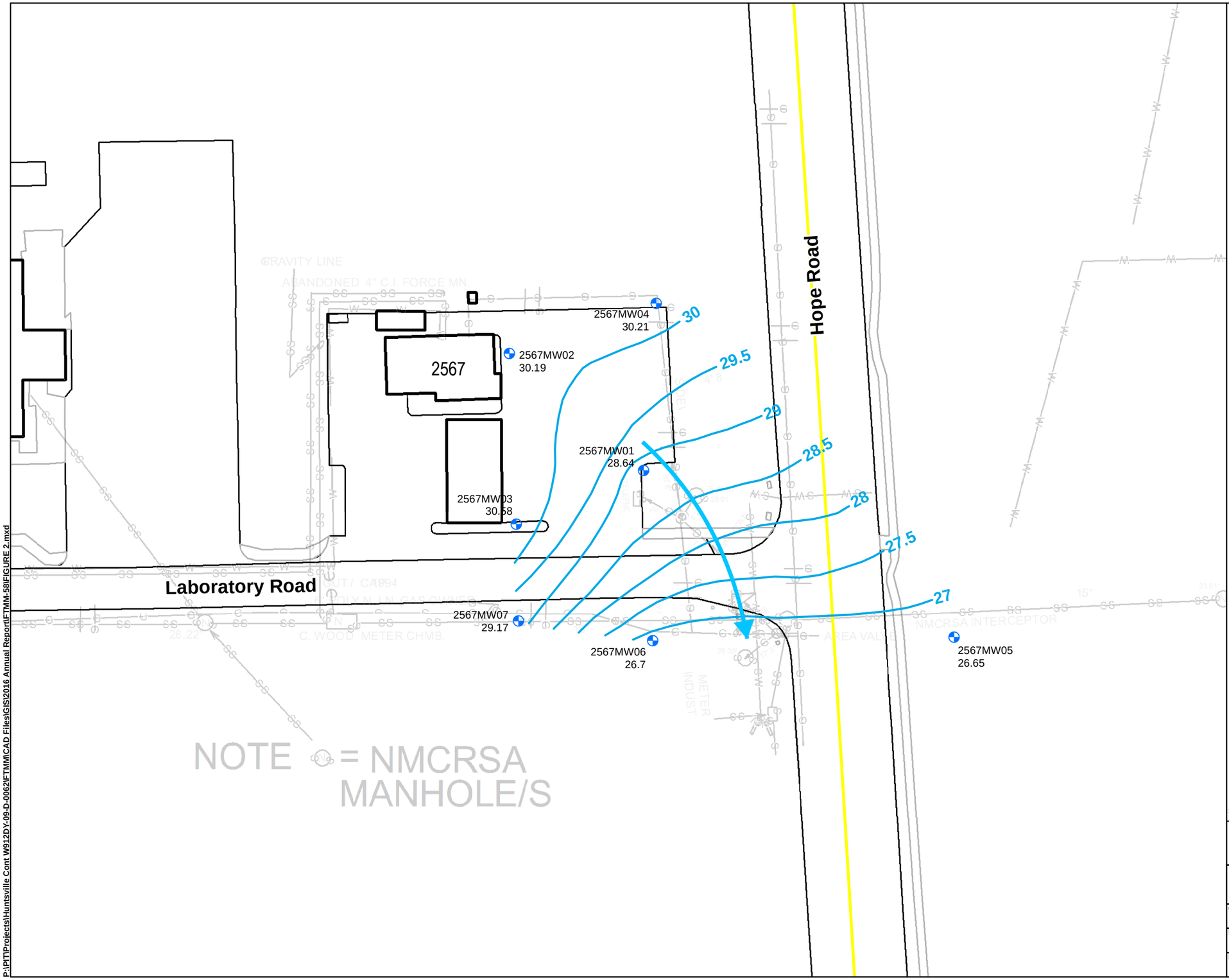
Source: FTMM Supplied CAD

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**

LAYOUT OF FTMM-58
BUILDING 2567 UST GASOLINE

CREATED BY: RR	REVIEWED BY: KF
DATE: MAY. 2017	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-03000	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2016 Annual Report\FTMM-58\FIGURE 1.mxd



LEGEND:

- Shallow Monitoring Well
- Municipal Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Inferred Groundwater Flow Direction
- Groundwater Elevation Contour

DRAFT

N

1 inch = 50 feet

0 25 50 100 Feet

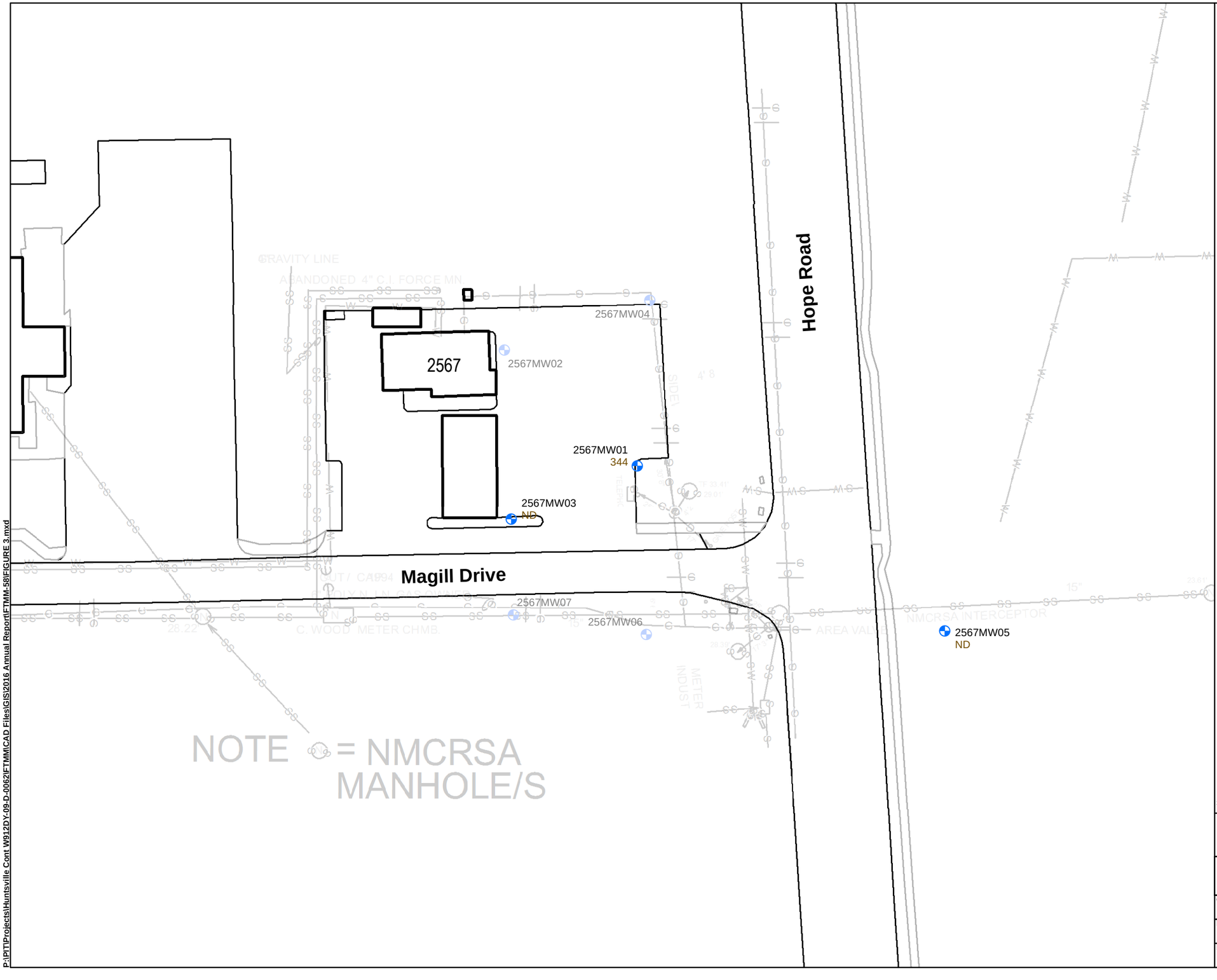
Source: FTMM Supplied CAD

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

FTMM-58 SHALLOW GROUNDWATER CONTOURS - OCTOBER 21, 2016

CREATED BY: RR	REVIEWED BY: CM
DATE: DEC. 2016	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-01000	FILE: FIGURE 2.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2016 Annual Report\FTMM-58\FIGURE 2.mxd



LEGEND:

- Shallow Monitoring Well
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

NOTES:

1. All concentrations are in ug/L.
2. Only those compounds with concentrations that exceed the NJDEP groundwater quality standard (GWQS) are shown on the figure.
3. Wells without values were not sampled during the 2016 Annual Sampling Event.

EXPLANATION:

2567MW03 ——— Sample ID
NA ——— Tert Butyl Alcohol Concentration

J - Estimated Value
JN - Tentatively Identified Compound, Estimated Value
ND - Not Detected
NA - Not Analyzed
-- - Compound did not exceed the NJ GWQS this sampling round

Compound	NJDEP GWQS
Tert Butyl Alcohol	100

DRAFT

N

1 inch = 50 feet

0 25 50 100 Feet

Source: FTMM Supplied CAD

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

FTMM-58 CHEMICAL CONSTITUENTS ABOVE NJDEP GWQS 2016 ANNUAL SAMPLING EVENT

CREATED BY: RR	REVIEWED BY: CM
DATE: DEC. 2016	FIGURE NUMBER: FIGURE 3
PROJECT NUMBER: 748810-03000	FILE: FIGURE 3.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2016 Annual Report\FTMM-58\FIGURE 3.mxd

ATTACHMENTS

Attachment A LFPS Field Sheets

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET 1 OF 1

PROJECT SITE/LOCATION: FTMM-55 | CONSULTING FIRM: PARSONS
DATE: 10/21/16 | FIELD PERSONNEL: D. Lobos
WEATHER: 65°F Heavy Rain

MONITOR WELL #: 256TMW01 | WELL DEPTH: 13 feet | PUMP INTAKE DEPTH: 8.6 ft to TOC
WELL PERMIT #: | WELL DIAMETER: 4 inches | SCREENED/OPEN INTERVAL: 3-13 ft to TOC

PID/FID READINGS:
BACKGROUND: 0.0 ppm
BENEATH OUTER CAP: 0.0 ppm
BENEATH INNER CAP: 0.0 ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 4.17 ft to TOC
DEPTH TO PRODUCT: — ft to TOC ; PRODUCT THICKNESS: — ft
MAKE/MODEL OF PUMP: 1.75" QED Sample Pro

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6920
SERIAL #: 11C001407
TEMP. CORRECTION VALUE: -0.48

Time	PURGING	SAMPLING	pH (units) READING	pH (units) CHANGE	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY (mS/cm) CHANGE	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL (mV) CHANGE	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN (mg/L) CHANGE	TURBIDITY (NTU) READING	TURBIDITY (NTU) CHANGE	TEMPERATURE (degrees C) READING	TEMPERATURE (degrees C) CHANGE	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
0920	X		6.58		1.050		-71.1		0.37		23.9		20.45		250	4.17
0925	X		6.67		1.017		-59.0		0.32		12.3		20.51		250	4.29
0930	X		6.69		1.015		-58.6		0.61		10.5		20.54		250	4.48
0935	X		6.69		1.011		-73.6		0.48		9.0		20.57		200	4.41
0940	X		6.69		1.008		-73.7		0.44		8.5		20.55		200	4.35
0945	X		6.69		1.007		-73.6		0.43		8.3		20.57		200	4.33
0950		X	6.70		1.005		-74.1		0.41		8.0		20.54		200	4.33

SAMPLING INFORMATION:
Sample ID: FTMM-55-GW-256TMW01-8.6
Sample Time: 0950
Comments: —

QA/QC INFORMATION:
Duplicate Collected?: No
MS/MSD Collected?: No
Filtering?: No

ADDITIONAL OBSERVATIONS/COMMENTS:
Clarity: clear
Odor: none
Other: —

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
pH: ± 0.1 units ; Spec. Conductivity: ± 3% ; ORP: ± 10mV ; D.O.: ± 10% ; Turbidity: ± 10% (or <1 NTU) ; Temperature: ± 3%. ; Water Level Change: < 0.3 ft

ANALYST NAME & SIGNATURE: D. Lobos — DATE: 10/21/16
REVIEWER NAME & SIGNATURE: — DATE:

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET 1 OF 1

PROJECT SITE/LOCATION: SWMU-58
DATE: 10/21/16
WEATHER: 65° Heavy Rain
CONSULTING FIRM: PARSONS
FIELD PERSONNEL: J. Lalzos

MONITOR WELL #: 58TMW03
WELL PERMIT #:
WELL DEPTH: 13.00 feet
WELL DIAMETER: 4 inches
PUMP INTAKE DEPTH: 8 ft to TOC
SCREENED/OPEN INTERVAL: 3-13 ft to TOC

PID/FID READINGS:
BACKGROUND: 0.0 ppm
BENEATH OUTER CAP: 0.0 ppm
BENEATH INNER CAP: 0.0 ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 2.81 ft to TOC
DEPTH TO PRODUCT: — ft to TOC ; PRODUCT THICKNESS: — ft
MAKE/MODEL OF PUMP: 1.75" QED Sample Pro

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6920
SERIAL #: 16001401
TEMP. CORRECTION VALUE: -0.08

Time	PURGING	SAMPLING	pH (units) READING	pH (units) CHANGE	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY (mS/cm) CHANGE	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL (mV) CHANGE	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN (mg/L) CHANGE	TURBIDITY (NTU) READING	TURBIDITY (NTU) CHANGE	TEMPERATURE (degrees C) READING	TEMPERATURE (degrees C) CHANGE	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
1010	X		6.61		1.836		-66.3		1.96		<7.6		20.11		200	2.87
1015	X		6.61		1.952		-76.4		0.68		46.7		20.13		200	3.16
1020	X		6.61		1.960		-80.9		0.54		34.0		20.20		150	3.20
1025	X		6.61		1.957		-81.3		0.48		30.4		20.21		150	3.84
1030	X		6.60		1.943		-81.3		0.45		32.1		20.24		150	3.84
1035		X	6.60		1.939		-80.0		0.43		29.6		20.29		150	3.84

SAMPLING INFORMATION:
Sample ID: SWMU-58-GW-0567MW03-8
Sample Time: 1035
Comments: Rain water in casing.

QA/QC INFORMATION:
Duplicate Collected?: No
MS/MSD Collected?: No
Filtering?: No

ADDITIONAL OBSERVATIONS/COMMENTS:
Clarity: slightly cloudy
Odor: none
Other: rain water in well casing when gauged.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
pH: ± 0.1 units ; Spec. Conductivity: ± 3% ; ORP: ± 10mV ; D.O.: ± 10% ; Turbidity: ± 10% (or <1 NTU) ; Temperature: ± 3%. ; Water Level Change: < 0.3 ft

ANALYST NAME & SIGNATURE: J. Lalzos
DATE: 10/21/16

REVIEWER NAME & SIGNATURE:
DATE:

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET ____ OF ____

PROJECT SITE/LOCATION: FTMM-58 | CONSULTING FIRM: PARSONS

DATE: 10/26/16 | FIELD PERSONNEL: ____

WEATHER: Rain 60°F

MONITOR WELL #: 2567MW05 | WELL DEPTH: ____ feet | PUMP INTAKE DEPTH: ____ ft to TOC

WELL PERMIT #: ____ | WELL DIAMETER: 4 inches | SCREENED/OPEN INTERVAL: 5-15 ft to TOC

PID/FID READINGS:
BACKGROUND: 0 ppm
BENEATH OUTER CAP: 6 ppm
BENEATH INNER CAP: 0 ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 7.25 ft to TOC
DEPTH TO PRODUCT: — ft to TOC ; PRODUCT THICKNESS: — ft
MAKE/MODEL OF PUMP: QED Sample Pro

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: ____
SERIAL #: ____
TEMP. CORRECTION VALUE: ____

Time	PURGING	SAMPLING	pH (units) READING	pH (units) CHANGE	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY (mS/cm) CHANGE	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL (mV) CHANGE	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN (mg/L) CHANGE	TURBIDITY (NTU) READING	TURBIDITY (NTU) CHANGE	TEMPERATURE (degrees C) READING	TEMPERATURE (degrees C) CHANGE	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
0930	X		5.56		0.238		160.7		0.83		109.4		18.65		200	7.51
0935	X		5.20		0.232		178.0		0.26		86.7		18.05		200	7.65
0940	X		5.40		0.231		182.6		0.2		76.2		17.98		200	7.84
0945	X		5.29		0.230		184.2		2.0		56.9		18.01		200	8.04
0950	X		5.34		0.230		185.3		2.34		47.1		18.22		150	8.16
0955	X		5.34		0.231		189.6		2.30		44.7		18.35		150	8.28
1000	X		5.33		0.231		192.2		2.29		45.4		18.46		150	8.40
1005		X	5.33		0.231		194.0		2.25		46.3		18.50		150	8.53

SAMPLING INFORMATION:
Sample ID: FTMM-58-GW-2567MW05-
Sample Time:
Comments:

QA/QC INFORMATION:
Duplicate Collected?:
MS/MSD Collected?:
Filtering?:

ADDITIONAL OBSERVATIONS/COMMENTS:
Clarity:
Odor:
Other:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
pH: ± 0.1 units ; Spec. Conductivity: ± 3% ; ORP: ± 10mV ; D.O.: ± 10% ; Turbidity: ± 10% (or <1 NTU) ; Temperature: ± 3%. ; Water Level Change: < 0.3 ft

ANALYST NAME & SIGNATURE: ____ DATE: ____

REVIEWER NAME & SIGNATURE: ____ DATE: ____

APPENDIX C
Soil Boring Logs and Well Construction Details

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4
DATE: 3/29/16
TIME: 0955
MEAS. FROM: BGS

INSPECTOR: CW, JM
DRILLER: JOE
WEATHER: 45°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/29/16 0950
DATE/TIME FINISH: 3/29/16 1005
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB01
LOCATION DESCRIPTION: PARCEL 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60"/20"	20.8	0-2" concrete		
	0.5-1.0			22.9	2-20" grey/Brown, moist, mf SAND and f gravel, trace silt		slight ODor
1				12.6			
				N/A	20-60" No recovery		
2						II	
3							
							▽
4							
				↓			
5			60"/60	193	0-12" Saturated, grey, loose, MF SAND, trace silt, trace f gravel		Strong ODOR
				211			
6	6.0-6.5			1601			
				975	12"-60" Saturated, grey, loose MF SAND, little silt	II	
7				320			
				12.4			
8				9.7			
				15.2			
9				3.5			
				2.2			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4'
DATE: 3/29/16
TIME: 0955
MEAS. FROM: Bag

INSPECTOR: CW/JM
DRILLER: JOE BAFNAK
WEATHER: 45°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/29/16 0950
DATE/TIME FINISH: 3/29/16 1005
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-01
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/50	32.1	0-10" No Recovery		Slight odor
				4.2	10"-33" wet, grey, loose, MF SAND, little Silt		
1				2.1			
				9.8			
2				3.6	33"-60" wet, dense, dark grey F SAND AND SILT, Mica present	II	No odor
				2.1			
3				2.8			
	13.5-14			0			
4				0			
				0			
5					End of Boring @ 15'		
6							
7							
8							
9							
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS Page 1 of 2

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4' BGS
DATE: 3/29/16
TIME: 0845
MEAS. FROM: BGS

INSPECTOR: CW/JM
DRILLER: JOE
WEATHER: 40°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/29/16 0835
DATE/TIME FINISH: 3/29/16 0930
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB02
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0	SS-SB02-0.5-1.0		60/12"	0	0-2" Concrete		
				236	2"-12" Grey, Moist, MF SAND and MF gravel, trace silt		
1				N/A	12"-60" No Recovery		Slight odor
2							
3							▽
4							
5				2.8	0-14" Saturated, grey, loose, MF SAND trace silt, trace F gravel		
				3.7			Slight odor
6				24.6	14"-60" Saturated, grey, loose, MF SAND, little silt	TT	
				68.7			
7				211			
				236			
8				186			
				199			
9				236			
	9.5-10.0			835			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4' Bgs
DATE: 3/29/16
TIME: 0845
MEAS. FROM: Bgs

INSPECTOR: CW/JM
DRILLER: SOE
WEATHER: 45°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/29/16 0835
DATE/TIME FINISH: 3/29/16 0938
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB02
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
1 0			60/42"	88	0-18" No Recovery	II	Slight odor
				386	18"-26" Wet, grey, loose, mf SAND, little silt		
1 1				397			
				569	26"-60" Wet, Dense, Dark grey f SAND and SILT, Mich present		
1 2				464			
				484			
1 3				501			
				687			
1 4				202			
				224			
1 5			60/48"	200	0-12" No Recovery	II	Slight odor
				225	12-18" Wet, Dense, Dark grey f SAND and SILT, Mich present		
1 6				186			
				147	18-48" Wet, Dense, Black f SAND and SILT, Mich present		
1 7				20.8			
				37.2			
1 8				2.2			No odor
				8.7			
1 9				0			
	19.5-20.0			0			
2 0					End of Boring @ 20'		

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)		
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15	
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30	
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30	

and – 35-50%
some – 20-35%
little – 10-20%
trace – <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748610-

INSPECTOR: CW / JM
DRILLER: JOE BARNAK
WEATHER: 45°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/29/16 1020
DATE/TIME FINISH: 3/29/16 1040
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-03
LOCATION DESCRIPTION: PARCEL 34
LOCATION PLAN: Oceanport, New Jersey

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~1.5'
DATE: 3/29/16
TIME: 1028
MEAS. FROM: BGS

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/34	0	0-3" Asphalt		
	0.5-1.0			0	3-18" Brist, ~~Maroon~~ Brown, MF SAND, some f gravel		▽
1	1.0-1.5			0			
				0	18"-38" saturated, grey f gravel, some mf sand	II	
2				0			
				0			
3				0			
				0			
4				0			
				0			
5			60/54	0	0-6" No recovery		
				0	6"-17" saturated, grey f gravel, some MF SAND		
6				0			
				0	17"-45" wet, grey, loose, mf SAND, little silt	II	
7				0			
				0	45"-60" wet, dense, Black, F SAND and SILT, mica present		
8				0			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4.5'
DATE: 3/24/16
TIME: 1055
MEAS. FROM:

INSPECTOR: CW, JM
DRILLER: JOE BARNABE
WEATHER: 45°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 3/24/16 1050
DATE/TIME FINISH: 3/24/16 1110
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-04
LOCATION DESCRIPTION: PARCEL 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			48/60	0	0-3" Asphalt		
	0.5-1.0			0	3"-16" Brown, moist, loose, MF SAND, trace f gravel		
1				0	16"-48" moist, loose, grey, MF SAND, little silt		
				0			
2				0	wet @ 42.5"	II	
				0			
3				0.8	48-60" No recovery		
				0.4			
4				NA			▽
				NA			
5			60/60	0	0-49" Saturated, grey, loose, MF SAND, little silt		
				0			
6	6-6.5			49.0	49"-60" Wet, Dark grey, M. Dense Fine SAND and SILT, mica present	II	
				0			
7	7-7.5			0			
				0			
8				0			
				0			
9				0			
				0			
10					END OF BORING @ 10'		

Remarks:

Sample Types	Consistency vs. Blowcount / Foot				
S – Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U – Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	some - 20-35%
C – Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A – Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30	trace - <10%
					moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4
DATE: 8/11/16
TIME:
MEAS. FROM:

INSPECTOR: C. Wolson
DRILLER: J. BARNAK
WEATHER: 89°F Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/11/16
DATE/TIME FINISH: 8/11/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-31-SB-05
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-10" Concrete		
					10"-16" light grey, mf, M. Dense SAND, little silt		
1							
2					16"-18" f gravel		
					18"-25" Moist, orange, mf, M. Dense, SAND, trace silt		
3							
	~~3.5-4~~			26.4			
4				50.1	25"-60" Moist, Grey, mf, SAND, some silt, Saturated @ 46"		
				278			
5				656			
				2086	0-13" Wet, Dark grey, f SAND and silt, trace clay - odor		
6	6-6.5			222			
				735			
7				499	13"-60" Saturated, grey, mf SAND, little silt trace f gravel		
	7.5-8			3655			
8				6.9			
				31			
9				52			
				1.1			
10				0.4			

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4
DATE: 8/11/16
TIME:
MEAS. FROM:

INSPECTOR: C. Watson
DRILLER: J. BARNAK
WEATHER: 89°F Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/11/16 1440
DATE/TIME FINISH: 8/11/16 1455
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-49-SD-05
LOCATION DESCRIPTION: Parcel 49
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
10			60/60	36.7	0 – 23" SAA		
				65.8			
11				6.1	23" – 60" moist, Dark grey f SAND and silt, Micah present		
				1.5			
12	12-12.5			0			
				0			
13				0			
				0			
14				0			
				0			
15							
16							
17							
18							
19							
20							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~3
DATE: 8/12/16
TIME:
MEAS. FROM:

INSPECTOR: P. Newtson
DRILLER: J. Babak
WEATHER: 85°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 0900 8/12/16
DATE/TIME FINISH: 0915 8/12/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAF-34-SB-06
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/50	0	~~0-27" Mix~~		
					0-5" Asphalt		
1					5-27" Moist, M. Dense, Mf SAND, little f gravel, trace brick: FILL		
2							
3					27"-50" Pea gravel, No fines		
4							
5			60/60	0	0-60 Pea gravel, saturated No fines		
6							
7							
8							
9							
10							

Remarks: Boring location filled cores w/ pea gravel: Unable to collect a soil sample

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Boring location moved: see other boring log

PARSONS

Page 1 of

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~3.5
DATE: 8/12/16
TIME: 1245
MEAS. FROM: BGS

INSPECTOR: D. WATSON
DRILLER: J. BARNAK
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/12/16 1130
DATE/TIME FINISH: 8/12/16 1145
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-06
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-8" Asphalt		
					8"-15" gravel		
1					15"-23" Moist, orange, mf SAND, trace f gravel		
2					23-25" Dark gray rock frag		
3	3-3.5				25"-60" Moist orange, mf SAND, trace f gravel, trace silt saturated @ 39"		
4							
					40"-44" Saturated, Dark gray f SAND and silt		
5				0	0-10" SAA		
				0	10"-55" Saturated, Dark gray, mf SAND, trace f gravel, trace silt		
6	6-6.5			56.5			
				227			
7				1031	55-60" wet, f SAND and silt, Mica present		
	7.5-8			1226			
8				16.9			
	8.5-9			0			
9				0			
				0			
10				0			

Remarks: NEW location - Approx 10ft towards Hope Road - outside protected AREA

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

INSPECTOR: C. Welton
DRILLER: J. BARNAK
WEATHER: 88°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/12/16 0940
DATE/TIME FINISH: 8/12/16 0950
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-07
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~3.5
DATE: 8/12/16
TIME: 0955
MEAS. FROM: bgs

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/48	0	0-6" Asphalt + Millings 6"-48" moist, M. dense, mt Brown SAND, some rock frags, little Brick, Fill Saturated @ 4½"		
1							
2							
3							
4							
5			60/60	0	0-60" pea gravel, no fines		
6							
7							
8							
9							
10							

Remarks: SAMPLE 3-3.5 (above water table), 6-6.5 sample of gravel - unable to collect

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS Page 1 of _____

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~6.5
DATE: 8/12/16
TIME: 1016
MEAS. FROM:

INSPECTOR: C. Watson
DRILLER: 0945
WEATHER: 0950
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/12/16 0955
DATE/TIME FINISH: 8/12/16 1005
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-18
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/45	0	0-11" Asphalt + millings		
					11"-25" moist, light Brown, mf SAND, trace f gravel		
1							
	1.5-2						
2					25"-36" wet, light Brown/yellow, mf SAND, trace f gravel		
3							
4							
					36"-41" moist, Dark grey, mf		
5			60/60	0	m-dense SAND, some silt		
					0-10" wet, light Brown/yellow, mf SAND, some f gravel		
6	6-6.5						
					10"-16" moist, Dense, f SAND and silt, little clay		
7							
					16"-60 Saturated, M.Dense, mf grey SAND,		
8							
9							
10							

Remarks: * Took sample above first sign of water (2ft) in addition to 6-6.5 sample

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)		
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15	
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30	
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30	

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~2
DATE: 8/12/16
TIME: 1120
MEAS. FROM: BGS

INSPECTOR: P. WATSON
DRILLER: J. BARNAK
WEATHER: 88°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/12/16 1110
DATE/TIME FINISH: 8/12/16 1120
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34-SB-09
LOCATION DESCRIPTION: Parcel 34
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/47	0	0-13" Moist, Brown, mf SAND, little silt		
1					13"-23" wet, light Brown/yellow, mf loose, SAND, trace f gravel		
	1.5-2				23"-36" Saturated, M. Dense, mf, grey SAND, little silt		
2							
3					36"-47" wet, Dark grey, f SAND and silt, trace organics		
4							
5			60/60	0	0-60" Saturated, M. Dense, mf, grey SAND, trace f gravel, trace silt		
6	6-6.5						
7							
8							
9							
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and – 35-50%
some – 20-35%
little – 10-20%
trace – <10%
moisture, density, color, gradation

PARSONS

Page 1 of 2

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 2.28
DATE: 5-18-18
TIME: 12:30
MEAS. FROM: TOC

INSPECTOR: Kevin McMillan
DRILLER: Joe
WEATHER: Low 60's / Overcast
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT / HSA
DATE/TIME START: 5-18-18 / 10:40
DATE/TIME FINISH: 5-18-18 / 10:54
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2567MW01R
LOCATION DESCRIPTION: Grass Surface
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				2.1	0-6" - Moist, Dark Brn, Moderate, F-C Silty SAND, Trace F. Subangular gravel		
				0.18			
1				2.2			
				0.6	6"-60" - Moist, M. dense, F-M, light Brn Silty SAND, Trace F. subangular gravel, ~~Faint Rot~~ (W)		
2				3.3			
				0.8			
3				2.7			
				2.0			
4				0.16			
				0.0			
5			60/60	0.0	0-12" - SAA		
				0.10			
6				0.0	12"-60" - Wet, M. dense, Dark Brn - Dark gray, F-M, Silty SAND, little Clay		
				0.0			
7				0.0			
				0.0			
8				0.0			
				0.0			
9				0.0			
				0.0			
10			60/60	0.0			

Remarks: Soil Cuttings Containerized. Soil cuttings Screened with PID in 55 gallon Drum

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 2.28
DATE: 5-18-18
TIME: 12:30
MEAS. FROM: TOC

INSPECTOR: Kevin McMullen
DRILLER: Joe
WEATHER: Low 60s / Overcast
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 5-18-18 / 10:40
DATE/TIME FINISH: 5-18-18 / 10:54
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2567MW01R
LOCATION DESCRIPTION: Grass Surface
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-24" - SAA		
				0			
1				0			
				0			
2			24/24	0			
3							
4					EOB @ 13' bgs		
5					2" MW installed. See well		
					construction for details		
6							
7							
8							
9							
20							

Remarks: Soil cuttings containerized in 55 gallon drum.
Soil Cuttings Screened with PID

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Well Construction Detail (Single Cased - Road Box)

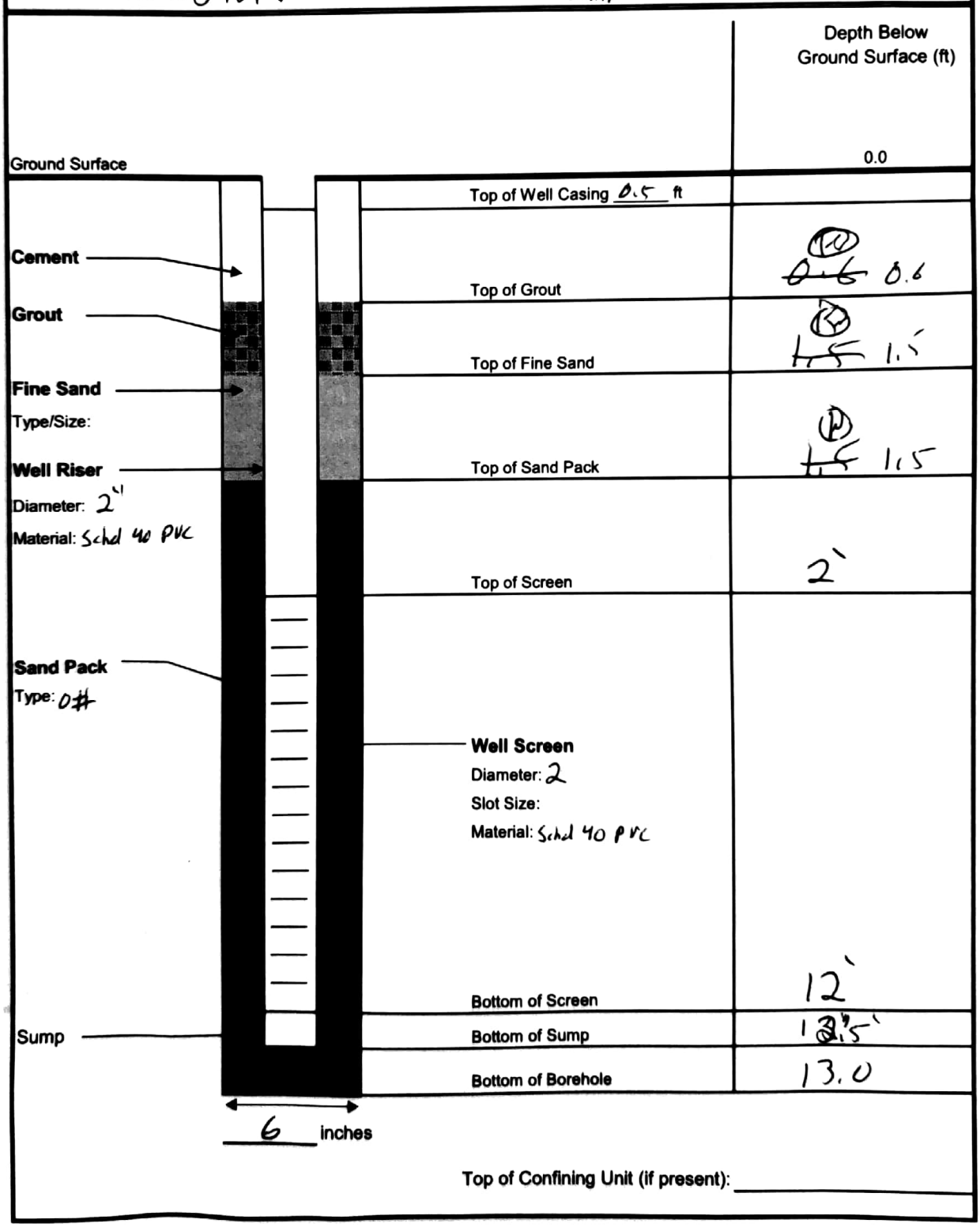
Client: USACE

Well ID: 2567MW01R

NJBWA Permit No.

Date Well Installed: 5-18-19

Location: Oceanport, NJ



PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM
PROJECT LOCATION: Parcel 34
PROJECT NUMBER: 748810-07100
GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE: 1/11/17
TIME:
MEAS. FROM:

INSPECTOR: Kevin McMallen
DRILLER: Nick
WEATHER: Low 40s / Clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe
DATE/TIME START: 01-11-17 / 11:45
DATE/TIME FINISH: 01-11-17 / 12:00
WEIGHT OF HAMMER:
DROP OF HAMMER:
TYPE OF HAMMER:

BORING/WELL NO: 2567-MW-08
LOCATION DESCRIPTION
LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-1' - Concrete		Drilling with 5' Augers
				0	1-3' - ~~Moist~~, Brn, Moist, F-M SAND, Some Blue Stone (Directly underneath Concrete		
1				0			
				0			
2				0			
				0.3	3'-5' - Wet, Brn-Drk Brn, F-M SAND, Some Silt, Trace Blue stone moderate petrol odor		
3				0.8			
				1.3			
4				0.7			▽5'
				1.0	5'-7' - Wet, Drk Brn, F-M SAND Some Silt, Trace Blue Stone Faint petrol odor		
5				1.2			
6					7'-10' - Wet, Drk Gray, F-M SAND Trace Silt, Trace green glauconite, moderate petrol odor		
7							
8							
9							
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense:: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTAM
PROJECT LOCATION: Parcel 34
PROJECT NUMBER: 748810-07100
GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: Keara McMullen
DRILLER: Nick
WEATHER: Low 40's / Clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe
DATE/TIME START: 1-11-17 / 11:45
DATE/TIME FINISH: 1-11-17 / 12:00
WEIGHT OF HAMMER:
DROP OF HAMMER:
TYPE OF HAMMER:

BORING/WELL NO: 2567-MW-08
LOCATION DESCRIPTION
LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
10					10'-14' - Wet, Drk gray-Drk green, F-M SAND, Some Silt, Some glauconite, Slight petrol odor		
11							
12							
13							
14							
15					EOB @ 14' bgs		
16					Backfilled with sand, bentonite, and capped with concrete road box		
17							
18							
19							
20							

Remarks: MW installed to 13' bgs (2' above H2O table, 8' below H2O table). 2.0" Diameter 10' Screen

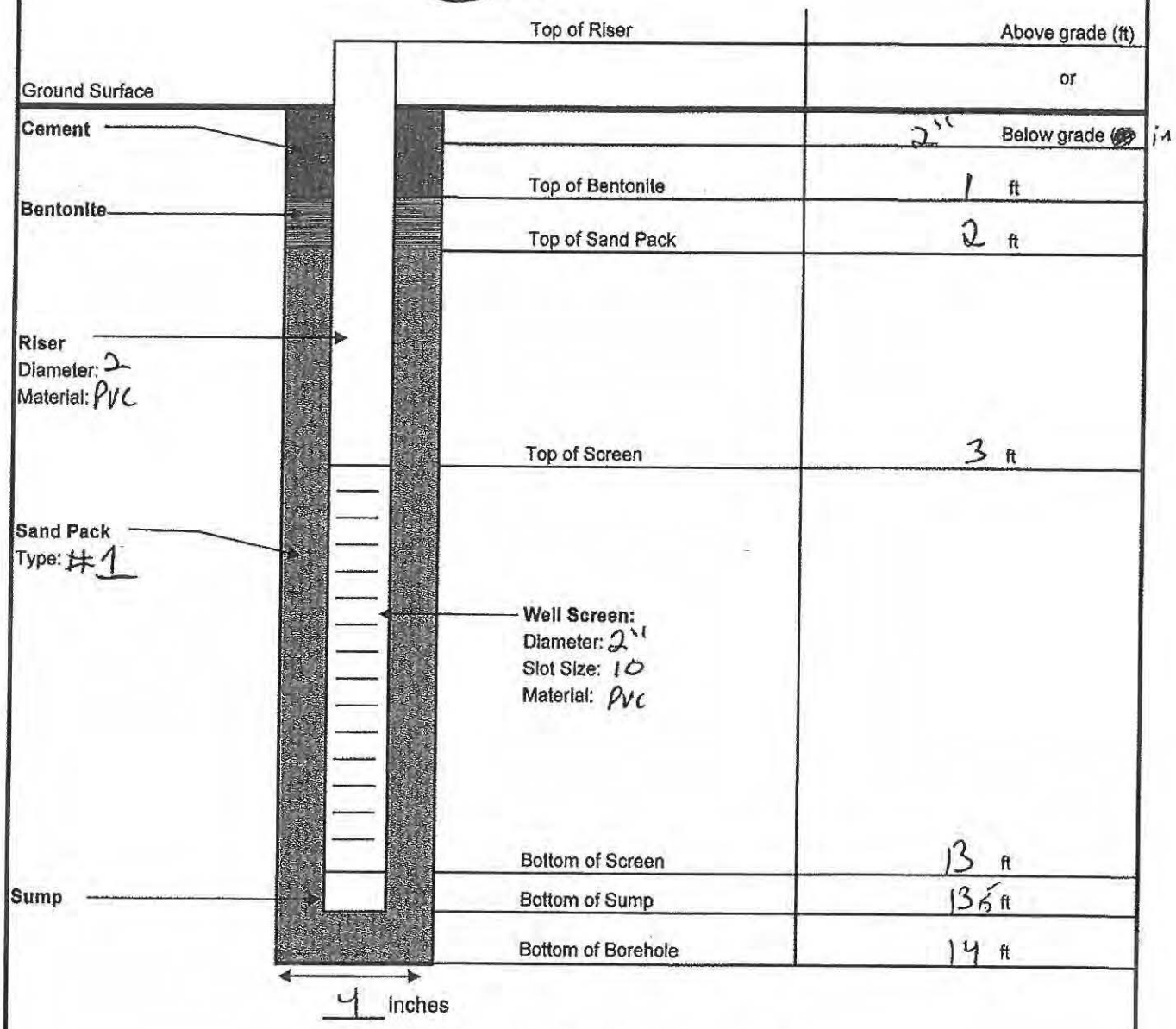
Sample Types	Consistency vs. Blowcount / Foot				
S -- Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U -- Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	some - 20-35%
C -- Rock Core	Loose: 4-10	V. Dense:: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A -- Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30	trace - <10%
					moisture, density, color, gradation

Well Construction Detail

Client: USACE
Project Name/ Location: FTMM / Parcel 34
Project Number: 748810-07100

Well Number: ~~MW~~ 2527-MW-08
Installation Date: 1-11-17
NJ Permit: E201700025

Surface Completion: (Circle one) Protective Casing / Road Box



Top of Confining Unit (if present): _____

PARSONS

Form Well Detail Single Cased.xls

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM
PROJECT LOCATION: Pav 34
PROJECT NUMBER: 748810- 67100

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE: 1/11/17
TIME:
MEAS. FROM:

INSPECTOR: KM
DRILLER: Nicks
WEATHER: 40F clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1008 / 1-11-17
DATE/TIME FINISH: 1020 / 1-11-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2567-MW-09
LOCATION DESCRIPTION:

LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0					surface: grass + soil		drilling w/ 5' augers O.D. 8.25 in
				0	0-1: dry, brown, f-m sand		
1				0			
				0	1-5: moist brown/light brown f-m sand some silt		
2				0			
				0			
3				0			
				0			
4				0			▽ 5 ft
				0			
5				0	5-6: wet, light brown/brown f-m sand, some silt		
				0			
6				0			
				0	6-10: wet, dark green f-m sand, some soft silt, some glauconite		
7				0			
				0			
8				0			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM
PROJECT LOCATION: PAR 34
PROJECT NUMBER: 748610-0710D

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: KM
DRILLER: Nick
WEATHER: 40F clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1008 / 1-11-17
DATE/TIME FINISH: 1020 / 1-11-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2567-MW-09
LOCATION DESCRIPTION
LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
10					10-14: wet, dark green f-m sand, some silt some clay, some glauconite		
11							
12					EOB @ 14 bgs		
13					Backfilled with sand, bentonite placed in 1x1 grout board box. Grout 1' thick		
14							
15							
16							
17							
18							
19							
20							

Remarks: Installed 2.0" MW to 13' bgs (3' Above / ~~Below~~ 10' below H2O Table) 10" Screen

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

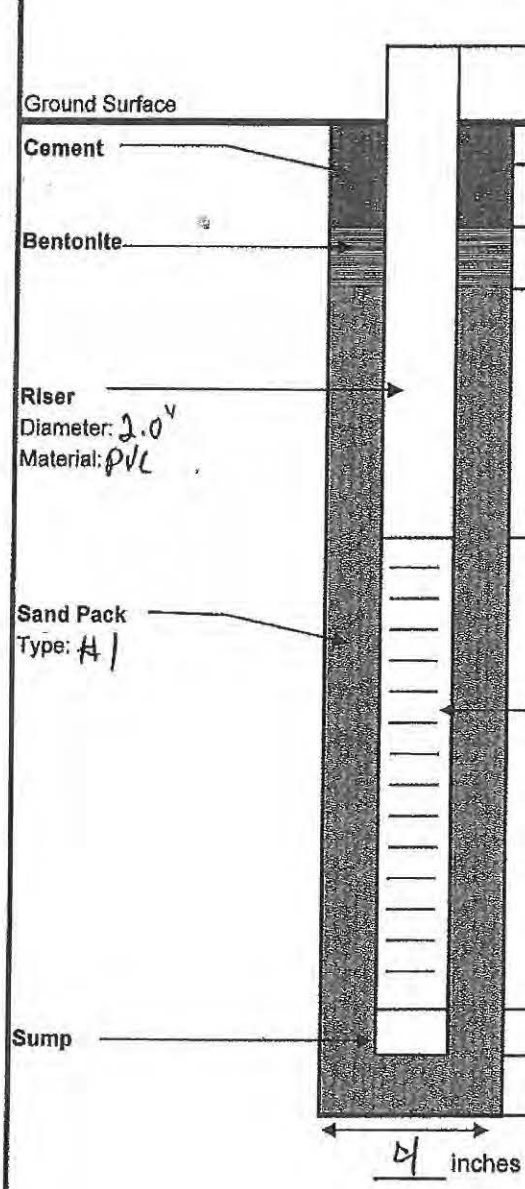
and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Well Construction Detail

Client: USACE
Project Name/ Location: FTMM / Parcel 34
Project Number: 748810-07100

Well Number: 2567-MW-09
Installation Date: 1-11-17
NJ Permit: E201700026

Surface Completion: (Circle one) ~~Protective Casing~~ / Road Box



	Above grade (ft) or Below grade (ft)
Top of Riser	2.8" Above grade
Top of Bentonite	1 ft
Top of Sand Pack	2 ft
Top of Screen	3 ft
Bottom of Screen	13.0 ft
Bottom of Sump	13.5 ft
Bottom of Borehole	14 ft

Top of Confining Unit (if present): _____

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM
PROJECT LOCATION: PAR 34
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 5.0
DATE: 1/11/17
TIME: 1320
MEAS. FROM:

INSPECTOR: KM
DRILLER: MK
WEATHER: 40F clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1300 1/11/17
DATE/TIME FINISH: 1325 1/11/17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2567-MW-10
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-0.5 - asphalt		Installed 2" MW to 13bgs (2ft above + 8ft below water table) 10" screen
				0			
1				8.3	0.5-1 - dry, brown f-m Sand, some sub ang grav moderate petrol odor		
				11.6			
2				10.8	1-5 - wet, light brown/brown f-m sand, some silt moderate petrol odor		
				22.1			
3				18.7			
				14.3			
4				20.1			
				21.0			▽ Silt
5				25.0	5-7 - wet light brown, f-m sand some silt. mod petrol odor		
				33.2			
6				21.0			
				23.0			
7				30.1	7-10 wet, dark green/gray f-m sand some silt, some glauconite		
				33.2			
8				29.8			
				27.1			
9				32.1			
				26.1			
10				54.1			

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM
PROJECT LOCATION: PIER 34
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: KM
DRILLER: NICK
WEATHER: 40 F clear
CONTRACTOR: Cascade
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1300 1/11/17
DATE/TIME FINISH: 1325 1/11/17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: 2507-MW-10
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
10				55.1	10-14 - wet dark green fine sand, some silt some glauconite moderate petroleum odor EOB @ 14' bgs, backfill w/ sand + bentonite		
				48.7			
11				42.1			
				44.0			
12				38.9			
				39.0			
13				38.8			
				40.0			
14							
15					encased in 1' by 1' Concrete road box		
16							
17							
18							
19							
20							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

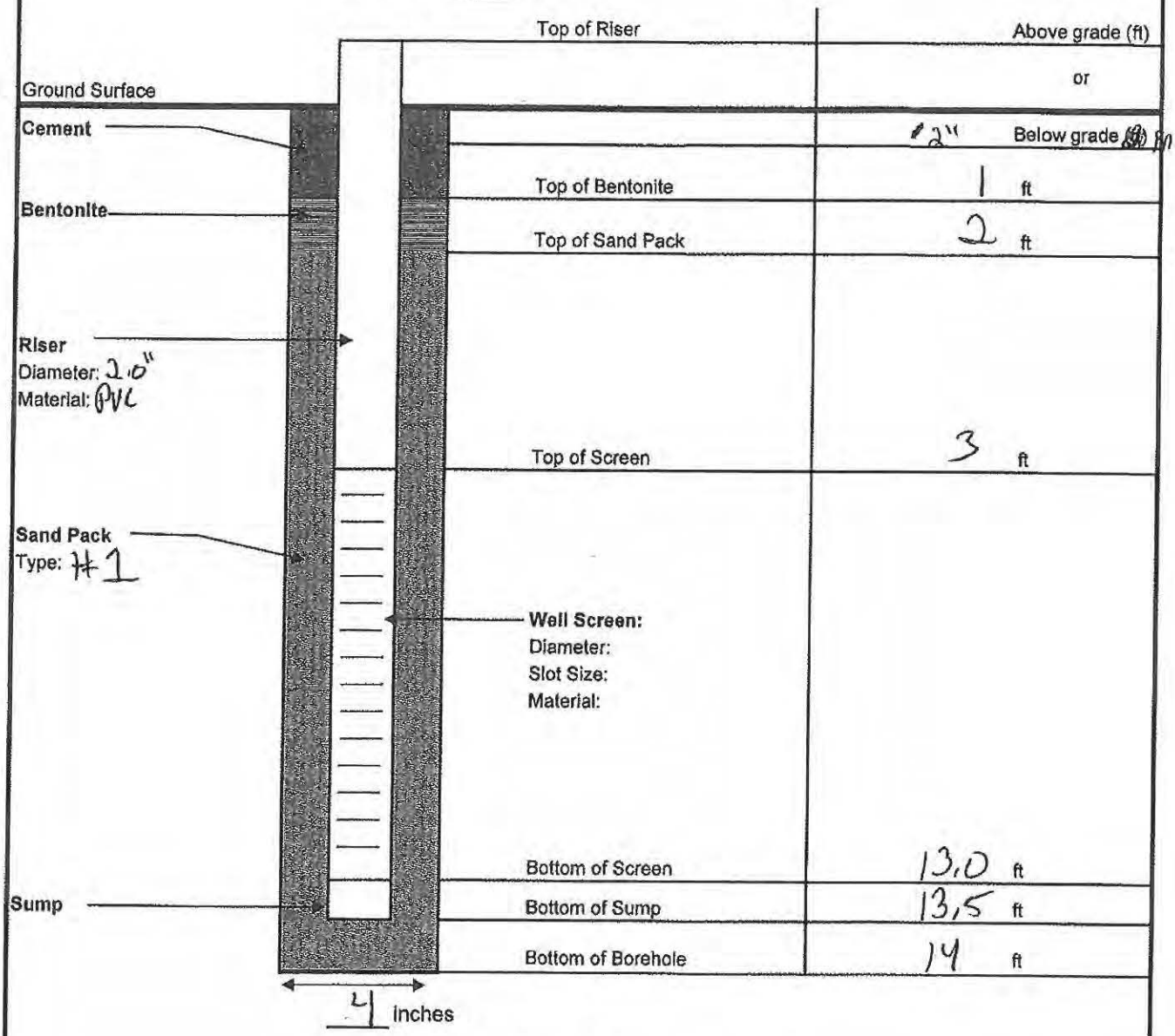
and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Well Construction Detail

Client: USACE
Project Name/ Location: FTMM / Parcel 34
Project Number: 748810-07100

Well Number: 2567-MW-10
Installation Date: 1-11-17
NJ Permit: E201700027

Surface Completion: (Circle one) — Protective Casing: (Road Box)



Top of Confining Unit (if present): _____

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel-34
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 3.0
DATE: 11-9-17
TIME:
MEAS. FROM:

INSPECTOR: TOM HORN
DRILLER: ECDI JOE
WEATHER: OVERCAST 55° F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT / 4¼ AUGERS
DATE/TIME START: 11-9-17 / 1345
DATE/TIME FINISH: 11-9-17 / 1540
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PRR-34-2567-MW11
LOCATION DESCRIPTION
LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0					AUGERED TO 12.5' WET LOOSE DK-GRAY-BROWN CUTTINGS TRANSFERRED TO A DRUM. PID READINGS WERE 0.0 ppm DURING THE INSTALLATION		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

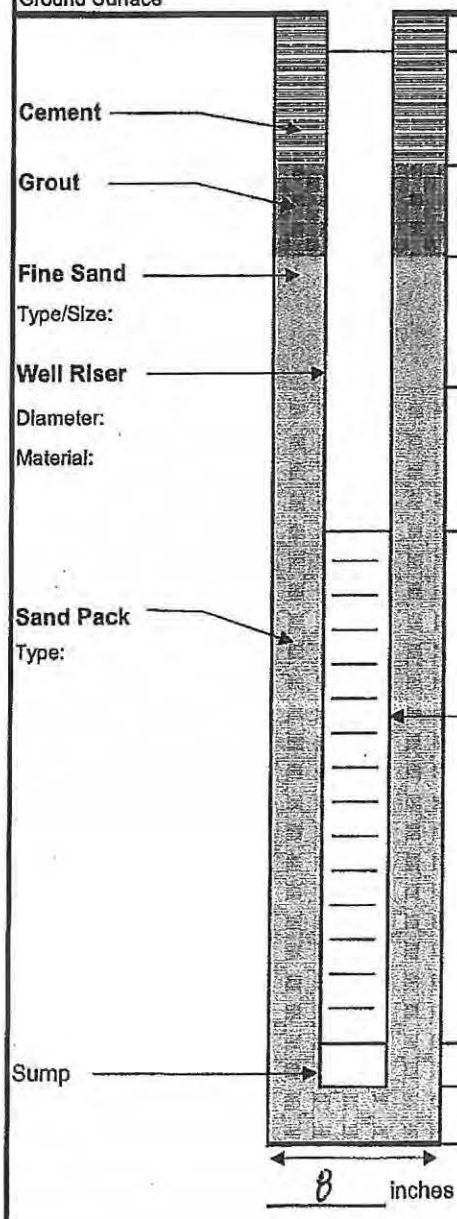
Well Construction Detail (Single Cased - Road Box)

Client: USACE

Well ID: ~~MW-11~~ PAR342567-MW-11
Date Well Installed: 11-9-17

NJBWA Permit No.

Location: PAR 34-2567



	Depth Below Ground Surface (ft)
Ground Surface	0.0
Top of Well Casing _____ ft	0.25
Top of Grout	0.5
Top of Fine Sand	1.0
Top of Sand Pack	1.5
Top of Screen	2.0
Well Screen Diameter: 2" Slot Size: 10-SLOT Material: PVC	
Bottom of Screen	12.0
Bottom of Sump	12.3
Bottom of Borehole	12.5

Top of Confining Unit (if present): _____

APPENDIX D
Field Notes

110 Location Lane Hall Date 10/01/2012

Project / Client Mold Remediation

- collected pre-remediation photos @ 9:01 hrs.
- placed orange dots where mold is recorded.

10/5/12 WR

Location 2567 Date 01/5?/2013

Project / Client T-1 Manning

PSB-1

0-6" - Concrete apron with rebar.

6"-2.5' - Pea gravel

2.5-3.0' - Grey-brown med. grain Sand, slight odor of Petroleum. 0.0 ppm PID reading.

collected samples.

PSB-1 (2.5-3.0) 11:05

3 service products + 1 mixture jar.

PSB-2

0-6" - Concrete with rebar
6"-2.5' - Red gravel
2.5-3.0' - Gray brown med grain Sand, slight petroleum odor, moist throughout.

Collected samples PSB-2 (2.5-3.0') 14:10
3 ounce products and 1 mason jar

PSB-3

0-6" - Concrete with rebar
6"-2.5' - Red gravel
2.5-3.0' - Gray-brown med-grain sand, slight petroleum odor, moist throughout.

Collected samples PSB-3 (2.5-3.0') 15:15
3 ounce products and 1 mason jar

PSB-4

0-5" Asphalt with road base layer
5"-2.5' - Red Gravel
2.5-3.0' - Gray-green glauconitic med to fine sand, no odor, moist throughout.

collected sample PSB-4 (2.5-3.0) 15:35
3 ounce product and 1 mason jar

PSB-5

0-5" - Asphalt with road base layer
5"-2.5' - Red gravel
2.5-3.0" - Gray green glauconitic med to fine sand, no odor, moist throughout.

collected sample PSB-5 (2.5-3.0') 15:50
3 ounce products + 1 mason jar.

PSB-6

0-5": Asphalt with road base/ugr.
5"-2.5'- Pea gravel
2.5-3.0' Grey-green glauconitic med to fine sand, no odor, moist/damp.
collected samples
PSB-6(2.5-3.0)
1610
3 encore products & 1 mixture jar

PSB-7

0-5" Asphalt with road base/ugr
5"-2.5'- Pea gravel
2.5-3.0'- Grey-green glauconitic med to fine sand, no odor, moist/damp.
collected samples
PSB-7(2.5-3.0)
3 encore & 1 mixture jar 16:25

SSSC-5(6-6.5)
08:45
4 sample jars
med fine sand w/ clay concrete chunks to SW ~ 6.5 ft.

SSSC-D(6-6.5)
09:10
4 sample jars
pea gravel in bottom some limestone cobbles. TD ~ 6.5 ft.

SSSC-C(6-6.5)
09:25
med fine sand brown-tan TD ~ 6.5 ft.

SSSC-E(6-6.5)
10:30
med fine sand brown asphalt electric line in bottom

365 min
gal
gal. = ppm

04/10/13

2567 mw02 – 11:20
2567 mw04 – 15:02

04/11/13

2567 mw01 – 09:16
2567 mw06 – 10:33
2567 mw07 – 11:49
2567 mw05 – 15:05
2567 mw03 – 16:15

Sump Notes
355 – dont do (FTMM, broken)
605 – dont do (Redundant grating)

Location _____

Project / Client FTMM PHASE II / USACE

TECH: Gibson, J. McDougal, ECOL (JOE BARNAK,

TASK: PARCEL 34/49 soil sampling

Weather: 40-50ff clear

0730: on-site

0745: Kick off meeting and H+S tailgate

0800: Begin Mob to PARCEL 34

0820: Arrive @ PAR-34

Sample ID	TIME	Analysis
PAR-34-SS-SB-03-0.5-1	1045	VOC's +TICs
PAR-34-SS-SB-03-1-1.5	1055	
PAR-34-SS-SB-02-19.5-20	0945	
PAR-34-SS-SB-02-0.5-1	0850	
PAR-34-SS-SB-02-9.5-10	0930	
PAR-34-SS-SB-01-0.5-1	1000	
PAR-34-SS-SB-01-6-6.5	1010	
PAR-34-SS-SB-01-13.5-14	1025	
PAR-34-SS-SB-04-0.5-1	1115	
PAR-34-SS-SB-04-6-6.5	1120	Dup/MS/MSD
PAR-34-SS-SB-04-7-7.5	1125	

1140: Begin Demob from PARCEL 34

1215: Mob to Parcel 49

1240: Looking @ PARCEL 49 in SS 01, 07, 09, 06 Area - looks like electric was not fully marked out

Location Oceanport, NJ Date 3/24/16

Project / Client FTMM phase II / USACE

Cont: FRANK getting electricians to come mark out the area before we start

SAMPLE ID	TIME	Analysis
PAR-49-SS-SB-07-9.5-10	1600	PAH Extract + Hold
" " 07-3.2-2.7	1540	
" " 07-0.5-1.0	1525	
PAR-49-SS-SB 01-1.7-2.3	1440	PAH
" " 01-0.5-1.0	1400	
" " 01-9.5-10	1455	
~~01 0.5-1.0~~		
~~01 6.6.5~~		
PAR-49-SS-SB01-1.7-2.3	1448	PAH

1605: Begin De Mob

1630: Collect Equipment Blank

1635: Begin cooler packing and COC's + QA/QC of samples

1700: Drillers off site

1730: PARSONS off site to ship

Aug 11 2016

Tech: C. Watson, S. Parakar, CCOI
TASK: SB's @ parcel 49
Weather: 80°F possible storms
0730: on-site H&S tailgate
0755: pack coolers, prep for pick up
0825: MOB to PAR 49
0835: drillers prep rig
0900: Begin Drilling

SAMPLE ID	TIME	Analysis
PAR-49-SB-20-0-0.5	925	PAH
" " -3-3.5	930	
PAR-49-SB-24-6-6.5	945	
PAR-49-SB-26-6-6.5	1000	
" " -13.5-14	1005	
PAR-49-SB-23-6-6.5	1030	
" " -12.5-13	1035	
PAR-49-SB-22-9-9.5	1130	
PAR-49-SB-25-6-6.5	1150	
PAR-49-SB-125-6-6.5	1200	dup
PAR-49-SB-25-8-8.5	1155	MS/MSD/QA split
PAR-49-SB-19-0.5-1	1250	
PAR-49-SB-19-2.5-3	1255	
PAR-49-SB-21-0-0.5	1320	
" " -121-0-0.5	1200	dup
PAR-49-SB-21-3-3.5	1225	MS/MSD/QA split
PAR-49-SB-18-0-0.5	1335	
PAR-49-SB-18-3.5-4	1340	

1215: Lunch

1400: S. Parakar mob to office to drop samples
1405: C. Watson + drillers meet at office
1415: Mob to Parcel 34
1445: start drilling PAR-34-SB-05
1500: sample PAR-34-SB-05-6.0-6.5 (dup)
1510: sample PAR-34-SB-05-7.5-8. (MS/MSD)
1520: sample PAR-34-SB-05-12-12.5 (QA split)
1540: MOB Back to Office
1600: collect EB
1620: prepare COC's, DCQR, prep samples
1630: consult with Frank about PAR-34 and paper work
1700: Off site

Aug 12 2016

Tech: C. Watson, S. Paralkar, EDCI
Task: SB's at parcel 34, sample/install 2 temp wells
Weather: clear, 90 F
0730: On site, H+S tailgate
0755: prep bottleware
0830: Mob to Parcel 34
0850: EDCI prep rig
0900: start drilling SB-06
0905: S. Paralkar sample TMW-05
gauging depth: 4.3 ft
0920: Unable to sample SB-06 because of pea gravel recovery: MOVED 10 ft EAST
1000: pea gravel from 5-10 in SB-7, unable to step out due to fence and pwo for AST. Collect a sample at the "above water table" interval

SAMPLE ID			
PAR-34-SB-06-3-3.5	1200	VOC's	
" " 6-6.5	1205		
" " 7.5-8	1210		
" " 8.5-9	1215		
PAR-34-SB-07-3-3.5	1105		Hold
PAR-34-SB-08-1.5-2	1055		
" " 6-6.5	1015		
PAR-34-SB-09-1.5-2	1130		
" " 6-6.5	1125		

1230: Mob back to office - Begin COC's, coolers packing, clean up, de-mob, etc.

FTMM/Jan 2018 GW 1-19-18 FTMM/Jan 2018 GW

Weather - Low 30's, Clear
Activity - GW sampling
Equipment - 2x YSI, 2x IP, 1x GAL, 8x QED Pumps, Hand tools PPE
Personnel - KM + NL + FA - PARSONS

Activity
0730 - KM onsite, HSE meeting, Calibrate equipment
0800 - Setup + LFPS PAR-34-2567-MW-02
0855 - Sample PAR-34-2567-GW-MW-02-8
0905 - Setup + LFPS PAR-34-2567-MW-03
0945 - Sample PAR-34-2567-GW-MW-03-8
0955 - Setup + LFPS PAR-34-2567-MW-08
1035 - Sample PAR-34-2567-GW-MW-08-8.5
1050 - Setup + LFPS PAR-34-2567-MW-10
1140 - Sample PAR-34-2567-GW-MW-10-8.5
1210 - Setup + LFPS PAR-34-2512-MW-09
1300 - Sample PAR-34-2567-GW-MW-09-8.5
1310 - Setup + LFPS PAR-34-2567-MW-11
1350 - Sample PAR-34-2567-GW-MW-11-7
1405 - Return to PiT to Finish Paperwork and Pack Samples
1400 - Collect EB-20180119
14:38 - Called off PINE equipment Spoke with Tameeka. Conf#: TNR 121
1530 - All offsite

Location FTMM Date 7-30-18

Project / Client GW SAMPLING

0800 MEET AARON FM AND REVIEW AT BLDG 383. WEATHER 70F OVERCAST. DISCUSS HOT TOPICS INCLUDING PLAN REVIEW, INSPECTOR ROUTE, TOXIC PLANTS AND INSECTS, COMMUNICATION AND HEARING AWARENESS AND PPE

0830 CALIBRATE PIDs. RECORD RESULTS TO CALIBRATION SHEET.

PREPARE EQUIPMENT FOR SYNOPTIC EVENT PLANNED FOR TODAY.

REVIEW TASKED SOFTWARE ON RUGGEDIZED UNITS RECEIVED LAST FRIDAY. LAST FRIDAY, F.A. AND TA COLLECTED WATER LEVELS AT 12 WELLS ON REACH 34.

0930 AFM AND TA PERFORM SITE WELL AREAS W/ TA F.A.

1000 TA & AFM COLLECT SYNOPTIC ROUND FROM REMAINING WELLS.

1130 COMPLETE SYNOPTIC ROUND.

LUNCH BREAK

1300 CALIBRATE YSI, COLLECT FB 0430 2018 FOR QC

1330 SETUP/LOAD TRUCKS WITH EQUIPMENT FOR LOW FLOW SAMPLING.

7-30-18

Location FTMM Date 7-30-18

Project / Client GW SAMPLING

1400 DEBRIEF FOR REACH 34

1430 AFM SETS UP AT MW-11, TA SETS UP AT MW-10.

1505 COLLECT FIRST SET OF READINGS FROM BLADDER PUMP SET TO 6.5' IN MW-10. SLIGHT PETROLEUM-LIKE ODOR OBSERVED, SLIGHT SHEEN

1508 AARON FM COLLECTS FIRST SET OF READINGS FROM BLADDER PUMP FROM MW-11.

1533 COLLECT PAR-34-GW-2567AMW10-8.5

1605 COLLECT PAR-34-GW-2567MW11-7.72.

1630 RETURN WITH SAMPLES, PLACE IN REFRIGERATOR FOR PICK-UP TOMORROW.

1645 CLEAN EQUIPMENT. A.FM RETURNS TABLET YSI 650MDS USING HAND SCREEN # 033332 WHICH MALFUNCTIONED WAS TO BE REPLACED. PLACE TAPE ORDER WITH PINK. RINSE THE CONTAINERS PURGE WATER THRU THE G.A.C. BUCKETS.

1700 OFFSITE.

7-30-18

Location FTM m Date 7/31/18

Project / Client GW SAMPLING

0800 FA, AFM AND TH ONSITE.
0815 CALIBRATE PIDS AND YSI UNITS.
0915 COMPLETE YSI CALIBRATION.
0930 LOAD TRUCK WITH EQUIPMENT PREPARE REPORTS FOR EMAIL TO SC/CG.
FA. PREPARED EB-20180731 AND PLACED IN REFRIGERATOR WITH SAMPLES COLLECTED YESTERDAY. PINE DELIVERS REPLACEMENT YSI
0940 HEAD TO PAREE 34 TO CONTINUE SAMPLING.
1000 SET UP AT MW-02. AFM SETS UP AT MW-04.
1112 COLLECT PAR-34-GW-2567mw02-8.0
1135 COLLECT PAR-34-GW-2567 mw04-7.2
1305 COLLECT PAR-34-GW-2567 mw03-8.0
1355 COLLECT PAR-34-GW-2567 mw-07R-8.2
1510 COLLECT PAR-34-GW-2567mw07-9.7
1554 COLLECT PAR-34-GW-2567mw01-8.5
1615 HEAD BACK TO OFFICE TO REVIEW EQUIPMENT AND PREPARE REPORTS
1630 AFM AND TA OFFSITE

Location FTMM Date 8-1-18

Project / Client GW SAMPLING

0800 MEET FA AND A FM ONSITE. WEATHER P. CLOUDY, 90°, HUMID
0815 H&S KICKOFF TOPICS, INCLUDE HEAT STRESS AND REHYDRATION, PPE, TRAFFIC AWARENESS AND TOXIC PLANTS / INSECTS.
0830 CALIBRATE EQUIPMENT
0930 LOAD VEHICLES W/ ITS EQUIPMENT
1000 SET UP AT PARCEL 34
1130 collect PAR-34-GW2567 MW05-9.5
1148 collect PAR-34-GW2567-MW09-8.5
1230 collect EB-20180801
1255 collect PAR-34-GW2567-MW06-10.2
1428 collect PAR-34-GW2567MW08-8.5
1530 TRANSFER CUSTODY OF SAMPLES TO ALS COURIER.
1545 REMOVE TUBING FROM PAR-68-MW-20
1600 MAINTAIN EQUIPMENT. DEPART SITE

8-1-18

APPENDIX E
Laboratory Analytical Reports

(included electronically on the CD of this report)

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

September 12, 2016

Ms. Carla Rodman
Parsons
301 Plainfield Rd
Suite 350
Syracuse, NY 13212

Certificate of Analysis

Revised Report - 9/12/2016 4:04:27 PM - See workorder comment section for explanation

Project Name:	**Ft. Monmouth Soils**	Workorder:	**2167239**
Purchase Order:		Workorder ID:	**PQF032|FTMM**

Dear Ms. Rodman:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 12, 2016.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms.Cris Grill , Ms. Maryanne Kosciewicz , Mr. Cory Mahony

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2167239 PQF032|FTMM

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2167239001	PAR-34-SB-05-6.0-6.5	Solid	8/11/2016 15:00	8/12/2016 21:20	Collected by Client
2167239002	PAR-34-SB-105-6.0-6.5	Solid	8/11/2016 12:00	8/12/2016 21:20	Collected by Client
2167239003	PAR-34-SB-05-7.5-8	Solid	8/11/2016 15:10	8/12/2016 21:20	Collected by Client
2167239004	PAR-34-SB-05-12.0-12.5	Solid	8/11/2016 15:20	8/12/2016 21:20	Collected by Client
2167239005	PAR-34-EB-08112016	Water	8/11/2016 16:00	8/12/2016 21:20	Collected by Client
2167239006	PAR-34-TB-08112016	Water	8/11/2016 00:00	8/12/2016 21:20	Collected by Client

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SAMPLE SUMMARY

Workorder: 2167239 PQF032|FTMM

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 2167239 PQF032|FTMM

Workorder Comments

This report was revised to correct the reporting units for the VOC's. DJM

This work order was modified to update units for the volatile organics library search to mg/kg. AJL 9/12/2016

Sample Comments

Lab ID: 2167239001 **Sample ID:** PAR-34-SB-05-6.0-6.5 **Sample Type:** SAMPLE

The VOMS internal standards and surrogates were recovered outside of the control limits in the primary soil analysis of this sample. The VOMS volatiles analysis was performed at a dilution due to the QC failures.

Lab ID: 2167239002 **Sample ID:** PAR-34-SB-105-6.0-6.5 **Sample Type:** SAMPLE

The VOMS internal standards and surrogates were recovered outside of the control limits in the primary soil analysis of this sample. The VOMS volatiles analysis was performed at a dilution due to the QC failures.

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239001** Date Collected: 8/11/2016 15:00 Matrix: Solid

Sample ID: **PAR-34-SB-05-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	2.2U	U	mg/kg	3.0	2.2	0.95	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Benzene	3.2		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Bromobenzene	0.45U	U	mg/kg	0.60	0.45	0.12	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Bromochloromethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Bromodichloromethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Bromoform	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Bromomethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
2-Butanone	2.2U	U	mg/kg	3.0	2.2	0.95	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
tert-Butyl Alcohol	7.4U	U	mg/kg	14.9	7.4	4.9	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
n-Butylbenzene	3.4		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
tert-Butylbenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
sec-Butylbenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Carbon Tetrachloride	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Chlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Chlorodibromomethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Chloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Chloroform	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Chloromethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
o-Chlorotoluene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
p-Chlorotoluene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2-Dibromo-3-chloropropane	0.0028U	U	mg/kg	0.0056	0.0028	0.0017	SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
1,2-Dibromoethane	0.0011U	U	mg/kg	0.0023	0.0011	0.00056	SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
1,2-Dichlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,3-Dichlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,4-Dichlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Dichlorodifluoromethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1-Dichloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2-Dichloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1-Dichloroethene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
cis-1,2-Dichloroethene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
trans-1,2-Dichloroethene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,3-Dichloropropane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
2,2-Dichloropropane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2-Dichloropropane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1-Dichloropropene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
cis-1,3-Dichloropropene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239001** Date Collected: 8/11/2016 15:00 Matrix: Solid

Sample ID: **PAR-34-SB-05-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Ethylbenzene	38.4		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Hexachlorobutadiene	0.45U	U	mg/kg	0.60	0.45	0.26	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
2-Hexanone	2.2U	U	mg/kg	3.0	2.2	0.95	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Isopropylbenzene	6.7		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
p-Isopropyltoluene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Methyl t-Butyl Ether	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
4-Methyl-2-Pentanone(MIBK)	2.2U	U	mg/kg	3.0	2.2	0.95	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Methylene Chloride	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Naphthalene	7.0		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
n-Propylbenzene	16.0		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Styrene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1,1,2-Tetrachloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1,2,2-Tetrachloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Tetrachloroethene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Toluene	0.75		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2,3-Trichlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2,4-Trichlorobenzene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1,1-Trichloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,1,2-Trichloroethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Trichloroethene	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Trichlorofluoromethane	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2,3-Trichloropropane	1.5U	U	mg/kg	3.0	1.5	0.95	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,2,4-Trimethylbenzene	96.0		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
1,3,5-Trimethylbenzene	26.4		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Vinyl Chloride	0.45U	U	mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
o-Xylene	33.7		mg/kg	0.60	0.45	0.20	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
mp-Xylene	177		mg/kg	1.2	0.89	0.39	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	71 - 136	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
4-Bromofluorobenzene (S)	86.4		%	79 - 119	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Dibromofluoromethane (S)	75.8	7	%	78 - 119	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	
Toluene-d8 (S)	88		%	85 - 116	SW846 8260C	8/11/16	CPK	8/24/16 18:33	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	205	5	%	71 - 136	SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
4-Bromofluorobenzene (S)	81		%	79 - 119	SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239001** Date Collected: 8/11/2016 15:00 Matrix: Solid

Sample ID: **PAR-34-SB-05-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	*Cntr*
Dibromofluoromethane (S)	42.5	4	%	78 - 119			SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Toluene-d8 (S)	113		%	85 - 116			SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Library Search - Volatiles												
2-Pentene, 3-methyl-, (E)-	0.18	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Hexane, 2-methyl-	0.21	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
2H-Pyran-3(4H)-one, dihydro-	0.20	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Hexane, 1-(hexyloxy)-2-methyl-	0.099	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
1-Heptene	0.054	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Cyclopentane, 1,2,3-trimethyl-	0.032	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Heptane, 3-methyl-	0.14	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Ethane, isocyanato-	0.11	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Octane, 2-methyl-	0.0080	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Nonane	0.0048	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Nonane, 2-methyl-	0.0043	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
7-METHYL-1,3,5-CYCLOHEPTATRIEN	0.11	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Benzene, 2-ethyl-1,4-dimethyl-	0.017	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
Benzene, 1,2,4,5-tetramethyl-	0.010	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
1H-Indene, 2,3-dihydro-4-methy	0.0096	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:17	TMP	D
WET CHEMISTRY												
Moisture	19.9		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A
Total Solids	80.1		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239002** Date Collected: 8/11/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-105-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	1.9U	U	mg/kg	2.5	1.9	0.80	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Benzene	2.5		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Bromobenzene	0.37U	U	mg/kg	0.50	0.37	0.10	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Bromochloromethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Bromodichloromethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Bromoform	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Bromomethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
2-Butanone	1.9U	U	mg/kg	2.5	1.9	0.80	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
tert-Butyl Alcohol	6.2U	U	mg/kg	12.5	6.2	4.1	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
n-Butylbenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
tert-Butylbenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
sec-Butylbenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Carbon Tetrachloride	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Chlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Chlorodibromomethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Chloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Chloroform	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Chloromethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
o-Chlorotoluene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
p-Chlorotoluene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2-Dibromo-3-chloropropane	0.0026U	U	mg/kg	0.0051	0.0026	0.0015	SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
1,2-Dibromoethane	0.0010U	U	mg/kg	0.0021	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
1,2-Dichlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,3-Dichlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,4-Dichlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Dichlorodifluoromethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1-Dichloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2-Dichloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1-Dichloroethene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
cis-1,2-Dichloroethene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
trans-1,2-Dichloroethene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,3-Dichloropropane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
2,2-Dichloropropane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2-Dichloropropane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1-Dichloropropene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
cis-1,3-Dichloropropene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239002** Date Collected: 8/11/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-105-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Ethylbenzene	29.4		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Hexachlorobutadiene	0.37U	U	mg/kg	0.50	0.37	0.21	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
2-Hexanone	1.9U	U	mg/kg	2.5	1.9	0.80	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Isopropylbenzene	5.2		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
p-Isopropyltoluene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Methyl t-Butyl Ether	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
4-Methyl-2-Pentanone(MIBK)	1.9U	U	mg/kg	2.5	1.9	0.80	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Methylene Chloride	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Naphthalene	5.1		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
n-Propylbenzene	12.6		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Styrene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1,1,2-Tetrachloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1,2,2-Tetrachloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Tetrachloroethene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Toluene	0.55		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2,3-Trichlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2,4-Trichlorobenzene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1,1-Trichloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,1,2-Trichloroethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Trichloroethene	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Trichlorofluoromethane	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2,3-Trichloropropane	1.2U	U	mg/kg	2.5	1.2	0.80	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,2,4-Trimethylbenzene	75.1		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
1,3,5-Trimethylbenzene	20.8		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Vinyl Chloride	0.37U	U	mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
o-Xylene	22.6		mg/kg	0.50	0.37	0.16	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
mp-Xylene	134		mg/kg	1.0	0.75	0.33	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	146	10	%	71 - 136	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
4-Bromofluorobenzene (S)	84.2		%	79 - 119	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Dibromofluoromethane (S)	77.2	9	%	78 - 119	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	
Toluene-d8 (S)	89.4		%	85 - 116	SW846 8260C	8/11/16	CPK	8/24/16 18:11	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	0	6	%	71 - 136	SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
4-Bromofluorobenzene (S)	74.3	7	%	79 - 119	SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239002** Date Collected: 8/11/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-105-6.0-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	*Cntr*
Dibromofluoromethane (S)	71.5	5	%	78 - 119			SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
Toluene-d8 (S)	94.3		%	85 - 116			SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
Library Search - Volatiles												
Pentane, 2-methyl-	0.032	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
Pentane, 2,3,4-trimethyl-	0.030	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
Benzene, 1-ethyl-2-methyl-	0.029	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 21:40	TMP	D
WET CHEMISTRY												
Moisture	17.7		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A
Total Solids	82.3		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239003** Date Collected: 8/11/2016 15:10 Matrix: Solid

Sample ID: **PAR-34-SB-05-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.24	40,41	mg/kg	0.010	0.0051	0.0033	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Benzene	0.0081	42,43	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Bromobenzene	0.0010U	U,50	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Bromochloromethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Bromodichloromethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Bromoform	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Bromomethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
2-Butanone	0.028		mg/kg	0.010	0.0051	0.0025	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
tert-Butyl Alcohol	0.0051U	U	mg/kg	0.010	0.0051	0.0025	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
n-Butylbenzene	0.0010U	U,69,70	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
tert-Butylbenzene	0.0010U	U,56	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
sec-Butylbenzene	0.0029	59,60	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Carbon Tetrachloride	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Chlorobenzene	0.0010U	U,45	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Chlorodibromomethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Chloroethane	0.0025U	U	mg/kg	0.0051	0.0025	0.0011	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Chloroform	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Chloromethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
o-Chlorotoluene	0.0010U	U,53	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
p-Chlorotoluene	0.0010U	U,54	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2-Dibromo-3-chloropropane	0.0025U	U	mg/kg	0.0051	0.0025	0.0015	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2-Dibromoethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2-Dichlorobenzene	0.0010U	U,67,68	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,3-Dichlorobenzene	0.0010U	U,61,62	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,4-Dichlorobenzene	0.0010U	U,63,64	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Dichlorodifluoromethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1-Dichloroethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2-Dichloroethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1-Dichloroethene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239003** Date Collected: 8/11/2016 15:10 Matrix: Solid

Sample ID: **PAR-34-SB-05-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
cis-1,2-Dichloroethene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
trans-1,2-Dichloroethene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,3-Dichloropropane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
2,2-Dichloropropane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2-Dichloropropane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1-Dichloropropene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
cis-1,3-Dichloropropene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
trans-1,3-Dichloropropene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Ethylbenzene	0.0029		mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Hexachlorobutadiene	0.0010U	U,75,76	mg/kg	0.0051	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
2-Hexanone	0.0051U	U	mg/kg	0.010	0.0051	0.0025	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Isopropylbenzene	0.035	48,49	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
p-Isopropyltoluene	0.00099J	J,65,66	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Methyl t-Butyl Ether	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0051U	U	mg/kg	0.010	0.0051	0.0025	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Methylene Chloride	0.0021		mg/kg	0.0020	0.0010	0.00061	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Naphthalene	0.0017J	J,73,74	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
n-Propylbenzene	0.066	51,52	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Styrene	0.0010U	U,47	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1,1,2-Tetrachloroethane	0.0010U	U,44	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1,2,2-Tetrachloroethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Tetrachloroethene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Toluene	0.0043		mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2,3-Trichlorobenzene	0.0010U	U,77,78	mg/kg	0.0051	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2,4-Trichlorobenzene	0.0010U	U,71,72	mg/kg	0.0051	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1,1-Trichloroethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,1,2-Trichloroethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Trichloroethene	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Trichlorofluoromethane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2,3-Trichloropropane	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
1,2,4-Trimethylbenzene	0.028	57,58	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239003** Date Collected: 8/11/2016 15:10 Matrix: Solid

Sample ID: **PAR-34-SB-05-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
1,3,5-Trimethylbenzene	0.0020J	J,55	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Vinyl Chloride	0.0010U	U	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
o-Xylene	0.0017J	J	mg/kg	0.0020	0.0010	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
mp-Xylene	0.014	46	mg/kg	0.0041	0.0020	0.00051	SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.4		%	71 - 136			SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
4-Bromofluorobenzene (S)	93.5		%	79 - 119			SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Dibromofluoromethane (S)	91.1		%	78 - 119			SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Toluene-d8 (S)	98		%	85 - 116			SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Library Search - Volatiles												
Pentane, 2,4-dimethyl-	0.079	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Cyclopentane, methyl-	0.061	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Hexane, 2-methyl-	0.11	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Hexane, 2,4-dimethyl-	0.12	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Pentane, 3-methyl-	0.035	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Cyclopentane, 1,2,4-trimethyl-	0.027	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Hexane, 2,2,5-trimethyl-	0.22	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Heptane, 2,4-dimethyl-	0.11	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Octane, 3-methyl-	0.070	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Heptane, 2,2,4-trimethyl-	0.023	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Nonane	0.037	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Octane, 2,5-dimethyl-	0.030	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Octane, 3,6-dimethyl-	0.027	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Nonane, 4-methyl-	0.070	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
Decane, 2,2-dimethyl-	0.021	J N	mg/kg				SW846 8260C	8/11/16	TMP	8/23/16 17:50	TMP	D
WET CHEMISTRY												
Moisture	21.6		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A
Total Solids	78.4		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239004** Date Collected: 8/11/2016 15:20 Matrix: Solid

Sample ID: **PAR-34-SB-05-12.0-12.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS												
Acetone	0.041	3	mg/kg	0.013	0.0065	0.0042	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Benzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Bromobenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Bromochloromethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Bromodichloromethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Bromoform	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Bromomethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
2-Butanone	0.0065U	U	mg/kg	0.013	0.0065	0.0033	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
tert-Butyl Alcohol	0.0065U	U	mg/kg	0.013	0.0065	0.0033	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
n-Butylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
tert-Butylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
sec-Butylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Carbon Tetrachloride	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Chlorobenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Chlorodibromomethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Chloroethane	0.0033U	U	mg/kg	0.0065	0.0033	0.0014	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Chloroform	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Chloromethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
o-Chlorotoluene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
p-Chlorotoluene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2-Dibromo-3-chloropropane	0.0033U	U	mg/kg	0.0065	0.0033	0.0020	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2-Dibromoethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2-Dichlorobenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,3-Dichlorobenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,4-Dichlorobenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Dichlorodifluoromethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1-Dichloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2-Dichloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1-Dichloroethene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
cis-1,2-Dichloroethene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
trans-1,2-Dichloroethene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,3-Dichloropropane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
2,2-Dichloropropane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2-Dichloropropane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1-Dichloropropene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
cis-1,3-Dichloropropene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239004** Date Collected: 8/11/2016 15:20 Matrix: Solid

Sample ID: **PAR-34-SB-05-12.0-12.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Ethylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Hexachlorobutadiene	0.0013U	U	mg/kg	0.0065	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
2-Hexanone	0.0065U	U	mg/kg	0.013	0.0065	0.0033	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Isopropylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
p-Isopropyltoluene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Methyl t-Butyl Ether	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
4-Methyl-2-Pentanone(MIBK)	0.0065U	U	mg/kg	0.013	0.0065	0.0033	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Methylene Chloride	0.0013U	U	mg/kg	0.0026	0.0013	0.00078	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Naphthalene	0.0011J	J	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
n-Propylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Styrene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1,1,2-Tetrachloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1,2,2-Tetrachloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Tetrachloroethene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Toluene	0.0024J	J	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2,3-Trichlorobenzene	0.0013U	U	mg/kg	0.0065	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2,4-Trichlorobenzene	0.0013U	U	mg/kg	0.0065	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1,1-Trichloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,1,2-Trichloroethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Trichloroethene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Trichlorofluoromethane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2,3-Trichloropropane	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,2,4-Trimethylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
1,3,5-Trimethylbenzene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Vinyl Chloride	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
o-Xylene	0.0013U	U	mg/kg	0.0026	0.0013	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
mp-Xylene	0.0026U	U	mg/kg	0.0052	0.0026	0.00065	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.6		%	71 - 136	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
4-Bromofluorobenzene (S)	94.8		%	79 - 119	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Dibromofluoromethane (S)	94.7		%	78 - 119	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	
Toluene-d8 (S)	101		%	85 - 116	SW846 8260C	8/11/16	TMP	8/23/16 18:13	TMP	

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 18:13	TMP	

WET CHEMISTRY

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239004** Date Collected: 8/11/2016 15:20 Matrix: Solid

Sample ID: **PAR-34-SB-05-12.0-12.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	29.2		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	70.8		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239005** Date Collected: 8/11/2016 16:00 Matrix: Water

Sample ID: **PAR-34-EB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	6.7		ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:26	TMP	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/23/16 13:26	TMP	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:26	TMP	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/23/16 13:26	TMP	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 13:26	TMP	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239005** Date Collected: 8/11/2016 16:00 Matrix: Water

Sample ID: **PAR-34-EB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		8/23/16 13:26	TMP	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:26	TMP	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:26	TMP	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 13:26	TMP	C
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:26	TMP	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/23/16 13:26	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	81 - 118	SW846 8260C		8/23/16 13:26	TMP	C
4-Bromofluorobenzene (S)	103		%	85 - 114	SW846 8260C		8/23/16 13:26	TMP	C
Dibromofluoromethane (S)	84.2		%	80 - 119	SW846 8260C		8/23/16 13:26	TMP	C
Toluene-d8 (S)	94.8		%	89 - 112	SW846 8260C		8/23/16 13:26	TMP	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/23/16 13:26	CPK	B

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239005** Date Collected: 8/11/2016 16:00 Matrix: Water

Sample ID: **PAR-34-EB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239006** Date Collected: 8/11/2016 00:00 Matrix: Water

Sample ID: **PAR-34-TB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	20.3		ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:48	TMP	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/23/16 13:48	TMP	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
2-Butanone	2.5J	J	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:48	TMP	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/23/16 13:48	TMP	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 13:48	TMP	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C

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ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239006** Date Collected: 8/11/2016 00:00 Matrix: Water

Sample ID: **PAR-34-TB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		8/23/16 13:48	TMP	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:48	TMP	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 13:48	TMP	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 13:48	TMP	C
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 13:48	TMP	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/23/16 13:48	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	81 - 118	SW846 8260C		8/23/16 13:48	TMP	C
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/23/16 13:48	TMP	C
Dibromofluoromethane (S)	85.4		%	80 - 119	SW846 8260C		8/23/16 13:48	TMP	C
Toluene-d8 (S)	93.6		%	89 - 112	SW846 8260C		8/23/16 13:48	TMP	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/23/16 13:48	CPK	B

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

Lab ID: **2167239006** Date Collected: 8/11/2016 00:00 Matrix: Water

Sample ID: **PAR-34-TB-08112016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2167239001	4	PAR-34-SB-05-6.0-6.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 42.5 and the control limits were 78 to 119. This result was reported at a dilution of 1.				
2167239001	5	PAR-34-SB-05-6.0-6.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 205 and the control limits were 71 to 136. This result was reported at a dilution of 1.				
2167239001	7	PAR-34-SB-05-6.0-6.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 75.8 and the control limits were 78 to 119. This result was reported at a dilution of 500.				
2167239002	5	PAR-34-SB-105-6.0-6.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 71.5 and the control limits were 78 to 119. This result was reported at a dilution of 1.				
2167239002	6	PAR-34-SB-105-6.0-6.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 0 and the control limits were 71 to 136. This result was reported at a dilution of 1.				
2167239002	7	PAR-34-SB-105-6.0-6.5	SW846 8260C	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260C was outside of control limits. The % Recovery was reported as 74.3 and the control limits were 79 to 119. This result was reported at a dilution of 1.				
2167239002	9	PAR-34-SB-105-6.0-6.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 77.2 and the control limits were 78 to 119. This result was reported at a dilution of 500.				
2167239002	10	PAR-34-SB-105-6.0-6.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 146 and the control limits were 71 to 136. This result was reported at a dilution of 500.				
2167239003	40	PAR-34-SB-05-7.5-8	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				
2167239003	41	PAR-34-SB-05-7.5-8	SW846 8260C	Acetone
The QC sample type MS for method SW846 8260C was outside the control limits for the analyte Acetone. The % Recovery was reported as 6.63 and the control limits were 36 to 164.				
2167239003	42	PAR-34-SB-05-7.5-8	SW846 8260C	Benzene
The QC sample type MS for method SW846 8260C was outside the control limits for the analyte Benzene. The % Recovery was reported as 61.7 and the control limits were 77 to 121.				
2167239003	43	PAR-34-SB-05-7.5-8	SW846 8260C	Benzene
The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Benzene. The % Recovery was reported as 76 and the control limits were 77 to 121.				
2167239003	44	PAR-34-SB-05-7.5-8	SW846 8260C	1,1,1,2-Tetrachloroethane
The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,1,1,2-Tetrachloroethane. The % Recovery was reported as 76.8 and the control limits were 78 to 125.				
2167239003	45	PAR-34-SB-05-7.5-8	SW846 8260C	Chlorobenzene
The QC sample type MS for method SW846 8260C was outside the control limits for the analyte Chlorobenzene. The % Recovery was reported as 77.3 and the control limits were 79 to 120.				
2167239003	46	PAR-34-SB-05-7.5-8	SW846 8260C	mp-Xylene
The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte mp-Xylene. The % Recovery was reported as 76.8 and the control limits were 77 to 124.				
2167239003	47	PAR-34-SB-05-7.5-8	SW846 8260C	Styrene
The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Styrene. The % Recovery was reported as 75 and the control limits were 76 to 124.				

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

2167239003	48	PAR-34-SB-05-7.5-8	SW846 8260C	Isopropylbenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte Isopropylbenzene. The % Recovery was reported as 52.9 and the control limits were 68 to 134.

2167239003	49	PAR-34-SB-05-7.5-8	SW846 8260C	Isopropylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Isopropylbenzene. The % Recovery was reported as 42 and the control limits were 68 to 134.

2167239003	50	PAR-34-SB-05-7.5-8	SW846 8260C	Bromobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Bromobenzene. The % Recovery was reported as 66.3 and the control limits were 78 to 121.

2167239003	51	PAR-34-SB-05-7.5-8	SW846 8260C	n-Propylbenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte n-Propylbenzene. The % Recovery was reported as 8.03 and the control limits were 73 to 125.

2167239003	52	PAR-34-SB-05-7.5-8	SW846 8260C	n-Propylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte n-Propylbenzene. The % Recovery was reported as -17.1 and the control limits were 73 to 125.

2167239003	53	PAR-34-SB-05-7.5-8	SW846 8260C	o-Chlorotoluene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte o-Chlorotoluene. The % Recovery was reported as 68.4 and the control limits were 75 to 122.

2167239003	54	PAR-34-SB-05-7.5-8	SW846 8260C	p-Chlorotoluene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte p-Chlorotoluene. The % Recovery was reported as 69.3 and the control limits were 72 to 124.

2167239003	55	PAR-34-SB-05-7.5-8	SW846 8260C	1,3,5-Trimethylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,3,5-Trimethylbenzene. The % Recovery was reported as 65.9 and the control limits were 73 to 124.

2167239003	56	PAR-34-SB-05-7.5-8	SW846 8260C	tert-Butylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte tert-Butylbenzene. The % Recovery was reported as 71.6 and the control limits were 73 to 125.

2167239003	57	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,4-Trimethylbenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,2,4-Trimethylbenzene. The % Recovery was reported as 22.3 and the control limits were 75 to 123.

2167239003	58	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,4-Trimethylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,2,4-Trimethylbenzene. The % Recovery was reported as -11.7 and the control limits were 75 to 123.

2167239003	59	PAR-34-SB-05-7.5-8	SW846 8260C	sec-Butylbenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte sec-Butylbenzene. The % Recovery was reported as 68.8 and the control limits were 73 to 126.

2167239003	60	PAR-34-SB-05-7.5-8	SW846 8260C	sec-Butylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte sec-Butylbenzene. The % Recovery was reported as 61.5 and the control limits were 73 to 126.

2167239003	61	PAR-34-SB-05-7.5-8	SW846 8260C	1,3-Dichlorobenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,3-Dichlorobenzene. The % Recovery was reported as 59.7 and the control limits were 77 to 121.

2167239003	62	PAR-34-SB-05-7.5-8	SW846 8260C	1,3-Dichlorobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,3-Dichlorobenzene. The % Recovery was reported as 60.8 and the control limits were 77 to 121.

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

2167239003	63	PAR-34-SB-05-7.5-8	SW846 8260C	1,4-Dichlorobenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,4-Dichlorobenzene. The % Recovery was reported as 60.2 and the control limits were 75 to 120.

2167239003	64	PAR-34-SB-05-7.5-8	SW846 8260C	1,4-Dichlorobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,4-Dichlorobenzene. The % Recovery was reported as 61 and the control limits were 75 to 120.

2167239003	65	PAR-34-SB-05-7.5-8	SW846 8260C	p-Isopropyltoluene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte p-Isopropyltoluene. The % Recovery was reported as 65.2 and the control limits were 73 to 127.

2167239003	66	PAR-34-SB-05-7.5-8	SW846 8260C	p-Isopropyltoluene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte p-Isopropyltoluene. The % Recovery was reported as 63.2 and the control limits were 73 to 127.

2167239003	67	PAR-34-SB-05-7.5-8	SW846 8260C	1,2-Dichlorobenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,2-Dichlorobenzene. The % Recovery was reported as 55.6 and the control limits were 78 to 121.

2167239003	68	PAR-34-SB-05-7.5-8	SW846 8260C	1,2-Dichlorobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,2-Dichlorobenzene. The % Recovery was reported as 51.2 and the control limits were 78 to 121.

2167239003	69	PAR-34-SB-05-7.5-8	SW846 8260C	n-Butylbenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte n-Butylbenzene. The % Recovery was reported as 63.9 and the control limits were 70 to 128.

2167239003	70	PAR-34-SB-05-7.5-8	SW846 8260C	n-Butylbenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte n-Butylbenzene. The % Recovery was reported as 55.7 and the control limits were 70 to 128.

2167239003	71	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,4-Trichlorobenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,2,4-Trichlorobenzene. The % Recovery was reported as 34.4 and the control limits were 67 to 129.

2167239003	72	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,4-Trichlorobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,2,4-Trichlorobenzene. The % Recovery was reported as 31 and the control limits were 67 to 129.

2167239003	73	PAR-34-SB-05-7.5-8	SW846 8260C	Naphthalene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Naphthalene. The % Recovery was reported as 42.4 and the control limits were 62 to 129.

2167239003	74	PAR-34-SB-05-7.5-8	SW846 8260C	Naphthalene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Naphthalene. The RPD was reported as 40.4 and the upper control limit is 30.

2167239003	75	PAR-34-SB-05-7.5-8	SW846 8260C	Hexachlorobutadiene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte Hexachlorobutadiene. The % Recovery was reported as 55.8 and the control limits were 61 to 135.

2167239003	76	PAR-34-SB-05-7.5-8	SW846 8260C	Hexachlorobutadiene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte Hexachlorobutadiene. The % Recovery was reported as 51.8 and the control limits were 61 to 135.

2167239003	77	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,3-Trichlorobenzene

The QC sample type MS for method SW846 8260C was outside the control limits for the analyte 1,2,3-Trichlorobenzene. The % Recovery was reported as 24.5 and the control limits were 66 to 130.

ANALYTICAL RESULTS

Workorder: 2167239 PQF032|FTMM

2167239003	78	PAR-34-SB-05-7.5-8	SW846 8260C	1,2,3-Trichlorobenzene

The QC sample type MSD for method SW846 8260C was outside the control limits for the analyte 1,2,3-Trichlorobenzene. The % Recovery was reported as 22.7 and the control limits were 66 to 130.

2167239004	3	PAR-34-SB-05-12.0-12.5	SW846 8260C	Acetone

The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.

ALS Environmental
1565 Jefferson Road
Building 300, Suite 360
Rochester, NY 14623
(585)288-5380

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: P34. * 2 1 6 7 2 3 9 *
ALS Quote #:

Client Name: Parsons Federal
Address: 100 High St 4th Floor
Boston, MA 02110
Contact: Cory Mahony
Phone#: 617-449-1440
Project Name/#: FTMM
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y carla.rodman@parsons.com
Fax? [ ] -Y No.:

Container Type	AN	AN	CG	AN	AN	CG				
Container Size	4 oz	4 oz	40mL	4 oz	1L	40ml				
Preservative	4c	4c	4C & MEOH	4c	HCL	HCL				

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	EPH (fractionated)	SVOCs - Naphthalene & 2-methylnaphthalene (8270D)	VOC (8260C)+TICs including 1,2-dichloroethane & 1,2-dibromoethane	Lead (6020)	SVOC (8270D) + TICs (groundwater)	VOC (8260C)+TICs (groundwater)			AUTHORIZED TO RUN	EXTRACT AND HOLD
					Enter Number of Containers Per Sample or Field Results Below.									
1 PAR-34-SB-05-6.0-6.5	8/11/16	1500	G	SO			3						X	
2 PAR-34-SB-105-6.0-6.5	8/11/16	1200	G	SO			3						X	
3 PAR-34-SB-05-7.5-8	8/11/16	1510	G	SO			3						X	
4 PAR-34-SB-05-7.5-8-MS	8/11/16	1510	G	SO			3						X	
5 PAR-34-SB-05-7.5-8-MSD	8/11/16	1510	G	SO			3						X	
6 PAR-34-SB-05-12.0-12.5	8/11/16	1520	G	SO			3						X	
7 PAR-34-EB-08112016	8/11/16	1600	EB	EB			3						X	
8 PAR-34-TB-08112016	8/11/16	—		TB			2						X	
9														
10														

Receipt Information (completed by Receiving Lab)
Cooler Temp: 1 Therm ID: 352
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?	/		SES
(If present) Seals Intact?	/		
Received on Ice?	/		
COC/Labels Complete/Accurate?	/		
Cont. in Good Cond.?	/		
Correct Containers?	/		
Correct Sample Volumes?	/		
Correct Preservation?	/		
Headspace/Volatiles?		/	

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: _Pickup _Labor
_Composite Sampling _Rental Equipment
_Other:

Project Comments: 748810
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): [signature] DATE 8/11/16 TIME 1630
REVIEWED BY(signature): DATE TIME

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC [ ]

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 FRANK ACCORSI PARSONS	8-12-16	1721	2 Paul Collins / ALS	8-12-16	1721
3 Paul Collins / ALS	8-12-16	1915	4 [signature]	8-12	1915
5 [signature]	8-12	2120	6 [signature]	8/12	2120
7			8		
9			10		

Reportable to PADEP? Yes [ ]
PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS

*G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 1565 Jefferson Road, Building 300, Suite 360 Rochester, NY 14623 USA

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

September 12, 2016

Ms. Carla Rodman
Parsons
301 Plainfield Rd
Suite 350
Syracuse, NY 13212

Certificate of Analysis

Revised Report - 9/12/2016 1:06:50 PM - See workorder comment section for explanation

Project Name:	**Ft. Monmouth Soils**	Workorder:	**2167241**
Purchase Order:		Workorder ID:	**PQF034|FTMM**

Dear Ms. Rodman:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 12, 2016.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms.Cris Grill , Ms. Maryanne Kosciewicz , Mr. Cory Mahony

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2167241 PQF034|FTMM

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2167241001	PAR-34-SB-07-3-3.5	Solid	8/12/2016 11:05	8/12/2016 21:20	Collected by Client
2167241002	PAR-34-SB-08-1.5-2.0	Solid	8/12/2016 10:55	8/12/2016 21:20	Collected by Client
2167241003	PAR-34-SB-08-6-6.5	Solid	8/12/2016 10:15	8/12/2016 21:20	Collected by Client
2167241004	PAR-34-SB-09-1.5-2	Solid	8/12/2016 11:30	8/12/2016 21:20	Collected by Client
2167241005	PAR-34-SB-09-6-6.5	Solid	8/12/2016 11:25	8/12/2016 21:20	Collected by Client

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2167241 PQF034|FTMM

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 2167241 PQF034|FTMM

Workorder Comments

This work order was modified to update units for the volatile organics library search to mg/kg. AJL 9/12/2016

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241001** Date Collected: 8/12/2016 11:05 Matrix: Solid

Sample ID: **PAR-34-SB-07-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.060		mg/kg	0.011	0.0053	0.0034	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Benzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Bromobenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Bromochloromethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Bromodichloromethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Bromoform	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Bromomethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
2-Butanone	0.0053U	U	mg/kg	0.011	0.0053	0.0027	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
tert-Butyl Alcohol	0.0053U	U	mg/kg	0.011	0.0053	0.0027	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
n-Butylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
tert-Butylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
sec-Butylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Carbon Tetrachloride	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Chlorobenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Chlorodibromomethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Chloroethane	0.0027U	U	mg/kg	0.0053	0.0027	0.0012	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Chloroform	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Chloromethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
o-Chlorotoluene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
p-Chlorotoluene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2-Dibromo-3-chloropropane	0.0027U	U	mg/kg	0.0053	0.0027	0.0016	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2-Dibromoethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2-Dichlorobenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,3-Dichlorobenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,4-Dichlorobenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Dichlorodifluoromethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1-Dichloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2-Dichloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1-Dichloroethene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
cis-1,2-Dichloroethene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
trans-1,2-Dichloroethene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,3-Dichloropropane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
2,2-Dichloropropane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2-Dichloropropane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1-Dichloropropene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
cis-1,3-Dichloropropene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241001** Date Collected: 8/12/2016 11:05 Matrix: Solid

Sample ID: **PAR-34-SB-07-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Ethylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Hexachlorobutadiene	0.0011U	U	mg/kg	0.0053	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
2-Hexanone	0.0053U	U	mg/kg	0.011	0.0053	0.0027	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Isopropylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
p-Isopropyltoluene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Methyl t-Butyl Ether	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
4-Methyl-2-Pentanone(MIBK)	0.0053U	U	mg/kg	0.011	0.0053	0.0027	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Methylene Chloride	0.0011U	U	mg/kg	0.0021	0.0011	0.00064	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Naphthalene	0.00072J	J	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
n-Propylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Styrene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1,1,2-Tetrachloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1,2,2-Tetrachloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Tetrachloroethene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Toluene	0.0021		mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2,3-Trichlorobenzene	0.0011U	U	mg/kg	0.0053	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2,4-Trichlorobenzene	0.0011U	U	mg/kg	0.0053	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1,1-Trichloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,1,2-Trichloroethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Trichloroethene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Trichlorofluoromethane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2,3-Trichloropropane	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,2,4-Trimethylbenzene	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
1,3,5-Trimethylbenzene	0.00080J	J	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Vinyl Chloride	0.0011U	U	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
o-Xylene	0.0013J	J	mg/kg	0.0021	0.0011	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
mp-Xylene	0.0021U	U	mg/kg	0.0042	0.0021	0.00053	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	84		%	71 - 136	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
4-Bromofluorobenzene (S)	94.7		%	79 - 119	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Dibromofluoromethane (S)	71.5	4	%	78 - 119	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E
Toluene-d8 (S)	98.2		%	85 - 116	SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E

Library Search - Volatiles

Benzene, 1-chloro-4-(trifluoro	0.0030	J N	mg/kg		SW846 8260C	8/12/16	ECB	8/24/16 16:08	TMP	E

WET CHEMISTRY

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241001** Date Collected: 8/12/2016 11:05 Matrix: Solid

Sample ID: **PAR-34-SB-07-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	9.8		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	90.2		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241002** Date Collected: 8/12/2016 10:55 Matrix: Solid

Sample ID: **PAR-34-SB-08-1.5-2.0** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.062	2	mg/kg	0.013	0.0063	0.0040	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Benzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Bromobenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Bromochloromethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Bromodichloromethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Bromoform	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Bromomethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
2-Butanone	0.0063U	U	mg/kg	0.013	0.0063	0.0032	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
tert-Butyl Alcohol	0.0063U	U	mg/kg	0.013	0.0063	0.0032	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
n-Butylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
tert-Butylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
sec-Butylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Carbon Tetrachloride	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Chlorobenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Chlorodibromomethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Chloroethane	0.0032U	U	mg/kg	0.0063	0.0032	0.0014	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Chloroform	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Chloromethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
o-Chlorotoluene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
p-Chlorotoluene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2-Dibromo-3-chloropropane	0.0032U	U	mg/kg	0.0063	0.0032	0.0019	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2-Dibromoethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2-Dichlorobenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,3-Dichlorobenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,4-Dichlorobenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Dichlorodifluoromethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1-Dichloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2-Dichloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1-Dichloroethene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
cis-1,2-Dichloroethene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
trans-1,2-Dichloroethene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,3-Dichloropropane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
2,2-Dichloropropane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2-Dichloropropane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1-Dichloropropene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
cis-1,3-Dichloropropene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241002** Date Collected: 8/12/2016 10:55 Matrix: Solid

Sample ID: **PAR-34-SB-08-1.5-2.0** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Ethylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Hexachlorobutadiene	0.0013U	U	mg/kg	0.0063	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
2-Hexanone	0.0063U	U	mg/kg	0.013	0.0063	0.0032	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Isopropylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
p-Isopropyltoluene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Methyl t-Butyl Ether	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0063U	U	mg/kg	0.013	0.0063	0.0032	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Methylene Chloride	0.0013U	U	mg/kg	0.0025	0.0013	0.00076	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Naphthalene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
n-Propylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Styrene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1,1,2-Tetrachloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1,2,2-Tetrachloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Tetrachloroethene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Toluene	0.0046		mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2,3-Trichlorobenzene	0.0013U	U	mg/kg	0.0063	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2,4-Trichlorobenzene	0.0013U	U	mg/kg	0.0063	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1,1-Trichloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,1,2-Trichloroethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Trichloroethene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Trichlorofluoromethane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2,3-Trichloropropane	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,2,4-Trimethylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
1,3,5-Trimethylbenzene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Vinyl Chloride	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
o-Xylene	0.0013U	U	mg/kg	0.0025	0.0013	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
mp-Xylene	0.0025U	U	mg/kg	0.0050	0.0025	0.00063	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	86.9		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
4-Bromofluorobenzene (S)	96.3		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Dibromofluoromethane (S)	94.1		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D
Toluene-d8 (S)	98.9		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 18:59	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 18:59	ECB	

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241002** Date Collected: 8/12/2016 10:55 Matrix: Solid

Sample ID: **PAR-34-SB-08-1.5-2.0** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	12.8		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	87.2		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241003** Date Collected: 8/12/2016 10:15 Matrix: Solid

Sample ID: **PAR-34-SB-08-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.092	2	mg/kg	0.012	0.0061	0.0039	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Benzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Bromobenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Bromochloromethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Bromodichloromethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Bromoform	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Bromomethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
2-Butanone	0.0061J	J	mg/kg	0.012	0.0061	0.0031	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
tert-Butyl Alcohol	0.0061U	U	mg/kg	0.012	0.0061	0.0031	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
n-Butylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
tert-Butylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
sec-Butylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Carbon Tetrachloride	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Chlorobenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Chlorodibromomethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Chloroethane	0.0031U	U	mg/kg	0.0061	0.0031	0.0013	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Chloroform	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Chloromethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
o-Chlorotoluene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
p-Chlorotoluene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2-Dibromo-3-chloropropane	0.0031U	U	mg/kg	0.0061	0.0031	0.0018	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2-Dibromoethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2-Dichlorobenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,3-Dichlorobenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,4-Dichlorobenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Dichlorodifluoromethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1-Dichloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2-Dichloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1-Dichloroethene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
cis-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
trans-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,3-Dichloropropane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
2,2-Dichloropropane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2-Dichloropropane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1-Dichloropropene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
cis-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241003** Date Collected: 8/12/2016 10:15 Matrix: Solid

Sample ID: **PAR-34-SB-08-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Ethylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Hexachlorobutadiene	0.0012U	U	mg/kg	0.0061	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
2-Hexanone	0.0061U	U	mg/kg	0.012	0.0061	0.0031	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Isopropylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
p-Isopropyltoluene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Methyl t-Butyl Ether	0.0013J	J	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0061U	U	mg/kg	0.012	0.0061	0.0031	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Methylene Chloride	0.0012U	U	mg/kg	0.0024	0.0012	0.00073	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Naphthalene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
n-Propylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Styrene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1,1,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1,2,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Tetrachloroethene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Toluene	0.0032		mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2,3-Trichlorobenzene	0.0012U	U	mg/kg	0.0061	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2,4-Trichlorobenzene	0.0012U	U	mg/kg	0.0061	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1,1-Trichloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,1,2-Trichloroethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Trichloroethene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Trichlorofluoromethane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2,3-Trichloropropane	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,2,4-Trimethylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
1,3,5-Trimethylbenzene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Vinyl Chloride	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
o-Xylene	0.0012U	U	mg/kg	0.0024	0.0012	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
mp-Xylene	0.0024U	U	mg/kg	0.0049	0.0024	0.00061	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.6		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
4-Bromofluorobenzene (S)	84.1		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Dibromofluoromethane (S)	93.6		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D
Toluene-d8 (S)	103		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 19:22	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 19:22	ECB	

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241003** Date Collected: 8/12/2016 10:15 Matrix: Solid

Sample ID: **PAR-34-SB-08-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	19.7		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	80.3		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241004** Date Collected: 8/12/2016 11:30 Matrix: Solid

Sample ID: **PAR-34-SB-09-1.5-2** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.073	2	mg/kg	0.012	0.0058	0.0037	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Benzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Bromobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Bromochloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Bromodichloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Bromoform	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Bromomethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
2-Butanone	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
tert-Butyl Alcohol	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
n-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
tert-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
sec-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Carbon Tetrachloride	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Chlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Chlorodibromomethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Chloroethane	0.0029U	U	mg/kg	0.0058	0.0029	0.0013	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Chloroform	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Chloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
o-Chlorotoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
p-Chlorotoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2-Dibromo-3-chloropropane	0.0029U	U	mg/kg	0.0058	0.0029	0.0017	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2-Dibromoethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,3-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,4-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Dichlorodifluoromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1-Dichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2-Dichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
cis-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
trans-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,3-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
2,2-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
cis-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241004** Date Collected: 8/12/2016 11:30 Matrix: Solid

Sample ID: **PAR-34-SB-09-1.5-2** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Ethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Hexachlorobutadiene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
2-Hexanone	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Isopropylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
p-Isopropyltoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Methyl t-Butyl Ether	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Methylene Chloride	0.0012U	U	mg/kg	0.0023	0.0012	0.00069	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Naphthalene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
n-Propylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Styrene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1,1,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1,2,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Tetrachloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Toluene	0.0027		mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2,3-Trichlorobenzene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2,4-Trichlorobenzene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1,1-Trichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,1,2-Trichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Trichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Trichlorofluoromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2,3-Trichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,2,4-Trimethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
1,3,5-Trimethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Vinyl Chloride	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
o-Xylene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
mp-Xylene	0.0023U	U	mg/kg	0.0046	0.0023	0.00058	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	87.2		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
4-Bromofluorobenzene (S)	87		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Dibromofluoromethane (S)	94.1		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D
Toluene-d8 (S)	92.1		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 19:45	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 19:45	ECB	

WET CHEMISTRY

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241004** Date Collected: 8/12/2016 11:30 Matrix: Solid

Sample ID: **PAR-34-SB-09-1.5-2** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	17.8		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	82.2		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241005** Date Collected: 8/12/2016 11:25 Matrix: Solid

Sample ID: **PAR-34-SB-09-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.039	2	mg/kg	0.011	0.0055	0.0035	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Benzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Bromobenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Bromochloromethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Bromodichloromethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Bromoform	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Bromomethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
2-Butanone	0.0038J	J	mg/kg	0.011	0.0055	0.0027	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
tert-Butyl Alcohol	0.0055U	U	mg/kg	0.011	0.0055	0.0027	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
n-Butylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
tert-Butylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
sec-Butylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Carbon Tetrachloride	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Chlorobenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Chlorodibromomethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Chloroethane	0.0027U	U	mg/kg	0.0055	0.0027	0.0012	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Chloroform	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Chloromethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
o-Chlorotoluene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
p-Chlorotoluene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2-Dibromo-3-chloropropane	0.0027U	U	mg/kg	0.0055	0.0027	0.0016	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2-Dibromoethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2-Dichlorobenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,3-Dichlorobenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,4-Dichlorobenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Dichlorodifluoromethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1-Dichloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2-Dichloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1-Dichloroethene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
cis-1,2-Dichloroethene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
trans-1,2-Dichloroethene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,3-Dichloropropane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
2,2-Dichloropropane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2-Dichloropropane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1-Dichloropropene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
cis-1,3-Dichloropropene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241005** Date Collected: 8/12/2016 11:25 Matrix: Solid

Sample ID: **PAR-34-SB-09-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Ethylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Hexachlorobutadiene	0.0011U	U	mg/kg	0.0055	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
2-Hexanone	0.0055U	U	mg/kg	0.011	0.0055	0.0027	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Isopropylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
p-Isopropyltoluene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Methyl t-Butyl Ether	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0055U	U	mg/kg	0.011	0.0055	0.0027	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Methylene Chloride	0.0011U	U	mg/kg	0.0022	0.0011	0.00065	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Naphthalene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
n-Propylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Styrene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1,1,2-Tetrachloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1,2,2-Tetrachloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Tetrachloroethene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Toluene	0.0029		mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2,3-Trichlorobenzene	0.0011U	U	mg/kg	0.0055	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2,4-Trichlorobenzene	0.0011U	U	mg/kg	0.0055	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1,1-Trichloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,1,2-Trichloroethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Trichloroethene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Trichlorofluoromethane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2,3-Trichloropropane	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,2,4-Trimethylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
1,3,5-Trimethylbenzene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Vinyl Chloride	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
o-Xylene	0.0011U	U	mg/kg	0.0022	0.0011	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
mp-Xylene	0.0022U	U	mg/kg	0.0044	0.0022	0.00055	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	82.8		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
4-Bromofluorobenzene (S)	81.5		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Dibromofluoromethane (S)	92.8		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D
Toluene-d8 (S)	100		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 20:08	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 20:08	ECB	

WET CHEMISTRY

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ANALYTICAL RESULTS

Workorder: 2167241 PQF034|FTMM

Lab ID: **2167241005** Date Collected: 8/12/2016 11:25 Matrix: Solid

Sample ID: **PAR-34-SB-09-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	21.1		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	78.9		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2167241001	4	PAR-34-SB-07-3-3.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 71.5 and the control limits were 78 to 119. This result was reported at a dilution of 1.				
2167241002	2	PAR-34-SB-08-1.5-2.0	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				
2167241003	2	PAR-34-SB-08-6-6.5	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				
2167241004	2	PAR-34-SB-09-1.5-2	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				
2167241005	2	PAR-34-SB-09-6-6.5	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				

ALS Environmental
1565 Jefferson Road
Building 300, Suite 360
Rochester, NY 14623
(585)288-5380

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: P[illegible]
ALS Quote #:
* 2 1 6 7 2 4 1 *

Client Name: Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact: Cory Mahony
Phone#: 617-449-1440
Project Name/#: FTMM
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] Y carla.rodman@parsons.com
Fax? [ ] Y No.:

Container Type	AN	AN	CG	AN	AN	CG				
Container Size	4 oz	4 oz	40mL	4 oz	1L	40ml				
Preservative	4c	4c	4C & MEOH	4c	HCL	HCL				

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	EPH (fractionated)	SVOCs - Naphthalene & 2-methylnaphthalene (8270D)	VOC (8260C)+TICs including 1,2-dichloroethane & 1,2-dibromoethane	Lead (6020)	SVOC (8270D) + TICs (groundwater)	VOC (8260C)+TICs (groundwater)			AUTHORIZED TO RUN	EXTRACT AND HOLD
					Enter Number of Containers Per Sample or Field Results Below.									
1 PAR-34-SB-07-3-3.5	8/12/16	1105	G	SO			3							X
2 PAR-34-SB-08-1.5-2.0	8/12/16	1055	G	SO			3							X
3 PAR-34-SB-08-6-6.5	8/12/16	1015	G	SO			3							X
4 PAR-34-SB-09-1.5-2	8/12/16	1130	G	SO			3							X
5 PAR-34-SB-09-6-6.5	8/12/16	1125	G	SO			3							X
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)
Cooler Temp: 1 Therm ID: 352
No. of Coolers: ____

	Y	N	Initial
Custody Seals Present?	✓		SES
(if present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. in Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Courier/Tracking #:
Sample/COC Comments

ALS Field Services: __Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): [signature] DATE 8/12/16 TIME 1300
REVIEWED BY(signature): [signature] DATE 8/12/16 TIME 1310

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 E. ACCORSI PARSONS	8-12-16	1712	2 Paul Collins/ALS	8-12-16	1721
3 Paul Collins/ALS	8-12-16	1915	4 D. K[illegible]	8-12	1915
5 D. K[illegible]	8-12	2120	6 [signature]	8/12	2120
7			8		
9			10		

Reportable to PADEP? Yes [ ]
PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS

*G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 1565 Jefferson Road, Building 300, Suite 360 Rochester, NY 14623 USA

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October 1, 2016

Ms.Cris Grill
Parsons
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Revised Report - 10/1/2016 12:48:01 AM - See workorder comment section for explanation

Project Name:	**Ft. Monmouth Soils**	Workorder:	**2168012**
Purchase Order:		Workorder ID:	**PQF035|FTMM**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 12, 2016.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

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SAMPLE SUMMARY

Workorder: 2168012 PQF035|FTMM

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2167241006	PAR-34-SB-06-3-3.5	Solid	8/12/2016 12:00	8/12/2016 21:20	Collected by Client
2167241007	PAR-34-SB-06-6-6.5	Solid	8/12/2016 12:05	8/12/2016 21:20	Collected by Client
2167241008	PAR-34-SB-06-7.5-8	Solid	8/12/2016 12:10	8/12/2016 21:20	Collected by Client
2167241009	PAR-34-SB-06-8.5-9	Solid	8/12/2016 12:15	8/12/2016 21:20	Collected by Client

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SAMPLE SUMMARY

Workorder: 2168012 PQF035|FTMM

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 2168012 PQF035|FTMM

Workorder Comments

This work order was modified to update units for the volatile organics library search to mg/kg. AJL 9/12/2016

This Certificate of Analysis has been modified in order to correct the Volatile units on sample -007. VNB 9/29/16

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ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241006** Date Collected: 8/12/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-06-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.065	2	mg/kg	0.0088	0.0044	0.0028	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Benzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Bromobenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Bromochloromethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Bromodichloromethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Bromoform	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Bromomethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
2-Butanone	0.0044U	U	mg/kg	0.0088	0.0044	0.0022	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
tert-Butyl Alcohol	0.0044U	U	mg/kg	0.0088	0.0044	0.0022	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
n-Butylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
tert-Butylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
sec-Butylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Carbon Tetrachloride	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Chlorobenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Chlorodibromomethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Chloroethane	0.0022U	U	mg/kg	0.0044	0.0022	0.00096	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Chloroform	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Chloromethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
o-Chlorotoluene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
p-Chlorotoluene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2-Dibromo-3-chloropropane	0.0022U	U	mg/kg	0.0044	0.0022	0.0013	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2-Dibromoethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2-Dichlorobenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,3-Dichlorobenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,4-Dichlorobenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Dichlorodifluoromethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1-Dichloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2-Dichloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1-Dichloroethene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
cis-1,2-Dichloroethene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
trans-1,2-Dichloroethene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,3-Dichloropropane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
2,2-Dichloropropane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2-Dichloropropane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1-Dichloropropene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
cis-1,3-Dichloropropene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241006** Date Collected: 8/12/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-06-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Ethylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Hexachlorobutadiene	0.00088U	U	mg/kg	0.0044	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
2-Hexanone	0.0044U	U	mg/kg	0.0088	0.0044	0.0022	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Isopropylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
p-Isopropyltoluene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Methyl t-Butyl Ether	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0044U	U	mg/kg	0.0088	0.0044	0.0022	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Methylene Chloride	0.00088U	U	mg/kg	0.0018	0.00088	0.00053	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Naphthalene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
n-Propylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Styrene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1,1,2-Tetrachloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1,2,2-Tetrachloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Tetrachloroethene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Toluene	0.0030		mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2,3-Trichlorobenzene	0.00088U	U	mg/kg	0.0044	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2,4-Trichlorobenzene	0.00088U	U	mg/kg	0.0044	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1,1-Trichloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,1,2-Trichloroethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Trichloroethene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Trichlorofluoromethane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2,3-Trichloropropane	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,2,4-Trimethylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
1,3,5-Trimethylbenzene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Vinyl Chloride	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
o-Xylene	0.00088U	U	mg/kg	0.0018	0.00088	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
mp-Xylene	0.0018U	U	mg/kg	0.0035	0.0018	0.00044	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	87.5		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
4-Bromofluorobenzene (S)	90.3		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Dibromofluoromethane (S)	93.5		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D
Toluene-d8 (S)	91		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 20:31	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/23/16 20:31	ECB	

WET CHEMISTRY

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241006** Date Collected: 8/12/2016 12:00 Matrix: Solid

Sample ID: **PAR-34-SB-06-3-3.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	8.2		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	91.8		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241007** Date Collected: 8/12/2016 12:05 Matrix: Solid

Sample ID: **PAR-34-SB-06-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.28		mg/kg	0.017	0.0083	0.0053	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Benzene	0.033		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Bromobenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Bromochloromethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Bromodichloromethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Bromoform	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Bromomethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
2-Butanone	0.0083U	U	mg/kg	0.017	0.0083	0.0041	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
tert-Butyl Alcohol	0.0083U	U	mg/kg	0.017	0.0083	0.0041	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
n-Butylbenzene	0.28		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
tert-Butylbenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
sec-Butylbenzene	0.22		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Carbon Tetrachloride	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Chlorobenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Chlorodibromomethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Chloroethane	0.0041U	U	mg/kg	0.0083	0.0041	0.0018	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Chloroform	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Chloromethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
o-Chlorotoluene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
p-Chlorotoluene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2-Dibromo-3-chloropropane	0.0041U	U	mg/kg	0.0083	0.0041	0.0025	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2-Dibromoethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2-Dichlorobenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,3-Dichlorobenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,4-Dichlorobenzene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Dichlorodifluoromethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1-Dichloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2-Dichloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1-Dichloroethene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
cis-1,2-Dichloroethene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
trans-1,2-Dichloroethene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,3-Dichloropropane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
2,2-Dichloropropane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2-Dichloropropane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1-Dichloropropene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
cis-1,3-Dichloropropene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241007** Date Collected: 8/12/2016 12:05 Matrix: Solid

Sample ID: **PAR-34-SB-06-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Ethylbenzene	7.6		mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
Hexachlorobutadiene	0.0017U	U	mg/kg	0.0083	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
2-Hexanone	0.0083U	U	mg/kg	0.017	0.0083	0.0041	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Isopropylbenzene	15.0		mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
p-Isopropyltoluene	0.11		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Methyl t-Butyl Ether	0.0035		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0083U	U	mg/kg	0.017	0.0083	0.0041	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Methylene Chloride	0.0070		mg/kg	0.0033	0.0017	0.00099	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Naphthalene	0.30		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
n-Propylbenzene	40.2		mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
Styrene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1,1,2-Tetrachloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1,2,2-Tetrachloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Tetrachloroethene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Toluene	0.017		mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2,3-Trichlorobenzene	0.0017U	U	mg/kg	0.0083	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2,4-Trichlorobenzene	0.0017U	U	mg/kg	0.0083	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1,1-Trichloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,1,2-Trichloroethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Trichloroethene	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Trichlorofluoromethane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2,3-Trichloropropane	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
1,2,4-Trimethylbenzene	214		mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
1,3,5-Trimethylbenzene	57.7		mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
Vinyl Chloride	0.0017U	U	mg/kg	0.0033	0.0017	0.00083	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
o-Xylene	0.73U	U	mg/kg	0.97	0.73	0.32	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
mp-Xylene	193		mg/kg	1.9	1.5	0.64	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.7		%	71 - 136	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
4-Bromofluorobenzene (S)	78.7		%	79 - 119	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
Dibromofluoromethane (S)	69.1		%	78 - 119	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	
Toluene-d8 (S)	75.8		%	85 - 116	SW846 8260C	8/12/16	CPK	8/24/16 17:49	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	119		%	71 - 136	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
4-Bromofluorobenzene (S)	111		%	79 - 119	SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241007** Date Collected: 8/12/2016 12:05 Matrix: Solid

Sample ID: **PAR-34-SB-06-6-6.5** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
Dibromofluoromethane (S)	74.3	2	%	78 - 119			SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Toluene-d8 (S)	114		%	85 - 116			SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Library Search - Volatiles												
Hexane, 2-methyl-	0.022	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Pentane, 2,3-dimethyl-	0.041	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Hexane, 3-methyl-	0.028	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Pentane, 2,3,4-trimethyl-	0.083	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Heptane, 4-methyl-	0.13	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Heptane, 3-methyl-	0.041	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Hexane, 2,2,5-trimethyl-	0.032	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Benzeneacetaldehyde	0.16	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Benzene, 1-ethenyl-4-methyl-	0.055	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Benzene, 2-ethyl-1,4-dimethyl-	0.024	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
Benzene, 1-methyl-4-(1-methyle	0.020	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/24/16 16:54	TMP	D
WET CHEMISTRY												
Moisture	34.4		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A
Total Solids	65.6		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241008** Date Collected: 8/12/2016 12:10 Matrix: Solid

Sample ID: **PAR-34-SB-06-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.12	2	mg/kg	0.014	0.0070	0.0045	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Benzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Bromobenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Bromochloromethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Bromodichloromethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Bromoform	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Bromomethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
2-Butanone	0.0097J	J	mg/kg	0.014	0.0070	0.0035	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
tert-Butyl Alcohol	0.0070U	U	mg/kg	0.014	0.0070	0.0035	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
n-Butylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
tert-Butylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
sec-Butylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Carbon Tetrachloride	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Chlorobenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Chlorodibromomethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Chloroethane	0.0035U	U	mg/kg	0.0070	0.0035	0.0015	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Chloroform	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Chloromethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
o-Chlorotoluene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
p-Chlorotoluene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2-Dibromo-3-chloropropane	0.0035U	U	mg/kg	0.0070	0.0035	0.0021	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2-Dibromoethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2-Dichlorobenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,3-Dichlorobenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,4-Dichlorobenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Dichlorodifluoromethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1-Dichloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2-Dichloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1-Dichloroethene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
cis-1,2-Dichloroethene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
trans-1,2-Dichloroethene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,3-Dichloropropane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
2,2-Dichloropropane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2-Dichloropropane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1-Dichloropropene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
cis-1,3-Dichloropropene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241008** Date Collected: 8/12/2016 12:10 Matrix: Solid

Sample ID: **PAR-34-SB-06-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Ethylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Hexachlorobutadiene	0.0014U	U	mg/kg	0.0070	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
2-Hexanone	0.0070U	U	mg/kg	0.014	0.0070	0.0035	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Isopropylbenzene	0.0012J	J	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
p-Isopropyltoluene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Methyl t-Butyl Ether	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0070U	U	mg/kg	0.014	0.0070	0.0035	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Methylene Chloride	0.0014U	U	mg/kg	0.0028	0.0014	0.00084	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Naphthalene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
n-Propylbenzene	0.0016J	J	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Styrene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1,1,2-Tetrachloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1,2,2-Tetrachloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Tetrachloroethene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Toluene	0.0032		mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2,3-Trichlorobenzene	0.0014U	U	mg/kg	0.0070	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2,4-Trichlorobenzene	0.0014U	U	mg/kg	0.0070	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1,1-Trichloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,1,2-Trichloroethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Trichloroethene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Trichlorofluoromethane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2,3-Trichloropropane	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,2,4-Trimethylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
1,3,5-Trimethylbenzene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Vinyl Chloride	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
o-Xylene	0.0014U	U	mg/kg	0.0028	0.0014	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
mp-Xylene	0.0028U	U	mg/kg	0.0056	0.0028	0.00070	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.5		%	71 - 136	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
4-Bromofluorobenzene (S)	88.2		%	79 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Dibromofluoromethane (S)	94.8		%	78 - 119	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Toluene-d8 (S)	98.4		%	85 - 116	SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Library Search - Volatiles										
Pentane, 2,3-dimethyl-	0.0057	J N	mg/kg		SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Butane, 2,2,3,3-tetramethyl-	0.018	J N	mg/kg		SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Pentane, 2,3,4-trimethyl-	0.010	J N	mg/kg		SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241008** Date Collected: 8/12/2016 12:10 Matrix: Solid

Sample ID: **PAR-34-SB-06-7.5-8** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	*Cntr*
Pentane, 2,3,3-trimethyl-	0.014	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
Hexane, 2,2,5-trimethyl-	0.0052	J N	mg/kg				SW846 8260C	8/12/16	TMP	8/23/16 20:54	TMP	D
WET CHEMISTRY												
Moisture	33.4		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A
Total Solids	66.6		%	0.1	0.1	0.01	S2540G-11			8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241009** Date Collected: 8/12/2016 12:15 Matrix: Solid

Sample ID: **PAR-34-SB-06-8.5-9** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
Acetone	0.038		mg/kg	0.012	0.0058	0.0037	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Benzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Bromobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Bromochloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Bromodichloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Bromoform	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Bromomethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
2-Butanone	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
tert-Butyl Alcohol	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
n-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
tert-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
sec-Butylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Carbon Tetrachloride	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Chlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Chlorodibromomethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Chloroethane	0.0029U	U	mg/kg	0.0058	0.0029	0.0013	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Chloroform	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Chloromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
o-Chlorotoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
p-Chlorotoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2-Dibromo-3-chloropropane	0.0029U	U	mg/kg	0.0058	0.0029	0.0018	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2-Dibromoethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,3-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,4-Dichlorobenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Dichlorodifluoromethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1-Dichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2-Dichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
cis-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
trans-1,2-Dichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,3-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
2,2-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2-Dichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
cis-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241009** Date Collected: 8/12/2016 12:15 Matrix: Solid

Sample ID: **PAR-34-SB-06-8.5-9** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Ethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Hexachlorobutadiene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
2-Hexanone	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Isopropylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
p-Isopropyltoluene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Methyl t-Butyl Ether	0.00098J	J	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
4-Methyl-2-Pentanone(MIBK)	0.0058U	U	mg/kg	0.012	0.0058	0.0029	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Methylene Chloride	0.0090		mg/kg	0.0023	0.0012	0.00070	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Naphthalene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
n-Propylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Styrene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1,1,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1,2,2-Tetrachloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Tetrachloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Toluene	0.0016J	J	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2,3-Trichlorobenzene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2,4-Trichlorobenzene	0.0012U	U	mg/kg	0.0058	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1,1-Trichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,1,2-Trichloroethane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Trichloroethene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Trichlorofluoromethane	0.0013J	J	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2,3-Trichloropropane	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,2,4-Trimethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
1,3,5-Trimethylbenzene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Vinyl Chloride	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
o-Xylene	0.0012U	U	mg/kg	0.0023	0.0012	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
mp-Xylene	0.0023U	U	mg/kg	0.0047	0.0023	0.00058	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	86.4		%	71 - 136	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
4-Bromofluorobenzene (S)	96.6		%	79 - 119	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Dibromofluoromethane (S)	94.7		%	78 - 119	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D
Toluene-d8 (S)	112		%	85 - 116	SW846 8260C	8/12/16	TMP	8/24/16 16:31	TMP	D

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/24/16 16:31	ECB	

WET CHEMISTRY

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168012 PQF035|FTMM

Lab ID: **2167241009** Date Collected: 8/12/2016 12:15 Matrix: Solid

Sample ID: **PAR-34-SB-06-8.5-9** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Moisture	20.9		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A
Total Solids	79.1		%	0.1	0.1	0.01	S2540G-11		8/16/16 13:25	VKB	A

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2167241006	2	PAR-34-SB-06-3-3.5	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				
2167241007	2	PAR-34-SB-06-6-6.5	SW846 8260C	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260C was outside of control limits. The % Recovery was reported as 74.3 and the control limits were 78 to 119. This result was reported at a dilution of 1.				
2167241008	2	PAR-34-SB-06-7.5-8	SW846 8260C	Acetone
The Method Blank for method SW846 8260C reported a value greater than the reporting level for the analyte Acetone.				

ALS Environmental
1565 Jefferson Road
Building 300, Suite 360
Rochester, NY 14623
(585)288-5380

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact: Cory Mahony
Phone#: 617-449-1440
Project Name/#: FTMM
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y carla.rodman@parsons.com
Fax? [ ] -Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	EPH (fractionated)	SVOCs - Naphthalene & 2-methylnaphthalene (8270D)	VOC (8260C)+TICs including 1,2-dichloroethane & 1,2-dibromoethane	Lead (6020)	SVOC (8270D) + TICs (groundwater)	VOC (8260C)+TICs (groundwater)			AUTHORIZED TO RUN	EXTRACT AND HOLD
Container Type					AN	AN	CG	AN	AN	CG				
Container Size					4 oz	4 oz	40mL	4 oz	1L	40ml				
Preservative					4c	4c	4C & MEOH	4c	HCL	HCL				
					ANALYSES/METHOD REQUESTED									
					Enter Number of Containers Per Sample or Field Results Below.									
1 PAR-34-SB-06-3-3.5	8/12/16	1200	G	SO			3						X	
2 PAR-34-SB-06-6-6.5	8/12/16	1205	G	SO			3						X	
3 PAR-34-SB-06-75-8	8/12/16	1210	G	SO			3						X	
4 PAR-34-SB-06-8.5-9	8/12/16	1215	G	SO			3						X	
5														
6														
7														
8														
9														
10														

*G=Grab; C=Composite **Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

Receipt Information (completed by Receiving Lab)
Cooler Temp: 1 Therm ID: 352
No. of Coolers: ____

	Y	N	Initial
Custody Seals Present?	✓		SES
(If present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. In Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			✓

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: __Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): [signature] DATE 8/12/16 TIME 1300
REVIEWED BY(signature): [signature] DATE 8/12/16 TIME 1510

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 Ed ACCORSI PARSONS	8-12-16	1721	2 Paul Collin / ALS	8-12-16	1721
3 Paul Collin / ALS	8-12-16	1915	4 R. KAT	8-12	1915
5 R. KAT	8-12	2120	6 [signature]	8/12	2120
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC
Reportable to PADEP? Yes [ ]
PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS

ALS ENVIRONMENTAL SHIPPING ADDRESS: 1565 Jefferson Road, Building 300, Suite 360 Rochester, NY 14623 USA

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September 29, 2016

Ms.Cris Grill
Parsons
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Revised Report - 9/29/2016 11:07:38 PM - See workorder comment section for explanation

Project Name:	**Ft. Monmouth Soils**	Workorder:	**2168014**
Purchase Order:		Workorder ID:	**PQF036|FTMM MW**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 12, 2016.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Debra J. Musser (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2168014 PQF036|FTMM MW

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2167241010	PAR-34-TMW-06	Water	8/12/2016 11:55	8/12/2016 21:20	Collected by Client
2167241011	PAR-34-TMW-05	Water	8/12/2016 09:05	8/12/2016 21:20	Collected by Client
2167241012	PAR-34-EB-08122016	Water	8/12/2016 12:45	8/12/2016 21:20	Collected by Client
2167241013	Trip Blank	Water	8/12/2016 00:00	8/12/2016 21:20	Collected by Client

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SAMPLE SUMMARY

Workorder: 2168014 PQF036|FTMM MW

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 2168014 PQF036|FTMM MW

Workorder Comments

This Certificate of Analysis has been modified in order to correct the sample ID for sample -010. VNB 9/29/16

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241010** Date Collected: 8/12/2016 11:55 Matrix: Water

Sample ID: **PAR-34-TMW-06** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 15:38	TMP	C
Benzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Bromobenzene	3.8U	U	ug/L	5.0	3.8	1.0	SW846 8260C		8/23/16 15:38	TMP	C
Bromochloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Bromodichloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Bromoform	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Bromomethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
2-Butanone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 15:38	TMP	C
tert-Butyl Alcohol	62.5U	U	ug/L	125	62.5	41.5	SW846 8260C		8/23/16 15:38	TMP	C
n-Butylbenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
tert-Butylbenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
sec-Butylbenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Carbon Tetrachloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Chlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Chlorodibromomethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Chloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Chloroform	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Chloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
o-Chlorotoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
p-Chlorotoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2-Dibromo-3-chloropropane	12.5U	U	ug/L	25.0	12.5	8.0	SW846 8260C		8/23/16 15:38	TMP	C
1,2-Dibromoethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,3-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,4-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Dichlorodifluoromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1-Dichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2-Dichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
cis-1,2-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
trans-1,2-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,3-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
2,2-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
cis-1,3-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241010** Date Collected: 8/12/2016 11:55 Matrix: Water

Sample ID: **PAR-34-TMW-06** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Ethylbenzene	28.0		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	2.2	SW846 8260C		8/23/16 15:38	TMP	C
2-Hexanone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 15:38	TMP	C
Isopropylbenzene	35.1		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
p-Isopropyltoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Methyl t-Butyl Ether	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
4-Methyl-2-Pentanone(MIBK)	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 15:38	TMP	C
Methylene Chloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Naphthalene	23.0		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
n-Propylbenzene	80.2		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Styrene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1,1,2-Tetrachloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1,2,2-Tetrachloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Tetrachloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Toluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2,3-Trichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2,4-Trichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1,1-Trichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,1,2-Trichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Trichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Trichlorofluoromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,2,3-Trichloropropane	12.5U	U	ug/L	25.0	12.5	8.0	SW846 8260C		8/23/16 15:38	TMP	C
1,2,4-Trimethylbenzene	344		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
1,3,5-Trimethylbenzene	109		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
Vinyl Chloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
o-Xylene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 15:38	TMP	C
mp-Xylene	167		ug/L	10.0	7.5	3.3	SW846 8260C		8/23/16 15:38	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	81 - 118	SW846 8260C		8/23/16 15:38	TMP	C
4-Bromofluorobenzene (S)	102		%	85 - 114	SW846 8260C		8/23/16 15:38	TMP	C
Dibromofluoromethane (S)	88		%	80 - 119	SW846 8260C		8/23/16 15:38	TMP	C
Toluene-d8 (S)	96.2		%	89 - 112	SW846 8260C		8/23/16 15:38	TMP	C
Library Search - Volatiles									
Sulfur dioxide	351	J N	ug/L		SW846 8260C		8/23/16 15:38	TMP	C
Hexane, 2-methyl-	19.6	J N	ug/L		SW846 8260C		8/23/16 15:38	TMP	C
Hexane, 3-methyl-	24.8	J N	ug/L		SW846 8260C		8/23/16 15:38	TMP	C

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241010** Date Collected: 8/12/2016 11:55 Matrix: Water

Sample ID: **PAR-34-TMW-06** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
Butane, 2,2,3,3-tetramethyl-	71.0	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Pentane, 2,3,4-trimethyl-	47.5	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Pentane, 2,3,3-trimethyl-	83.3	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Heptane, 3-methyl-	17.4	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1-ethyl-2-methyl-	156	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1-ethenyl-2-methyl-	57.6	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1-ethyl-2,4-dimethyl-	36.7	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1-ethyl-2,3-dimethyl-	25.7	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 4-ethyl-1,2-dimethyl-	36.3	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1,2,4,5-tetramethyl-	16.0	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
Benzene, 1,2,3,5-tetramethyl-	25.1	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C
1H-Indene, 2,3-dihydro-5-methy	22.0	J N	ug/L				SW846 8260C		8/23/16 15:38	TMP	C

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241011** Date Collected: 8/12/2016 09:05 Matrix: Water

Sample ID: **PAR-34-TMW-05** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 16:21	TMP	C
Benzene	441		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Bromobenzene	3.8U	U	ug/L	5.0	3.8	1.0	SW846 8260C		8/23/16 16:21	TMP	C
Bromochloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Bromodichloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Bromoform	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Bromomethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
2-Butanone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 16:21	TMP	C
tert-Butyl Alcohol	62.5U	U	ug/L	125	62.5	41.5	SW846 8260C		8/23/16 16:21	TMP	C
n-Butylbenzene	33.5		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
tert-Butylbenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
sec-Butylbenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Carbon Tetrachloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Chlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Chlorodibromomethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Chloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Chloroform	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Chloromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
o-Chlorotoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
p-Chlorotoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dibromo-3-chloropropane	12.5U	U	ug/L	25.0	12.5	8.0	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dibromoethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,3-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,4-Dichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Dichlorodifluoromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1-Dichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
cis-1,2-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
trans-1,2-Dichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,3-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
2,2-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dichloropropane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
cis-1,3-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241011** Date Collected: 8/12/2016 09:05 Matrix: Water

Sample ID: **PAR-34-TMW-05** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Ethylbenzene	1290		ug/L	50.0	37.5	16.5	SW846 8260C		8/23/16 16:00	TMP	C
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	2.2	SW846 8260C		8/23/16 16:21	TMP	C
2-Hexanone	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 16:21	TMP	C
Isopropylbenzene	222		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
p-Isopropyltoluene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Methyl t-Butyl Ether	4.5J	J	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
4-Methyl-2-Pentanone(MIBK)	18.8U	U	ug/L	25.0	18.8	8.0	SW846 8260C		8/23/16 16:21	TMP	C
Methylene Chloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Naphthalene	145		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
n-Propylbenzene	446		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Styrene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1,1,2-Tetrachloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1,2,2-Tetrachloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Tetrachloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Toluene	30.3		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2,3-Trichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2,4-Trichlorobenzene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1,1-Trichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,1,2-Trichloroethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Trichloroethene	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Trichlorofluoromethane	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
1,2,3-Trichloropropane	12.5U	U	ug/L	25.0	12.5	8.0	SW846 8260C		8/23/16 16:21	TMP	C
1,2,4-Trimethylbenzene	2440		ug/L	50.0	37.5	16.5	SW846 8260C		8/23/16 16:00	TMP	C
1,3,5-Trimethylbenzene	560		ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
Vinyl Chloride	3.8U	U	ug/L	5.0	3.8	1.7	SW846 8260C		8/23/16 16:21	TMP	C
o-Xylene	310		ug/L	50.0	37.5	16.5	SW846 8260C		8/23/16 16:00	TMP	C
mp-Xylene	4810		ug/L	100	75.0	33.0	SW846 8260C		8/23/16 16:00	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	117		%	81 - 118	SW846 8260C		8/23/16 16:21	TMP	C
1,2-Dichloroethane-d4 (S)	114		%	81 - 118	SW846 8260C		8/23/16 16:00	TMP	C
4-Bromofluorobenzene (S)	97.3		%	85 - 114	SW846 8260C		8/23/16 16:21	TMP	C
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/23/16 16:00	TMP	C
Dibromofluoromethane (S)	87.6		%	80 - 119	SW846 8260C		8/23/16 16:00	TMP	C
Dibromofluoromethane (S)	85		%	80 - 119	SW846 8260C		8/23/16 16:21	TMP	C
Toluene-d8 (S)	93.3		%	89 - 112	SW846 8260C		8/23/16 16:21	TMP	C
Toluene-d8 (S)	94.8		%	89 - 112	SW846 8260C		8/23/16 16:00	TMP	C

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241011** Date Collected: 8/12/2016 09:05 Matrix: Water

Sample ID: **PAR-34-TMW-05** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Library Search - Volatiles											
Butane, 2-methyl-	89.3	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Pentane	45.1	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Cyclopentane, methyl-	178	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Benzene, (1-methylethyl)-	19.5	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Benzene, 1-ethyl-2-methyl-	423	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Benzene, 1-ethyl-2-methyl-	83.0	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Benzene, 1-ethyl-2,3-dimethyl-	32.8	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
Benzene, 1,2,4,5-tetramethyl-	20.6	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C
1H-Indene, 2,3-dihydro-5-methy	26.6	J N	ug/L				SW846 8260C		8/23/16 16:21	TMP	C

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ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241012** Date Collected: 8/12/2016 12:45 Matrix: Water

Sample ID: **PAR-34-EB-08122016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	5.9		ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:10	TMP	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/23/16 14:10	TMP	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:10	TMP	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/23/16 14:10	TMP	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 14:10	TMP	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241012** Date Collected: 8/12/2016 12:45 Matrix: Water

Sample ID: **PAR-34-EB-08122016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		8/23/16 14:10	TMP	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:10	TMP	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:10	TMP	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 14:10	TMP	C
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:10	TMP	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/23/16 14:10	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	81 - 118	SW846 8260C		8/23/16 14:10	TMP	C
4-Bromofluorobenzene (S)	104		%	85 - 114	SW846 8260C		8/23/16 14:10	TMP	C
Dibromofluoromethane (S)	86.6		%	80 - 119	SW846 8260C		8/23/16 14:10	TMP	C
Toluene-d8 (S)	93.9		%	89 - 112	SW846 8260C		8/23/16 14:10	TMP	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/23/16 14:10	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241012** Date Collected: 8/12/2016 12:45 Matrix: Water
Sample ID: **PAR-34-EB-08122016** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241013** Date Collected: 8/12/2016 00:00 Matrix: Water

Sample ID: **Trip Blank** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	14.9		ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:32	TMP	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/23/16 14:32	TMP	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
2-Butanone	3.5J	J	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:32	TMP	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/23/16 14:32	TMP	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 14:32	TMP	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241013** Date Collected: 8/12/2016 00:00 Matrix: Water

Sample ID: **Trip Blank** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		8/23/16 14:32	TMP	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:32	TMP	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/23/16 14:32	TMP	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/23/16 14:32	TMP	C
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/23/16 14:32	TMP	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/23/16 14:32	TMP	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	81 - 118	SW846 8260C		8/23/16 14:32	TMP	C
4-Bromofluorobenzene (S)	104		%	85 - 114	SW846 8260C		8/23/16 14:32	TMP	C
Dibromofluoromethane (S)	86.4		%	80 - 119	SW846 8260C		8/23/16 14:32	TMP	C
Toluene-d8 (S)	92.3		%	89 - 112	SW846 8260C		8/23/16 14:32	TMP	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/23/16 14:32	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2168014 PQF036|FTMM MW

Lab ID: **2167241013** Date Collected: 8/12/2016 00:00 Matrix: Water

Sample ID: **Trip Blank** Date Received: 8/12/2016 21:20

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Debra J Musser

Ms. Debra J. Musser
Project Coordinator

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Building 300, Suite 360
Rochester, NY 14623
(585)288-5380

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

2168014

1 of 1

3 of 3

Client Name: Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact: Cory Mahony
Phone#: 617-449-1440
Project Name/#: FTMM
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y carla.rodman@parsons.com
Fax? [ ] -Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	EPH (fractionated)	SVOCs - Naphthalene & 2-methylnaphthalene (8270D)	VOC (8260C)+TICs including 1,2-dichloroethane & 1,2-dibromoethane	Lead (6020)	SVOC (8270D) + TICs (groundwater)	VOC (8260C)+TICs (groundwater)			AUTHORIZED TO RUN	EXTRACT AND HOLD
Container Type					AN	AN	CG	AN	AN	CG				
Container Size					4 oz	4 oz	40mL	4 oz	1L	40ml				
Preservative					4c	4c	4C & MECH	4c	HCL	HCL				
					ANALYSES/METHOD REQUESTED									
					Enter Number of Containers Per Sample or Field Results Below.									
1 PAR-34-TMW-06	8/12	1155	G	GW						3			X	
2 PAR-34-TMW-05	8/12	0905	G	GW						3			X	
3 PAR-34-EB-08122016	8/12	1245	G	EB						3			X	
4														
5														
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)
Cooler Temp: 1 Therm ID: 352
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?		X	SES
(if present) Seals Intact?		X	
Received on Ice?		X	
COC/Labels Complete/Accurate?		X	
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			

SES 8/13/16

Courier/Tracking #:
Sample/COC Comments

ALS Field Services: _Pickup _Labor
_Composite Sampling _Rental Equipment
_Other:

Project Comments: 748810
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): Paul Collins Date 8/12/16 1300
REVIEWED BY(signature): [signature] Date 8/12/16 1310

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 F. ACCORSI PARSONS	8-12-16	1721	2 Paul Collins ALS	8-12-16	1721
3 Paul Collins / ALS	8-12-16	1915	4 [signature]	8-12	1915
5 [signature]	8-12	2126	6		
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC
Reportable to PADEP? Yes [ ]
PWSID # _____
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS

*G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Ol=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 1565 Jefferson Road, Building 300, Suite 360 Rochester, NY 14623 USA

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

October 27, 2016

Ms.Cris Grill
Parsons
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**2184164**
Purchase Order:		Workorder ID:	**PQF049|FTMM PARCEL 58 GW TBA 1**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Friday, October 21, 2016.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2184164001	FTMM-58-GW-2567MW03-8	Water	10/21/2016 10:35	10/21/2016 20:40	Collected by Client
2184164002	FTMM-58-GW-2567MW01-8.6	Water	10/21/2016 09:50	10/21/2016 20:40	Collected by Client
2184164003	FTMM-58-GW-2567MW01-11	Water	10/21/2016 10:05	10/21/2016 20:40	Collected by Client
2184164004	EB-20161021	Water	10/21/2016 11:00	10/21/2016 20:40	Collected by Client

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Lab ID: **2184164001** Date Collected: 10/21/2016 10:35 Matrix: Water

Sample ID: **FTMM-58-GW-2567MW03-8** Date Received: 10/21/2016 20:40

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		10/26/16 16:47	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	81 - 118			SW846 8260C		10/26/16 16:47	DD	A
4-Bromofluorobenzene (S)	91.1		%	85 - 114			SW846 8260C		10/26/16 16:47	DD	A
Dibromofluoromethane (S)	83.6		%	80 - 119			SW846 8260C		10/26/16 16:47	DD	A
Toluene-d8 (S)	90.1		%	89 - 112			SW846 8260C		10/26/16 16:47	DD	A

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

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ANALYTICAL RESULTS

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Lab ID: **2184164002** Date Collected: 10/21/2016 09:50 Matrix: Water

Sample ID: **FTMM-58-GW-2567MW01-8.6** Date Received: 10/21/2016 20:40

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
tert-Butyl Alcohol	344		ug/L	25.0	12.5	8.3	SW846 8260C			10/26/16 17:08	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	81 - 118			SW846 8260C			10/26/16 17:08	DD	A
4-Bromofluorobenzene (S)	94		%	85 - 114			SW846 8260C			10/26/16 17:08	DD	A
Dibromofluoromethane (S)	84.7		%	80 - 119			SW846 8260C			10/26/16 17:08	DD	A
Toluene-d8 (S)	89.5		%	89 - 112			SW846 8260C			10/26/16 17:08	DD	A

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Lab ID: **2184164003** Date Collected: 10/21/2016 10:05 Matrix: Water

Sample ID: **FTMM-58-GW-2567MW01-11** Date Received: 10/21/2016 20:40

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C			10/26/16 17:30	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	81 - 118			SW846 8260C			10/26/16 17:30	DD	A
4-Bromofluorobenzene (S)	93.9		%	85 - 114			SW846 8260C			10/26/16 17:30	DD	A
Dibromofluoromethane (S)	81.7		%	80 - 119			SW846 8260C			10/26/16 17:30	DD	A
Toluene-d8 (S)	90.6		%	89 - 112			SW846 8260C			10/26/16 17:30	DD	A

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2184164 PQF049|FTMM PARCEL 58 GW TBA 1

Lab ID: **2184164004** Date Collected: 10/21/2016 11:00 Matrix: Water

Sample ID: **EB-20161021** Date Received: 10/21/2016 20:40

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS												
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C			10/26/16 12:23	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	81 - 118			SW846 8260C			10/26/16 12:23	DD	A
4-Bromofluorobenzene (S)	95		%	85 - 114			SW846 8260C			10/26/16 12:23	DD	A
Dibromofluoromethane (S)	83.8		%	80 - 119			SW846 8260C			10/26/16 12:23	DD	A
Toluene-d8 (S)	93.3		%	89 - 112			SW846 8260C			10/26/16 12:23	DD	A

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental
1565 Jefferson Road
Building 300, Suite 360
Rochester, NY 14623
(585)288-5380

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

VB

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

2184164

1 of 1

Client Name: Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact: Cory Mahony
Phone#: 617-449-1440
Project Name/#: FTMM
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	VOC (8260C)+15 TICs	TBA ONLY - VOC (8260C)	AUTHORIZED TO RUN	EXTRACT AND HOLD
					CG	40ml	HCL				
					CG	40ml	HCL				
1 FTMM-SB-GW-2567MW03-8	10/21/16	1035	G	GW					X	3	
2 FTMM-SB-GW-2567MW01-8.6	10/21/16	0950	G	GW					X		
3 FTMM-SB-GW-2567MW05-11	10/21/16	1005	G	GW					X		
4 EB-20161021	10/21/16	1100	G	EB					X		
5											
6											
7											
8											
9											
10											

ANALYSES/METHOD REQUESTED
Enter Number of Containers Per Sample or Field Results Below.

Cooler Temp: 1 Therm ID: 352
No. of Coolers: ____

	Y	N	Initial
Custody Seals Present?			SEG
(if present) Seals Intact?			
Received on Ice?			
COC/Labels Complete/Accurate?			
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810
MDL Must Meet NJDEP Groundwater Quality Standards

LOGGED BY(signature): DATE TIME
REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	10/21/16	14:57	2	10/21/16	1257
3	10/21	1800	4	10-21	1830
5	10-21	2040	6	10/21	2040
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ] [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 1565 Jefferson Road, Building 300, Suite 360 Rochester, NY 14623 USA

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

May 11, 2017

Ms.Cris Grill
Parsons - Boston MA
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Revised Report - 5/11/2017 2:46:18 AM - See workorder comment section for explanation

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**2220970**
Purchase Order:		Workorder ID:	**PQF079|FTMM PAR 34 GW VOCs**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 6, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Lorraine Weber

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2220970001	PAR-34-GW-2567MW10-10.5	Water	4/5/2017 10:30	4/6/2017 20:30	Collected by Client
2220970002	PAR-34-GW-2567MW10-5.5	Water	4/5/2017 09:35	4/6/2017 20:30	Collected by Client
2220970003	PAR-34-GW-2567MW08-5.5	Water	4/5/2017 09:25	4/6/2017 20:30	Collected by Client
2220970004	PAR-34-GW-2567MW08-10.5	Water	4/5/2017 10:50	4/6/2017 20:30	Collected by Client
2220970005	PAR-34-GW-2567MW108-5.5	Water	4/5/2017 12:00	4/6/2017 20:30	Collected by Client
2220970006	PAR-34-GW-2567MW09-8.52	Water	4/5/2017 11:55	4/6/2017 20:30	Collected by Client
2220970007	EB-20170405	Water	4/5/2017 13:30	4/6/2017 20:30	Collected by Client
2220970008	TB-20170405	Water	4/5/2017 00:00	4/6/2017 20:30	Collected by Client

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Workorder Comments

This Certificate of Analysis has been modified in order to correct the received date and time per the chain of custody. VNB 5/9/17

This Certificate of Analysis has been modified in order to edit the Trip Blank collection date and time per client request. VNB 5/10/17

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970001** Date Collected: 4/5/2017 10:30 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS											
Acetone	6.0		ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:05	CJG	B
Benzene	18.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/12/17 22:05	CJG	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:05	CJG	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/12/17 22:05	CJG	B
n-Butylbenzene	1.6		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 22:05	CJG	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970001** Date Collected: 4/5/2017 10:30 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Ethylbenzene	72.9		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/12/17 22:05	CJG	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:05	CJG	B
Isopropylbenzene	8.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Methyl t-Butyl Ether	0.39J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:05	CJG	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Naphthalene	9.5		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
n-Propylbenzene	23.0		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Toluene	107		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Total Xylenes	304		ug/L	3.0	2.3	1.0	SW846 8260C		4/12/17 22:05	CJG	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 22:05	CJG	B
1,2,4-Trimethylbenzene	58.7		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
1,3,5-Trimethylbenzene	15.3		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
o-Xylene	73.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:05	CJG	B
mp-Xylene	231		ug/L	2.0	1.5	0.66	SW846 8260C		4/12/17 22:05	CJG	B
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.9		%	81 - 118			SW846 8260C		4/12/17 22:05	CJG	B
4-Bromofluorobenzene (S)	92.4		%	85 - 114			SW846 8260C		4/12/17 22:05	CJG	B
Dibromofluoromethane (S)	86.2		%	80 - 119			SW846 8260C		4/12/17 22:05	CJG	B
Toluene-d8 (S)	93.6		%	89 - 112			SW846 8260C		4/12/17 22:05	CJG	B
Library Search - Volatiles											
Pentane, 2-methyl-	14.3	J N	ug/L				SW846 8260C		4/12/17 22:05	CJG	B
Cyclopentane, methyl-	17.4	J N	ug/L				SW846 8260C		4/12/17 22:05	CJG	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970001** Date Collected: 4/5/2017 10:30 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Benzene, 1-ethyl-4-methyl-	48.3	J N	ug/L				SW846 8260C		4/12/17 22:05	CJG	B
Benzene, 1-ethyl-2-methyl-	13.2	J N	ug/L				SW846 8260C		4/12/17 22:05	CJG	B

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970002** Date Collected: 4/5/2017 09:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	9.4		ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:27	CJG	B
Benzene	63.5		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/12/17 22:27	CJG	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
2-Butanone	2.2J	J	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:27	CJG	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/12/17 22:27	CJG	B
n-Butylbenzene	2.8		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 22:27	CJG	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970002** Date Collected: 4/5/2017 09:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Ethylbenzene	296		ug/L	10.0	7.5	3.3	SW846 8260C		4/13/17 17:09	DD	B
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/12/17 22:27	CJG	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:27	CJG	B
Isopropylbenzene	18.4		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Methyl t-Butyl Ether	0.94J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 22:27	CJG	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Naphthalene	26.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
n-Propylbenzene	48.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Toluene	441		ug/L	10.0	7.5	3.3	SW846 8260C		4/13/17 17:09	DD	B
Total Xylenes	1330		ug/L	30.0	22.5	10.0	SW846 8260C		4/13/17 17:09	DD	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 22:27	CJG	B
1,2,4-Trimethylbenzene	197		ug/L	10.0	7.5	3.3	SW846 8260C		4/13/17 17:09	DD	B
1,3,5-Trimethylbenzene	54.3		ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 22:27	CJG	B
o-Xylene	317		ug/L	10.0	7.5	3.3	SW846 8260C		4/13/17 17:09	DD	B
mp-Xylene	1020		ug/L	20.0	15.0	6.6	SW846 8260C		4/13/17 17:09	DD	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	94.1		%	81 - 118	SW846 8260C		4/13/17 17:09	DD	B
1,2-Dichloroethane-d4 (S)	88.5		%	81 - 118	SW846 8260C		4/12/17 22:27	CJG	B
4-Bromofluorobenzene (S)	89.9		%	85 - 114	SW846 8260C		4/13/17 17:09	DD	B
4-Bromofluorobenzene (S)	89.5		%	85 - 114	SW846 8260C		4/12/17 22:27	CJG	B
Dibromofluoromethane (S)	84.4		%	80 - 119	SW846 8260C		4/12/17 22:27	CJG	B
Dibromofluoromethane (S)	89.7		%	80 - 119	SW846 8260C		4/13/17 17:09	DD	B
Toluene-d8 (S)	92.8		%	89 - 112	SW846 8260C		4/12/17 22:27	CJG	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970002** Date Collected: 4/5/2017 09:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Toluene-d8 (S)	89.5		%	89 - 112			SW846 8260C		4/13/17 17:09	DD	B
Library Search - Volatiles											
Benzene, 1-ethyl-4-methyl-	103	J N	ug/L				SW846 8260C		4/12/17 22:27	CJG	B
Benzene, 1-ethyl-2-methyl-	29.5	J N	ug/L				SW846 8260C		4/12/17 22:27	CJG	B
Benzene, 1,2,4-trimethyl-	112	J N	ug/L				SW846 8260C		4/12/17 22:27	CJG	B

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970003** Date Collected: 4/5/2017 09:25 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:55	CJG	E
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/14/17 03:55	CJG	E
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:55	CJG	E
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/14/17 03:55	CJG	E
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 03:55	CJG	E
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970003** Date Collected: 4/5/2017 09:25 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Ethylbenzene	0.44J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/14/17 03:55	CJG	E
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:55	CJG	E
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:55	CJG	E
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
n-Propylbenzene	0.59J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/14/17 03:55	CJG	E
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 03:55	CJG	E
1,2,4-Trimethylbenzene	1.2		ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:55	CJG	E
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/14/17 03:55	CJG	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.3		%	81 - 118	SW846 8260C		4/14/17 03:55	CJG	E
4-Bromofluorobenzene (S)	99.3		%	85 - 114	SW846 8260C		4/14/17 03:55	CJG	E
Dibromofluoromethane (S)	87.8		%	80 - 119	SW846 8260C		4/14/17 03:55	CJG	E
Toluene-d8 (S)	95.4		%	89 - 112	SW846 8260C		4/14/17 03:55	CJG	E

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/14/17 03:55	CPK	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970003** Date Collected: 4/5/2017 09:25 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970004** Date Collected: 4/5/2017 10:50 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:17	CJG	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/14/17 04:17	CJG	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:17	CJG	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/14/17 04:17	CJG	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 04:17	CJG	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970004** Date Collected: 4/5/2017 10:50 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/14/17 04:17	CJG	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:17	CJG	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:17	CJG	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
n-Propylbenzene	0.38J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/14/17 04:17	CJG	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 04:17	CJG	C
1,2,4-Trimethylbenzene	0.99J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:17	CJG	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/14/17 04:17	CJG	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.6		%	81 - 118	SW846 8260C		4/14/17 04:17	CJG	C
4-Bromofluorobenzene (S)	99.3		%	85 - 114	SW846 8260C		4/14/17 04:17	CJG	C
Dibromofluoromethane (S)	88		%	80 - 119	SW846 8260C		4/14/17 04:17	CJG	C
Toluene-d8 (S)	94.2		%	89 - 112	SW846 8260C		4/14/17 04:17	CJG	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/14/17 04:17	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970004** Date Collected: 4/5/2017 10:50 Matrix: Water

Sample ID: **PAR-34-GW-2567MW08-10.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970005** Date Collected: 4/5/2017 12:00 Matrix: Water

Sample ID: **PAR-34-GW-2567MW108-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:39	CJG	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/14/17 04:39	CJG	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:39	CJG	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/14/17 04:39	CJG	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 04:39	CJG	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970005** Date Collected: 4/5/2017 12:00 Matrix: Water

Sample ID: **PAR-34-GW-2567MW108-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Ethylbenzene	0.39J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/14/17 04:39	CJG	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:39	CJG	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 04:39	CJG	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
n-Propylbenzene	0.47J	J	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/14/17 04:39	CJG	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 04:39	CJG	C
1,2,4-Trimethylbenzene	1.1		ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 04:39	CJG	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/14/17 04:39	CJG	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97		%	81 - 118	SW846 8260C		4/14/17 04:39	CJG	C
4-Bromofluorobenzene (S)	98.6		%	85 - 114	SW846 8260C		4/14/17 04:39	CJG	C
Dibromofluoromethane (S)	90.1		%	80 - 119	SW846 8260C		4/14/17 04:39	CJG	C
Toluene-d8 (S)	95.7		%	89 - 112	SW846 8260C		4/14/17 04:39	CJG	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/14/17 04:39	CPK	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970005** Date Collected: 4/5/2017 12:00 Matrix: Water

Sample ID: **PAR-34-GW-2567MW108-5.5** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970006** Date Collected: 4/5/2017 11:55 Matrix: Water

Sample ID: **PAR-34-GW-2567MW09-8.52** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 23:55	CJG	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/12/17 23:55	CJG	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 23:55	CJG	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/12/17 23:55	CJG	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 23:55	CJG	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970006** Date Collected: 4/5/2017 11:55 Matrix: Water

Sample ID: **PAR-34-GW-2567MW09-8.52** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/12/17 23:55	CJG	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 23:55	CJG	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 23:55	CJG	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/12/17 23:55	CJG	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 23:55	CJG	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 23:55	CJG	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/12/17 23:55	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.1		%	81 - 118	SW846 8260C		4/12/17 23:55	CJG	B
4-Bromofluorobenzene (S)	93.9		%	85 - 114	SW846 8260C		4/12/17 23:55	CJG	B
Dibromofluoromethane (S)	89.8		%	80 - 119	SW846 8260C		4/12/17 23:55	CJG	B
Toluene-d8 (S)	91.3		%	89 - 112	SW846 8260C		4/12/17 23:55	CJG	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/12/17 23:55	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970006** Date Collected: 4/5/2017 11:55 Matrix: Water

Sample ID: **PAR-34-GW-2567MW09-8.52** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970007** Date Collected: 4/5/2017 13:30 Matrix: Water

Sample ID: **EB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 21:21	CJG	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/12/17 21:21	CJG	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 21:21	CJG	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/12/17 21:21	CJG	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 21:21	CJG	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970007** Date Collected: 4/5/2017 13:30 Matrix: Water

Sample ID: **EB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/12/17 21:21	CJG	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 21:21	CJG	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/12/17 21:21	CJG	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/12/17 21:21	CJG	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/12/17 21:21	CJG	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/12/17 21:21	CJG	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/12/17 21:21	CJG	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	94.5		%	81 - 118	SW846 8260C		4/12/17 21:21	CJG	B
4-Bromofluorobenzene (S)	90.7		%	85 - 114	SW846 8260C		4/12/17 21:21	CJG	B
Dibromofluoromethane (S)	89.6		%	80 - 119	SW846 8260C		4/12/17 21:21	CJG	B
Toluene-d8 (S)	89.9		%	89 - 112	SW846 8260C		4/12/17 21:21	CJG	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/12/17 21:21	CPK	B

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970007** Date Collected: 4/5/2017 13:30 Matrix: Water

Sample ID: **EB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

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ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970008** Date Collected: 4/5/2017 00:00 Matrix: Water

Sample ID: **TB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:33	CJG	C
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		4/14/17 03:33	CJG	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:33	CJG	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		4/14/17 03:33	CJG	C
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 03:33	CJG	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970008** Date Collected: 4/5/2017 00:00 Matrix: Water

Sample ID: **TB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Hexachlorobutadiene	0.75U	U	ug/L	1.0	0.75	0.43	SW846 8260C		4/14/17 03:33	CJG	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:33	CJG	C
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		4/14/17 03:33	CJG	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		4/14/17 03:33	CJG	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		4/14/17 03:33	CJG	C
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		4/14/17 03:33	CJG	C
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		4/14/17 03:33	CJG	C

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.1		%	81 - 118	SW846 8260C		4/14/17 03:33	CJG	C
4-Bromofluorobenzene (S)	100		%	85 - 114	SW846 8260C		4/14/17 03:33	CJG	C
Dibromofluoromethane (S)	89.8		%	80 - 119	SW846 8260C		4/14/17 03:33	CJG	C
Toluene-d8 (S)	93.6		%	89 - 112	SW846 8260C		4/14/17 03:33	CJG	C

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		4/14/17 03:33	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2220970 PQF079|FTMM PAR 34 GW VOCs

Lab ID: **2220970008** Date Collected: 4/5/2017 00:00 Matrix: Water

Sample ID: **TB-20170405** Date Received: 4/6/2017 20:30

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

2220970

17 | 1 of 1

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Parsons Federal
Address: 100 High Street, 4th Floor, Boston, MA 02110
Contact: Lorraine Weber
Phone#: 315-552-9745
Project Name/#: Fort Monmouth
Bill To: Parsons Federal

TAT: [x] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.
Date Required: _____ Approved By: _____
Email? [x] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.: _____

(Lab Use Only) Received by Receiving Lab)
Cooler Temp: 12 Therm ID: 318
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. In Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Courier/Tracking #:

Container Type	CG	CG	P	P	CG	P	AV			
Container Size	40 ml	40 ml	500 ml	250 ml	40 ml	500 ml	40 ml			
Preservative	HCL	HCL	ZnAc NaOH	UNP	HCL	UNP	HCL			

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + 15 TICs (8260)	VOCs + 15 TICs + TBA (8260)	Sulfide (SM4500S2F)	Sulfate/Nitrate/Chloride (E300)	Dissolved Gases (RSK-175) (methane, ethane, ethene)	Alkalinity (SM2320B)	Dissolved Organic Carbon (Field Filtered, SW9060) (SW9060)				Sample/COC Comments
					Enter Number of Containers Per Sample or Field Results Below.										
1 PAR-34-GW-2567MW10-10.5	4/5/17	1030	G	GW		3									
2 PAR-34-GW-2567MW10-5.5	4/5/17	0935	G	GW		3									
3 PAR-34-GW-2567MW08-5.5	4/5/17	0925	G	GW		3									
4 PAR-34-GW-2567MW08-10.5	4/5/17	1050	G	GW		3									
5 PAR-34-GW-2567MW08-5.5-MS	4/5/17	0925	G	GW		3									
6 PAR-34-GW-2567MW08-5.5-MSD	4/5/17	0925	G	GW		3									
7 PAR-34-GW-2567MW108-5.5	4/5/17	1200	G	GW		3									
8 PAR-34-GW-2567MW09-8.52	4/5/17	1155	G	GW		3									
9 EB-20170405	4/5/17	1330	G	GW		3									
10 TB-20170405	4/5/17	—	G	TB		3									

ALS Field Services: oPickup oLabor oComposite Sampling oRental Equipment oOther: _____

Project Comments: 748810
MDL Must Meet NJDEP Groundwater Quality Standards

LOGGED BY(signature): _____ DATE: 4/5/17 TIME: 1230
REVIEWED BY(signature): FRANK ACCORSI DATE: 4-5-17 TIME: 1300

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 Frank Accorsi / PARSONS	4-6-17	1118	2 [illegible] / ALS	4/6/17	11:18
3 [illegible] / ALS	4/6/17		4 [illegible]	4-6	1745
5 [illegible]	4-6	2030	6 [illegible]	4/6	2027
7			8		
9			10		

Data Deliverables: [ ] Standard [x] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ] [ ]
State Samples Collected In: [ ] NY [x] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID # _____
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite
**Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oi=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

January 26, 2018

Mr. Kent Friesen
Parsons - Federal Services

Certificate of Analysis

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**2289966**
Purchase Order:	**P34-01-20180119**	Workorder ID:	**PQF126|Ft. Monmouth Parcel 34**

Dear Mr. Friesen:

Enclosed are the analytical results for samples received by the laboratory on Friday, January 19, 2018.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Julien Chambert , Ms.Cris Grill , Ms. Lorraine Weber

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2289966001	PAR-34-2567-GW-MW-11-7	Water	1/19/2018 13:50	1/19/2018 19:50	Collected by Client
2289966002	PAR-34-2567-GW-MW-02-8	Water	1/19/2018 08:55	1/19/2018 19:50	Collected by Client
2289966003	PAR-34-2567-GW-MW-03-8	Water	1/19/2018 09:45	1/19/2018 19:50	Collected by Client
2289966004	PAR-34-2567-GW-MW-08-8.5	Water	1/19/2018 10:35	1/19/2018 19:50	Collected by Client
2289966005	PAR-34-2567-GW-MW-09-8.5	Water	1/19/2018 13:00	1/19/2018 19:50	Collected by Client
2289966006	PAR-34-2567-GW-MW-10-8.5	Water	1/19/2018 11:40	1/19/2018 19:50	Collected by Client
2289966007	EB20180119	Water	1/19/2018 14:00	1/19/2018 19:50	Collected by Client

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SAMPLE SUMMARY

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966001** Date Collected: 1/19/2018 13:50 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-11-7** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 15:42	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/24/18 15:42	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 15:42	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/24/18 15:42	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 15:42	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966001** Date Collected: 1/19/2018 13:50 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-11-7** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/24/18 15:42	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 15:42	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 15:42	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		1/24/18 15:42	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 15:42	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 15:42	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		1/24/18 15:42	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	81 - 118	SW846 8260C		1/24/18 15:42	TMP	B
4-Bromofluorobenzene (S)	89.2		%	85 - 114	SW846 8260C		1/24/18 15:42	TMP	B
Dibromofluoromethane (S)	106		%	80 - 119	SW846 8260C		1/24/18 15:42	TMP	B
Toluene-d8 (S)	111		%	89 - 112	SW846 8260C		1/24/18 15:42	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		1/24/18 15:42	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966001** Date Collected: 1/19/2018 13:50 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-11-7** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966002** Date Collected: 1/19/2018 08:55 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-02-8** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:05	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/24/18 16:05	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:05	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/24/18 16:05	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 16:05	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966002** Date Collected: 1/19/2018 08:55 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-02-8** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/24/18 16:05	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:05	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:05	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		1/24/18 16:05	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 16:05	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:05	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		1/24/18 16:05	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	124	1	%	81 - 118	SW846 8260C		1/24/18 16:05	TMP	B
4-Bromofluorobenzene (S)	102		%	85 - 114	SW846 8260C		1/24/18 16:05	TMP	B
Dibromofluoromethane (S)	101		%	80 - 119	SW846 8260C		1/24/18 16:05	TMP	B
Toluene-d8 (S)	84.2	2	%	89 - 112	SW846 8260C		1/24/18 16:05	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		1/24/18 16:05	CPK	B

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID:	**2289966002**	Date Collected:	1/19/2018 08:55	Matrix:	Water
Sample ID:	**PAR-34-2567-GW-MW-02-8**	Date Received:	1/19/2018 19:50		

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966003** Date Collected: 1/19/2018 09:45 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-03-8** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:28	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/24/18 16:28	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:28	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/24/18 16:28	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 16:28	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:28	TMP	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966003** Date Collected: 1/19/2018 09:45 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-03-8** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			1/24/18 16:28	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			1/24/18 16:28	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Methyl t-Butyl Ether	0.43J	J	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			1/24/18 16:28	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			1/24/18 16:28	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C			1/24/18 16:28	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			1/24/18 16:28	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			1/24/18 16:28	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	81 - 118	SW846 8260C			1/24/18 16:28	TMP	B
4-Bromofluorobenzene (S)	103		%	85 - 114	SW846 8260C			1/24/18 16:28	TMP	B
Dibromofluoromethane (S)	103		%	80 - 119	SW846 8260C			1/24/18 16:28	TMP	B
Toluene-d8 (S)	99		%	89 - 112	SW846 8260C			1/24/18 16:28	TMP	B

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No TIC's Detected	.				Lib Search VOC			1/24/18 16:28	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID:	**2289966003**	Date Collected:	1/19/2018 09:45	Matrix:	Water
Sample ID:	**PAR-34-2567-GW-MW-03-8**	Date Received:	1/19/2018 19:50		

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966004** Date Collected: 1/19/2018 10:35 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-08-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:51	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/24/18 16:51	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:51	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/24/18 16:51	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 16:51	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966004** Date Collected: 1/19/2018 10:35 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-08-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/24/18 16:51	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:51	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 16:51	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		1/24/18 16:51	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 16:51	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 16:51	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		1/24/18 16:51	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	81 - 118	SW846 8260C		1/24/18 16:51	TMP	B
4-Bromofluorobenzene (S)	96.9		%	85 - 114	SW846 8260C		1/24/18 16:51	TMP	B
Dibromofluoromethane (S)	104		%	80 - 119	SW846 8260C		1/24/18 16:51	TMP	B
Toluene-d8 (S)	102		%	89 - 112	SW846 8260C		1/24/18 16:51	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		1/24/18 16:51	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966004** Date Collected: 1/19/2018 10:35 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-08-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966005** Date Collected: 1/19/2018 13:00 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-09-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 17:14	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/24/18 17:14	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 17:14	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/24/18 17:14	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 17:14	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966005** Date Collected: 1/19/2018 13:00 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-09-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/24/18 17:14	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 17:14	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/24/18 17:14	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		1/24/18 17:14	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/24/18 17:14	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/24/18 17:14	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		1/24/18 17:14	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	81 - 118	SW846 8260C		1/24/18 17:14	TMP	B
4-Bromofluorobenzene (S)	99.5		%	85 - 114	SW846 8260C		1/24/18 17:14	TMP	B
Dibromofluoromethane (S)	103		%	80 - 119	SW846 8260C		1/24/18 17:14	TMP	B
Toluene-d8 (S)	108		%	89 - 112	SW846 8260C		1/24/18 17:14	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		1/24/18 17:14	CPK	B

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966005** Date Collected: 1/19/2018 13:00 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-09-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966006** Date Collected: 1/19/2018 11:40 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-10-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 17:21	TMP	C
Benzene	13.6		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/25/18 17:21	TMP	C
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 17:21	TMP	C
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/25/18 17:21	TMP	C
n-Butylbenzene	1.7		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/25/18 17:21	TMP	C
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C

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ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966006** Date Collected: 1/19/2018 11:40 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-10-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Ethylbenzene	59.9		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/25/18 17:21	TMP	C
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 17:21	TMP	C
Isopropylbenzene	7.5		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Methyl t-Butyl Ether	0.45J	J	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 17:21	TMP	C
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Naphthalene	9.4		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
n-Propylbenzene	20.5		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Toluene	7.8		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Total Xylenes	243		ug/L	3.0	2.3	1.0	SW846 8260C		1/25/18 17:21	TMP	C
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/25/18 17:21	TMP	C
1,2,4-Trimethylbenzene	62.3		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
1,3,5-Trimethylbenzene	18.4		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
o-Xylene	41.8		ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 17:21	TMP	C
mp-Xylene	201		ug/L	2.0	1.5	0.66	SW846 8260C		1/25/18 17:21	TMP	C
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	121	2	%	81 - 118			SW846 8260C		1/25/18 17:21	TMP	C
4-Bromofluorobenzene (S)	100		%	85 - 114			SW846 8260C		1/25/18 17:21	TMP	C
Dibromofluoromethane (S)	100		%	80 - 119			SW846 8260C		1/25/18 17:21	TMP	C
Toluene-d8 (S)	85.1	3	%	89 - 112			SW846 8260C		1/25/18 17:21	TMP	C
Library Search - Volatiles											
Butane, 2-methyl-	18.3	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Pentane	15.8	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966006** Date Collected: 1/19/2018 11:40 Matrix: Water

Sample ID: **PAR-34-2567-GW-MW-10-8.5** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Pentane, 2-methyl-	25.1	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Cyclopentane, methyl-	18.1	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Benzene, 1-ethyl-2-methyl-	37.8	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Benzene, 1-ethyl-3-methyl-	11.2	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Benzene, 1,2,4-trimethyl-	53.4	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C
Benzene, 1-ethyl-2,3-dimeth	0.0	J N	ug/L				SW846 8260C		1/25/18 17:21	TMP	C

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966007** Date Collected: 1/19/2018 14:00 Matrix: Water

Sample ID: **EB20180119** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.5J	J	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 16:58	TMP	E
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		1/25/18 16:58	TMP	E
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 16:58	TMP	E
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		1/25/18 16:58	TMP	E
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/25/18 16:58	TMP	E
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966007** Date Collected: 1/19/2018 14:00 Matrix: Water

Sample ID: **EB20180119** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		1/25/18 16:58	TMP	E
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 16:58	TMP	E
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		1/25/18 16:58	TMP	E
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		1/25/18 16:58	TMP	E
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		1/25/18 16:58	TMP	E
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		1/25/18 16:58	TMP	E
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		1/25/18 16:58	TMP	E

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	81 - 118	SW846 8260C		1/25/18 16:58	TMP	E
4-Bromofluorobenzene (S)	83.1	2	%	85 - 114	SW846 8260C		1/25/18 16:58	TMP	E
Dibromofluoromethane (S)	97.9		%	80 - 119	SW846 8260C		1/25/18 16:58	TMP	E
Toluene-d8 (S)	95.6		%	89 - 112	SW846 8260C		1/25/18 16:58	TMP	E

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		1/25/18 16:58	CPK	D

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966007** Date Collected: 1/19/2018 14:00 Matrix: Water

Sample ID: **EB20180119** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
SEMIVOLATILES												
Acenaphthene	0.96U	U	ug/L	1.9	0.96	0.14	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Acenaphthylene	0.96U	U	ug/L	1.9	0.96	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Anthracene	0.96U	U	ug/L	1.9	0.96	0.14	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzidine	28.7U	U	ug/L	28.7	28.7	3.0	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzo(a)anthracene	0.96U	U	ug/L	1.9	0.96	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzo(a)pyrene	0.96U	U	ug/L	1.9	0.96	0.21	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzo(b)fluoranthene	0.96U	U	ug/L	1.9	0.96	0.12	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzo(g,h,i)perylene	0.96U	U	ug/L	1.9	0.96	0.21	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzo(k)fluoranthene	0.96U	U	ug/L	1.9	0.96	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Benzyl Alcohol	1.9U	U	ug/L	7.7	1.9	0.22	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Bromophenyl-phenylether	0.96U	U	ug/L	7.7	0.96	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Butylbenzylphthalate	0.13J	J	ug/L	7.7	0.96	0.11	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Carbazole	0.96U	U	ug/L	7.7	0.96	0.11	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Chloro-3-methylphenol	0.96U	U	ug/L	7.7	0.96	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Chloroaniline	0.96U	U	ug/L	7.7	0.96	0.21	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
bis(2-Chloroethoxy)methane	0.96U	U	ug/L	7.7	0.96	0.20	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
bis(2-Chloroethyl)ether	0.96U	U	ug/L	7.7	0.96	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
bis(2-Chloroisopropyl)ether	0.96U	U	ug/L	7.7	0.96	0.27	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Chloronaphthalene	0.96U	U	ug/L	7.7	0.96	0.17	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Chlorophenol	1.9U	U	ug/L	7.7	1.9	0.32	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Chlorophenyl-phenylether	0.96U	U	ug/L	7.7	0.96	0.13	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Chrysene	0.96U	U	ug/L	1.9	0.96	0.14	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
mp-Cresol	0.96U	U	ug/L	7.7	0.96	0.15	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
o-Cresol	0.96U	U	ug/L	7.7	0.96	0.24	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Di-n-Butylphthalate	0.96U	U	ug/L	7.7	0.96	0.13	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Di-n-Octylphthalate	0.96U	U	ug/L	7.7	0.96	0.096	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Dibenzo(a,h)anthracene	0.96U	U	ug/L	1.9	0.96	0.20	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Dibenzofuran	0.96U	U	ug/L	7.7	0.96	0.15	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
1,2-Dichlorobenzene	0.96U	U	ug/L	7.7	0.96	0.19	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
1,3-Dichlorobenzene	0.96U	U	ug/L	7.7	0.96	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
1,4-Dichlorobenzene	0.96U	U	ug/L	7.7	0.96	0.17	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
3,3-Dichlorobenzidine	2.9U	U	ug/L	15.3	2.9	0.46	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,4-Dichlorophenol	0.96U	U	ug/L	7.7	0.96	0.31	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Diethylphthalate	0.96U	U	ug/L	7.7	0.96	0.17	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,4-Dimethylphenol	4.8U	U	ug/L	7.7	4.8	0.20	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Dimethylphthalate	0.96U	U	ug/L	7.7	0.96	0.13	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,4-Dinitrophenol	7.7U	U	ug/L	15.3	7.7	2.4	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966007** Date Collected: 1/19/2018 14:00 Matrix: Water

Sample ID: **EB20180119** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
2,4-Dinitrotoluene	0.96U	U	ug/L	7.7	0.96	0.12	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,6-Dinitrotoluene	0.96U	U	ug/L	7.7	0.96	0.20	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
1,2-Diphenylhydrazine	0.96U	U	ug/L	7.7	0.96	0.25	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
bis(2-Ethylhexyl)phthalate	0.96U	U	ug/L	7.7	0.96	0.21	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Fluoranthene	0.96U	U	ug/L	1.9	0.96	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Fluorene	0.96U	U	ug/L	1.9	0.96	0.19	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Hexachlorobenzene	0.96U	U	ug/L	7.7	0.96	0.22	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Hexachlorobutadiene	0.96U	U	ug/L	7.7	0.96	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Hexachlorocyclopentadiene	1.9U	U	ug/L	7.7	1.9	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Hexachloroethane	0.96U	U	ug/L	7.7	0.96	0.29	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Indeno(1,2,3-cd)pyrene	0.96U	U	ug/L	1.9	0.96	0.11	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Isophorone	0.96U	U	ug/L	7.7	0.96	0.14	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Methyl-4,6-dinitrophenol	4.8U	U	ug/L	7.7	4.8	0.32	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Methylnaphthalene	0.96U	U	ug/L	1.9	0.96	0.16	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Naphthalene	0.96U	U	ug/L	1.9	0.96	0.17	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Nitroaniline	0.96U	U	ug/L	7.7	0.96	0.19	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
3-Nitroaniline	1.9U	U	ug/L	7.7	1.9	0.18	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Nitroaniline	0.96U	U	ug/L	7.7	0.96	0.39	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Nitrobenzene	1.9U	U	ug/L	7.7	1.9	0.27	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Nitrophenol	1.9U	U	ug/L	7.7	1.9	0.43	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
4-Nitrophenol	4.8U	U	ug/L	7.7	4.8	1.0	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
N-Nitrosodimethylamine	1.9U	U	ug/L	7.7	1.9	0.61	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
N-Nitroso-di-n-propylamine	0.96U	U	ug/L	7.7	0.96	0.23	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
N-Nitrosodiphenylamine	1.9U	U	ug/L	7.7	1.9	0.17	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Pentachlorophenol	7.7U	U	ug/L	15.3	7.7	1.1	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Phenanthrene	0.96U	U	ug/L	1.9	0.96	0.12	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Phenol	0.96U	U	ug/L	7.7	0.96	0.22	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Pyrene	0.96U	U	ug/L	1.9	0.96	0.15	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
1,2,4-Trichlorobenzene	0.96U	U	ug/L	7.7	0.96	0.15	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,4,5-Trichlorophenol	2.9U	U	ug/L	7.7	2.9	0.53	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2,4,6-Trichlorophenol	0.96U	U	ug/L	7.7	0.96	0.55	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
2,4,6-Tribromophenol (S)	86.4		%	43 - 140	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Fluorobiphenyl (S)	81.8		%	44 - 119	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
2-Fluorophenol (S)	52.5		%	19 - 119	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Nitrobenzene-d5 (S)	90.9		%	44 - 120	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Phenol-d5 (S)	32		%	13 - 49	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B
Terphenyl-d14 (S)	95.2		%	50 - 134	SW846 8270D	1/25/18	DSH	1/25/18 18:01	DHF	B

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

Lab ID: **2289966007** Date Collected: 1/19/2018 14:00 Matrix: Water

Sample ID: **EB20180119** Date Received: 1/19/2018 19:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
LIBRARY SEARCH - SEMI-VOLATILE											
No TIC's Detected	.						Lib Search SV		1/25/18 18:01	DHF	B

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2289966 PQF126|Ft. Monmouth Parcel 34

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2289966002	1	PAR-34-2567-GW-MW-02-8	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 124 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2289966002	2	PAR-34-2567-GW-MW-02-8	SW846 8260C	Toluene-d8
The surrogate Toluene-d8 for method SW846 8260C was outside of control limits. The % Recovery was reported as 84.2 and the control limits were 89 to 112. This result was reported at a dilution of 1.				
2289966006	2	PAR-34-2567-GW-MW-10-8.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 121 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2289966006	3	PAR-34-2567-GW-MW-10-8.5	SW846 8260C	Toluene-d8
The surrogate Toluene-d8 for method SW846 8260C was outside of control limits. The % Recovery was reported as 85.1 and the control limits were 89 to 112. This result was reported at a dilution of 1.				
2289966007	2	EB20180119	SW846 8260C	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260C was outside of control limits. The % Recovery was reported as 83.1 and the control limits were 85 to 114. This result was reported at a dilution of 1.				

2289966

ALS Environmental
34 Dogwood Lane w Middletown, PA 17057 w 717.944.5541 w Fax: 717.944.1430

CHAIN OF C
REQUEST FOR

ALL SHADED AREAS MUST BE
SAMPLER. INSTRUCT

* 2 2 8 9 9 6 6 *

COC #: P34-01-20180119 | 1 of 1
ALS Quote #:

Client Name: Parsons Federal
Address: 100 High Street, 4th Floor
Boston, MA 02110
Contact: Lorraine Weber
Phone#: 315-552-9745
Project Name/#: Fort Monmouth (FTMM) - Parcel 34
Bill To: Parsons Federal

TAT [x] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: _____ Approved By: _____
Email? [x] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.: _____

	Container Type	CG	CG									
	Container Size	40 ml	1 L									
	Preservative	HCL	UNP									

ANALYSES/METHOD REQUESTED

Log in replacement COC See Attached for Receipt info SLS 1/22/18

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + 15 TICs (8260)	Silver, + 15 TICs (8270)								
1 PAR-34-2567-GW-MW-11-7	1-19-18	1350	G	GW	2									
2 PAR-34-GW-2567-MW-02-8		0955	G	GW	2									
3 PAR-34-GW-2567-MW-03-8		0945	G	GW	2									
4 PAR-34-GW-2567-MW-08-8.5		1035	G	GW	2									
5 PAR-34-GW-2567-MW-09-8.5		1300	G	GW	2									
6 PAR-34-GW-2567-MW-10-8.5		1140	G	GW	2									
7 FB-20180119		1400	G	GW	2	2								
8 TB-20180119	—	—	—	GW	2									
9														
10														

Enter Number of Containers Per Sample or Field Results Below.

Trip Blanks not rec'd.

Receipt Information (completed by Receiving Lab)

Cooler Temp: _____ Therm ID: _____
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?			
COC/Labels Complete/Accurate?			
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			

Courier/Tracking #:

Sample/COC Comments

PAR-34-2567-GW-MW-02-8
PAR-34-2567-GW-MW-03-8
PAR-34-2567-GW-MW-08-8.5
PAR-34-2567-GW-MW-09-8.5
PAR-34-2567-GW-MW-10-8.5

ALS Field Services: oPickup oLabor
oComposite Sampling oRental Equipment
oOther: _____

Project Comments: 748810
NDL short Meet NJDEP Groundwater Quality Standards 1627

LOGGED BY(signature): _____ DATE 1-19-18 TIME 1430
REVIEWED BY(signature): E. Austin DATE 1-19-18 TIME 1500

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 E. Austin / PARSONS	1-19-18	1510	2	1-19-18	1570
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [x] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [x] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ]
PWSID # _____
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oi=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

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Rev 8/04

2284966

ALS Environmental
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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC #: P34-01-20180119 | 1 of 1
ALS Quote #:

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Parsons Federal
Address: 100 High Street, 4th Floor, Boston, MA 02110
Contact: Lorraine Weber
Phone#: 315-552-9745
Project Name/#: Fort Monmouth (FTMM) - Parcel 34
Bill To: Parsons Federal
TAT [x] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.
Date Required: _____ Approved By: _____
Email? [x] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	VOCs + 15 TICs (8260)	SVOCs + 15 TICs (8270)								
					CG	40 ml	HCL	UNP									
					ANALYSES/METHOD REQUESTED												
					Enter Number of Containers Per Sample or Field Results Below.												
1 PAR-34-2567-GW-MW-11-7	1-19-18	1350	G	GW	2												
2 PAR-34-GW-2567-MW-02-8		0855	G	GW	2												
3 PAR-34-GW-2567-MW-03-8		0945	G	GW	2												
4 PAR-34-2567-GW-MW-08-8.5		1035	G	GW	2												
5 PAR-34-GW-2567-MW-09-8.5		1300	G	GW	2												
6 PAR-34-GW-2567-MW-10-8.5		1140	G	GW	2												
7 EB-20180119		1400	G	GW	2	2											
8 TB-20180119	—	—	—	W	2												
9																	
10																	

Receipt Information (completed by Receiving Lab)
Cooler Temp: 0 Therm ID: 2 DZ
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?	X		
COC/Labels Complete/Accurate?	X		
Cont. in Good Cond.?	X		
Correct Containers?	X		
Correct Sample Volumes?	X		
Correct Preservation?	X		
Headspace/Volatiles?		X	

Courier/Tracking #:

Sample/COC Comments
Missing Trip blanks JW 1-22

ALS Field Services: [x] Pickup oLabor oComposite Sampling oRental Equipment oOther: _____

Project Comments: 748810
MDL Must Meet NJDEP Groundwater Quality Standards

LOGGED BY(signature): _____ DATE 1-19-18 TIME 1430
REVIEWED BY(signature): _____ DATE 1-19-18 TIME 1500

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 PARSONS	1-19-18	1510	2	1/19/18	1510
3			4	1-19	1730
5	1-19	1958	6	1/19/18	1958
7			8		
9			10		

Data Deliverables: [ ] Standard [x] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ] [ ]
State Samples Collected In: [ ] NY [x] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ]
PWSID # _____
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite
** Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

August 10, 2018

Ms.Cris Grill
Parsons - Boston MA
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**2329695**
Purchase Order:		Workorder ID:	**PQF148|Parcel 34**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, July 31, 2018.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Kent Friesen , Mr. Julien Chambert , Ms. Lorraine Weber

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

Re: Power Outage at ALS – Middletown Facility

To Whom It May Concern,

During the recent weather event in the Northeast and related flooding in our area, ALS–Middletown lost power the evening of Monday, July 23, 2018. Numerous trees damaged both utility poles and fell on power lines in the flooded areas making repair that much more difficult for the emergency repair groups. The laboratory was without power until the afternoon of Wednesday, July 25, 2018.

This power outage prevented ALS from operating our business in a normal manner during this period. The analysis and reporting of samples during this time period was significantly reduced. In addition to continuing to receive samples from our clients, our field service staff and sample receiving groups continued to collect, process and receive samples during this period. Analysis of short hold parameters was accomplished under emergency generator power. As power was restored to our facility, we have brought all systems back online with minimal damage to instruments and computers. In this situation a sudden loss of power can cause damage to sensitive electronic equipment so care is being taken to ensure the instruments are operating at optimal conditions.

As we return to full operational status, we will experience backlogs in our data analysis and processing. The lab staff is working diligently 24/7 to get all delayed projects, results and reports out as quickly as possible to prevent any further delays. If any data was compromised due to the power loss, an appropriate comment will be notated on your laboratory report.

If you have any questions or concerns regarding your sample results, please feel free to contact your ALS Project Manager or our Client Services Manager, Shiloh Summy at Shiloh.summy@alsglobal.com or (717)-577-3515.

Thank you for choosing ALS–Middletown to meet your analytical needs. We are committed to ensuring all data meets our stringent quality standards even in these unfortunate circumstances.

Sincerely,

Scott Brunk

Laboratory Director

ALS Environmental, Middletown

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2329695 PQF148|Parcel 34

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2329695001	PAR-34-GW-2567MW02-8.0	Water	7/31/2018 11:12	7/31/2018 19:35	Collected by Client
2329695002	PAR-34-GW-2567MW03-8.0	Water	7/31/2018 13:05	7/31/2018 19:35	Collected by Client
2329695003	PAR-34-GW-2567MW04-7.2	Water	7/31/2018 11:35	7/31/2018 19:35	Collected by Client
2329695004	PAR-34-GW-2567MW10-8.5	Water	7/30/2018 15:33	7/31/2018 19:35	Collected by Client
2329695005	PAR-34-GW-2567MW11-7.7	Water	7/30/2018 16:05	7/31/2018 19:35	Collected by Client
2329695006	EB-20180730	Water	7/30/2018 13:20	7/31/2018 19:35	Collected by Client
2329695007	EB-20180731	Water	7/31/2018 09:00	7/31/2018 19:35	Collected by Client
2329695008	TB-20180731	Water	7/31/2018 00:00	7/31/2018 19:35	Collected by Client

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2329695 PQF148|Parcel 34

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695001** Date Collected: 7/31/2018 11:12 Matrix: Water

Sample ID: **PAR-34-GW-2567MW02-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:35	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 14:35	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:35	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 14:35	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:35	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695001** Date Collected: 7/31/2018 11:12 Matrix: Water

Sample ID: **PAR-34-GW-2567MW02-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 14:35	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:35	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:35	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 14:35	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:35	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:35	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 14:35	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	117		%	81 - 118			SW846 8260C		8/9/18 14:35	TMP	A
4-Bromofluorobenzene (S)	108		%	85 - 114			SW846 8260C		8/9/18 14:35	TMP	A
Dibromofluoromethane (S)	110		%	80 - 119			SW846 8260C		8/9/18 14:35	TMP	A
Toluene-d8 (S)	99.3		%	89 - 112			SW846 8260C		8/9/18 14:35	TMP	A
Library Search - Volatiles											
Cyclopentane, methyl-	1.5	J N	ug/L				SW846 8260C		8/9/18 14:35	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695001** Date Collected: 7/31/2018 11:12 Matrix: Water

Sample ID: **PAR-34-GW-2567MW02-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695002** Date Collected: 7/31/2018 13:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW03-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:58	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 14:58	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:58	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 14:58	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:58	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695002** Date Collected: 7/31/2018 13:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW03-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 14:58	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:58	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Methyl t-Butyl Ether	0.34J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:58	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 14:58	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:58	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:58	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 14:58	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	81 - 118	SW846 8260C		8/9/18 14:58	TMP	B
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/9/18 14:58	TMP	B
Dibromofluoromethane (S)	111		%	80 - 119	SW846 8260C		8/9/18 14:58	TMP	B
Toluene-d8 (S)	99.7		%	89 - 112	SW846 8260C		8/9/18 14:58	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 14:58	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695002** Date Collected: 7/31/2018 13:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW03-8.0** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695003** Date Collected: 7/31/2018 11:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW04-7.2** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:21	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 15:21	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:21	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 15:21	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 15:21	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:21	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695003** Date Collected: 7/31/2018 11:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW04-7.2** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			8/9/18 15:21	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 15:21	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 15:21	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			8/9/18 15:21	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C			8/9/18 15:21	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 15:21	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			8/9/18 15:21	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	81 - 118	SW846 8260C			8/9/18 15:21	TMP	B
4-Bromofluorobenzene (S)	105		%	85 - 114	SW846 8260C			8/9/18 15:21	TMP	B
Dibromofluoromethane (S)	110		%	80 - 119	SW846 8260C			8/9/18 15:21	TMP	B
Toluene-d8 (S)	99.7		%	89 - 112	SW846 8260C			8/9/18 15:21	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/9/18 15:21	CPK	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695003** Date Collected: 7/31/2018 11:35 Matrix: Water

Sample ID: **PAR-34-GW-2567MW04-7.2** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695004** Date Collected: 7/30/2018 15:33 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-8.5** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:43	TMP	B
Benzene	13.6		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 15:43	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:43	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 15:43	TMP	B
n-Butylbenzene	1.1		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Chloroform	0.42J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 15:43	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695004** Date Collected: 7/30/2018 15:33 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-8.5** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Ethylbenzene	46.6		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 15:43	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:43	TMP	B
Isopropylbenzene	6.7		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Methyl t-Butyl Ether	0.36J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 15:43	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Naphthalene	7.6		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
n-Propylbenzene	19.7		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Toluene	1.1		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Total Xylenes	89.5		ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 15:43	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,1,2-Trichloroethane	0.71J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 15:43	TMP	B
1,2,4-Trimethylbenzene	35.3		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
1,3,5-Trimethylbenzene	8.5		ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 15:43	TMP	B
mp-Xylene	89.5		ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 15:43	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	115		%	81 - 118	SW846 8260C		8/9/18 15:43	TMP	B
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/9/18 15:43	TMP	B
Dibromofluoromethane (S)	108		%	80 - 119	SW846 8260C		8/9/18 15:43	TMP	B
Toluene-d8 (S)	99.7		%	89 - 112	SW846 8260C		8/9/18 15:43	TMP	B
Library Search - Volatiles									
Pentane, 2-methyl-	11.7	J N	ug/L		SW846 8260C		8/9/18 15:43	TMP	B
Cyclopentane, methyl-	15.4	J N	ug/L		SW846 8260C		8/9/18 15:43	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695004** Date Collected: 7/30/2018 15:33 Matrix: Water

Sample ID: **PAR-34-GW-2567MW10-8.5** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
Hexane, 2,2,5,5-tetramethyl	9.0	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Cyclotrisiloxane, hexamethy	3.1	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Benzene, 1,2,3-trimethyl-	11.4	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Benzene, 1-ethyl-2-methyl-	4.9	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Benzene, 2-propenyl-	13.5	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Benzene, 2-ethyl-1,4-dimeth	8.1	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B
Benzene, 2-ethenyl-1,4-dime	6.8	J N	ug/L				SW846 8260C		8/9/18 15:43	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695005** Date Collected: 7/30/2018 16:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW11-7.7** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:06	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 16:06	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:06	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 16:06	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Chloromethane	0.38J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:06	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695005** Date Collected: 7/30/2018 16:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW11-7.7** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 16:06	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:06	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:06	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Naphthalene	0.34J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 16:06	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:06	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:06	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 16:06	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	81 - 118	SW846 8260C		8/9/18 16:06	TMP	B
4-Bromofluorobenzene (S)	109		%	85 - 114	SW846 8260C		8/9/18 16:06	TMP	B
Dibromofluoromethane (S)	110		%	80 - 119	SW846 8260C		8/9/18 16:06	TMP	B
Toluene-d8 (S)	100		%	89 - 112	SW846 8260C		8/9/18 16:06	TMP	B
Library Search - Volatiles									
Propane, 2,2-difluoro-	2.6	J N	ug/L		SW846 8260C		8/9/18 16:06	TMP	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695005** Date Collected: 7/30/2018 16:05 Matrix: Water

Sample ID: **PAR-34-GW-2567MW11-7.7** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695006** Date Collected: 7/30/2018 13:20 Matrix: Water

Sample ID: **EB-20180730** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:12	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 14:12	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:12	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 14:12	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:12	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695006** Date Collected: 7/30/2018 13:20 Matrix: Water

Sample ID: **EB-20180730** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 14:12	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:12	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 14:12	TMP	B
Methylene Chloride	0.46J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 14:12	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 14:12	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 14:12	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 14:12	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	117		%	81 - 118	SW846 8260C		8/9/18 14:12	TMP	B
4-Bromofluorobenzene (S)	106		%	85 - 114	SW846 8260C		8/9/18 14:12	TMP	B
Dibromofluoromethane (S)	107		%	80 - 119	SW846 8260C		8/9/18 14:12	TMP	B
Toluene-d8 (S)	99.2		%	89 - 112	SW846 8260C		8/9/18 14:12	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 14:12	CPK	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695006** Date Collected: 7/30/2018 13:20 Matrix: Water

Sample ID: **EB-20180730** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695007** Date Collected: 7/31/2018 09:00 Matrix: Water

Sample ID: **EB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:49	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 13:49	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:49	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 13:49	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:49	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695007** Date Collected: 7/31/2018 09:00 Matrix: Water

Sample ID: **EB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 13:49	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:49	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:49	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 13:49	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:49	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:49	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 13:49	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	118		%	81 - 118	SW846 8260C		8/9/18 13:49	TMP	B
4-Bromofluorobenzene (S)	109		%	85 - 114	SW846 8260C		8/9/18 13:49	TMP	B
Dibromofluoromethane (S)	108		%	80 - 119	SW846 8260C		8/9/18 13:49	TMP	B
Toluene-d8 (S)	99.5		%	89 - 112	SW846 8260C		8/9/18 13:49	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.						Lib Search VOC		8/9/18 13:49	CPK	B

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ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695007** Date Collected: 7/31/2018 09:00 Matrix: Water

Sample ID: **EB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695008** Date Collected: 7/31/2018 00:00 Matrix: Water

Sample ID: **TB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	6.7		ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:26	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 13:26	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:26	TMP	B
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 13:26	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:26	TMP	B
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695008** Date Collected: 7/31/2018 00:00 Matrix: Water

Sample ID: **TB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 13:26	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:26	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:26	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 13:26	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:26	TMP	B
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:26	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 13:26	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	117		%	81 - 118	SW846 8260C		8/9/18 13:26	TMP	B
4-Bromofluorobenzene (S)	109		%	85 - 114	SW846 8260C		8/9/18 13:26	TMP	B
Dibromofluoromethane (S)	107		%	80 - 119	SW846 8260C		8/9/18 13:26	TMP	B
Toluene-d8 (S)	101		%	89 - 112	SW846 8260C		8/9/18 13:26	TMP	B

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 13:26	CPK	B

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329695 PQF148|Parcel 34

Lab ID: **2329695008** Date Collected: 7/31/2018 00:00 Matrix: Water

Sample ID: **TB-20180731** Date Received: 7/31/2018 19:35

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 2329695 PQF148|Parcel 34

Lab ID	Sample ID	Analysis Method	Prep Method
2329695001	PAR-34-GW-2567MW02-8.0	Lib Search VOC	
2329695001	PAR-34-GW-2567MW02-8.0	SW846 8260C	
2329695002	PAR-34-GW-2567MW03-8.0	Lib Search VOC	
2329695002	PAR-34-GW-2567MW03-8.0	SW846 8260C	
2329695003	PAR-34-GW-2567MW04-7.2	Lib Search VOC	
2329695003	PAR-34-GW-2567MW04-7.2	SW846 8260C	
2329695004	PAR-34-GW-2567MW10-8.5	Lib Search VOC	
2329695004	PAR-34-GW-2567MW10-8.5	SW846 8260C	
2329695005	PAR-34-GW-2567MW11-7.7	Lib Search VOC	
2329695005	PAR-34-GW-2567MW11-7.7	SW846 8260C	
2329695006	EB-20180730	Lib Search VOC	
2329695006	EB-20180730	SW846 8260C	
2329695007	EB-20180731	Lib Search VOC	
2329695007	EB-20180731	SW846 8260C	
2329695008	TB-20180731	Lib Search VOC	
2329695008	TB-20180731	SW846 8260C	

9695

ALS Environmental
34 Dogwood Lane
Middletown, PA 07057
(717) 944-5541

CHAIN OF CUS / REQUEST FOR AI

ALL SHADED AREAS MUST BE COMP
SAMPLER. INSTRUCTIONS

* 2 3 2 9 6 9 5 *

COC #: P34-~~02~~ 01- 20180731 of

ALS Quote #:

Client Name Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact Lorraine Weber
Phone#: 315-552-9745
Project Name/#: Parcel 34
Bill To: Parsons Federal

TAT [ ] Normal-Standard TAT is 10-12 business days.
[X] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.:

	Container Type	Container Size	Preservative
	Vial	40 mL	HCl

ANALYSES/METHOD REQUESTED

	Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + TICS (8260)	TOTAL # of CONTAINERS	AUTHORIZED TO RUN
						Enter Number of Containers Per Sample or Field Results Below.		
1	~~PAR-34-GW-2567MW01~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
2	~~PAR-34-GW-2567MW01R~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
3	PAR-34-GW-2567MW02 - 8.0	7-31-18	1112	G	GW	X2	2	X
4	PAR-34-GW-2567MW03 - 8.0	7-31-18	1305	G	GW	X	2	X
5	PAR-34-GW-2567MW04 - 7.2	7-31-18	1135	G	GW	X	2	X
6	~~PAR-34-GW-2567MW05~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
7	~~PAR-34-GW-2567MW06~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
8	~~PAR-34-GW-2567MW07~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
9	~~PAR-34-GW-2567MW08~~			~~G~~	GW	~~X~~	~~2~~	~~X~~
10	~~PAR-34-GW-2567MW09~~			~~G~~	GW	~~X~~	~~2~~	~~X~~

GW 8-1-18

Receipt Information (completed by Receiving Lab)
Cooler Temp: 2 °C Therm ID: 339
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?	/		QM
(if present) Seals Intact?	/		↓
Received on Ice?	/		↓
COC/Labels Complete/Accurate?		X	CM
Cont. in Good Cond.?	X		↓
Correct Containers?	X		↓
Correct Sample Volumes?	X		↓
Correct Preservation?	X		↓
Headspace/Volatiles?			↓

Courier/Tracking #: ALS/SPE073100 8
Sample/COC Comments

ALS Field Services: __Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810-06036
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): [signature] DATE 7-31-18 TIME
REVIEWED BY(signature): [signature] DATE 7-31-18 TIME

	Relinquished By / Company Name	Date	Time		Received By / Company Name	Date	Time
1	[signature] PARSONS	7-31-18	1330	2	[signature] ALS	7/31/18	1330
3	[signature]	7/31/18	1531	4	COMMON COURIER / ALS COURIER		
5	COMMON COURIER / ALS COURIER			6	[signature] ALS	7/31/18	1935
7				8			
9				10			

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Ol=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

9695

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: P34-01-20180730 of

ALS Quote #:

ALS Environmental
34 Dogwood Lane
Middletown, PA 07057
(717) 944-5541

Client Name: Parsons Federal

Address: 100 High St. 4th Floor
Boston, MA 02110

Contact: Lorraine Weber

Phone#: 315-552-9745

Project Name/#: Parcel 34

Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.

Date Required: Approved?

Email? [X]-Y lorraine.weber@parsons.com

Fax? [ ]-Y No.:

	Container Type	Vial									
	Container Size	40 mL									
	Preservative	HCl									

ANALYSES/METHOD REQUESTED

	Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + TICs (8260)								TOTAL # of CONTAINERS	AUTHORIZED TO RUN
						Enter Number of Containers Per Sample or Field Results Below.									
1	PAR-34-GW-2567MW10 - 8.5	7-30-18	1533	G	GW	X 2								2	X
2	PAR-34-GW-2567MW11 - 7.7	7-30-18	1605	G	GW	X								2	X
3	EB-20180730	7-30-18	1320	-	OL	X								2	X
4	EB-20180731	7-31-18	0900	-	OL	X								2	X
5	TB-20180731	7-31-18	-	-	OL	X								2	X
6															
7															
8															
9															
10															

Receipt Information (completed by Receiving Lab)

Cooler Temp: 2 °C Therm ID: 359

No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?			
COC/Labels Complete/Accurate?			
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			

Courier/Tracking #: ALS/SPL 80731008

Sample/COC Comments

ALS Field Services: [X] Pickup _Labor
_Composite Sampling _Rental Equipment
_Other:

Project Comments: 748810-07100
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): T. Ciccone DATE 7-30-18

REVIEWED BY(signature): T. Ciccone DATE 7-30-18

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE

Special Processing: USACE [ ] Navy [ ]

State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type- ERPIMS & HAZSITE

	Relinquished By / Company Name	Date	Time		Received By / Company Name	Date	Time
1	PARSONS	7-31-18	1330	2		7/31/18	1330
3		7/31/18	1531	4	COMMON COURIER / ALS COURIER		
5	COMMON COURIER / ALS COURIER			6	ALS	7/31/18	1935
7				8			
9				10			

* G=Grab; C=Composite

**Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

August 10, 2018

Ms.Cris Grill
Parsons - Boston MA
100 High St.
4th Floor
Boston, MA 02110

Certificate of Analysis

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**2329897**
Purchase Order:		Workorder ID:	**PQF149|Parcel 34**

Dear Ms.Cris Grill:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, August 1, 2018.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Kent Friesen , Mr. Julien Chambert , Ms. Lorraine Weber

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

Re: Power Outage at ALS – Middletown Facility

To Whom It May Concern,

During the recent weather event in the Northeast and related flooding in our area, ALS–Middletown lost power the evening of Monday, July 23, 2018. Numerous trees damaged both utility poles and fell on power lines in the flooded areas making repair that much more difficult for the emergency repair groups. The laboratory was without power until the afternoon of Wednesday, July 25, 2018.

This power outage prevented ALS from operating our business in a normal manner during this period. The analysis and reporting of samples during this time period was significantly reduced. In addition to continuing to receive samples from our clients, our field service staff and sample receiving groups continued to collect, process and receive samples during this period. Analysis of short hold parameters was accomplished under emergency generator power. As power was restored to our facility, we have brought all systems back online with minimal damage to instruments and computers. In this situation a sudden loss of power can cause damage to sensitive electronic equipment so care is being taken to ensure the instruments are operating at optimal conditions.

As we return to full operational status, we will experience backlogs in our data analysis and processing. The lab staff is working diligently 24/7 to get all delayed projects, results and reports out as quickly as possible to prevent any further delays. If any data was compromised due to the power loss, an appropriate comment will be notated on your laboratory report.

If you have any questions or concerns regarding your sample results, please feel free to contact your ALS Project Manager or our Client Services Manager, Shiloh Summy at Shiloh.summy@alsglobal.com or (717)-577-3515.

Thank you for choosing ALS–Middletown to meet your analytical needs. We are committed to ensuring all data meets our stringent quality standards even in these unfortunate circumstances.

Sincerely,

Scott Brunk

Laboratory Director

ALS Environmental, Middletown

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2329897 PQF149|Parcel 34

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2329897001	PAR-34-GW-2567MW01-8.5	Ground Water	7/31/2018 15:54	8/1/2018 20:50	Collected by Client
2329897002	PAR-34-GW-2567MW01R-8.2	Ground Water	7/31/2018 13:55	8/1/2018 20:50	Collected by Client
2329897003	PAR-34-GW-2567MW05-9.5	Ground Water	8/1/2018 11:30	8/1/2018 20:50	Collected by Client
2329897004	PAR-34-GW-2567MW06-10.2	Ground Water	8/1/2018 12:55	8/1/2018 20:50	Collected by Client
2329897005	PAR-34-GW-2567MW07-9.7	Ground Water	7/31/2018 15:10	8/1/2018 20:50	Collected by Client
2329897006	PAR-34-GW-2567MW08-8.5	Ground Water	8/1/2018 14:28	8/1/2018 20:50	Collected by Client
2329897007	PAR-34-GW-2567MW09-8.4	Ground Water	8/1/2018 11:48	8/1/2018 20:50	Collected by Client
2329897008	EB-20180801	Ground Water	8/1/2018 12:30	8/1/2018 20:50	Collected by Client
2329897009	TB-20180801	Ground Water	8/1/2018 20:50	8/1/2018 20:50	Collected by Client

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2329897 PQF149|Parcel 34

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897001** Date Collected: 7/31/2018 15:54 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:29	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 16:29	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:29	TMP	A
tert-Butyl Alcohol	293		ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 16:29	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:29	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897001** Date Collected: 7/31/2018 15:54 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 16:29	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:29	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Methyl t-Butyl Ether	0.88J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:29	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 16:29	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:29	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:29	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 16:29	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	119	1	%	81 - 118			SW846 8260C		8/9/18 16:29	TMP	A
4-Bromofluorobenzene (S)	107		%	85 - 114			SW846 8260C		8/9/18 16:29	TMP	A
Dibromofluoromethane (S)	108		%	80 - 119			SW846 8260C		8/9/18 16:29	TMP	A
Toluene-d8 (S)	97.8		%	89 - 112			SW846 8260C		8/9/18 16:29	TMP	A
Library Search - Volatiles											
Unknown	14.1	J	ug/L				SW846 8260C		8/9/18 16:29	TMP	A
Unknown	18.2	J	ug/L				SW846 8260C		8/9/18 16:29	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897001** Date Collected: 7/31/2018 15:54 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Cyclotrisiloxane, hexamethy	3.8	J N	ug/L				SW846 8260C		8/9/18 16:29	TMP	A
3-Pentanone, 2,2-dimethyl-	1.6	J N	ug/L				SW846 8260C		8/9/18 16:29	TMP	A

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897002** Date Collected: 7/31/2018 13:55 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01R-8.2** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:52	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 16:52	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:52	TMP	A
tert-Butyl Alcohol	27.0		ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 16:52	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:52	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897002** Date Collected: 7/31/2018 13:55 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01R-8.2** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 16:52	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:52	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 16:52	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 16:52	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 16:52	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 16:52	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 16:52	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	120	1	%	81 - 118	SW846 8260C		8/9/18 16:52	TMP	A
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/9/18 16:52	TMP	A
Dibromofluoromethane (S)	110		%	80 - 119	SW846 8260C		8/9/18 16:52	TMP	A
Toluene-d8 (S)	99.1		%	89 - 112	SW846 8260C		8/9/18 16:52	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.						Lib Search VOC		8/9/18 16:52	CPK	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897002** Date Collected: 7/31/2018 13:55 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW01R-8.2** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897003** Date Collected: 8/1/2018 11:30 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW05-9.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.2J	J	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 17:15	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 17:15	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 17:15	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 17:15	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 17:15	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:15	TMP	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897003** Date Collected: 8/1/2018 11:30 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW05-9.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			8/9/18 17:15	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 17:15	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 17:15	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			8/9/18 17:15	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C			8/9/18 17:15	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:15	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			8/9/18 17:15	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	121	1	%	81 - 118	SW846 8260C			8/9/18 17:15	TMP	A
4-Bromofluorobenzene (S)	109		%	85 - 114	SW846 8260C			8/9/18 17:15	TMP	A
Dibromofluoromethane (S)	111		%	80 - 119	SW846 8260C			8/9/18 17:15	TMP	A
Toluene-d8 (S)	99.4		%	89 - 112	SW846 8260C			8/9/18 17:15	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/9/18 17:15	CPK	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID:	**2329897003**	Date Collected:	8/1/2018 11:30	Matrix:	Ground Water
Sample ID:	**PAR-34-GW-2567MW05-9.5**	Date Received:	8/1/2018 20:50		

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897004** Date Collected: 8/1/2018 12:55 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW06-10.2** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 17:38	TMP	
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 17:38	TMP	
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 17:38	TMP	
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 17:38	TMP	
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 17:38	TMP	
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 17:38	TMP	

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897004** Date Collected: 8/1/2018 12:55 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW06-10.2** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			8/9/18 17:38	TMP	
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 17:38	TMP	
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 17:38	TMP	
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			8/9/18 17:38	TMP	
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C			8/9/18 17:38	TMP	
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 17:38	TMP	
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			8/9/18 17:38	TMP	

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	120	1	%	81 - 118	SW846 8260C			8/9/18 17:38	TMP	
4-Bromofluorobenzene (S)	110		%	85 - 114	SW846 8260C			8/9/18 17:38	TMP	
Dibromofluoromethane (S)	112		%	80 - 119	SW846 8260C			8/9/18 17:38	TMP	
Toluene-d8 (S)	100		%	89 - 112	SW846 8260C			8/9/18 17:38	TMP	

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/9/18 17:38	CPK	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID:	**2329897004**	Date Collected:	8/1/2018 12:55	Matrix:	Ground Water
Sample ID:	**PAR-34-GW-2567MW06-10.2**	Date Received:	8/1/2018 20:50		

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897005** Date Collected: 7/31/2018 15:10 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW07-9.7** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:01	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 18:01	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:01	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 18:01	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 18:01	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:01	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897005** Date Collected: 7/31/2018 15:10 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW07-9.7** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			8/9/18 18:01	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 18:01	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			8/9/18 18:01	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			8/9/18 18:01	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C			8/9/18 18:01	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			8/9/18 18:01	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			8/9/18 18:01	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	119	1	%	81 - 118	SW846 8260C			8/9/18 18:01	TMP	A
4-Bromofluorobenzene (S)	106		%	85 - 114	SW846 8260C			8/9/18 18:01	TMP	A
Dibromofluoromethane (S)	111		%	80 - 119	SW846 8260C			8/9/18 18:01	TMP	A
Toluene-d8 (S)	97.2		%	89 - 112	SW846 8260C			8/9/18 18:01	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC			8/9/18 18:01	CPK	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897005** Date Collected: 7/31/2018 15:10 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW07-9.7** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897006** Date Collected: 8/1/2018 14:28 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW08-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:24	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 18:24	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:24	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 18:24	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 18:24	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897006** Date Collected: 8/1/2018 14:28 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW08-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 18:24	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:24	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:24	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 18:24	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 18:24	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:24	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 18:24	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	121	1	%	81 - 118	SW846 8260C		8/9/18 18:24	TMP	A
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/9/18 18:24	TMP	A
Dibromofluoromethane (S)	111		%	80 - 119	SW846 8260C		8/9/18 18:24	TMP	A
Toluene-d8 (S)	99.5		%	89 - 112	SW846 8260C		8/9/18 18:24	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 18:24	CPK	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897006** Date Collected: 8/1/2018 14:28 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW08-8.5** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897007** Date Collected: 8/1/2018 11:48 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW09-8.4** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:46	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 18:46	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:46	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 18:46	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Chloromethane	0.44J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 18:46	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897007** Date Collected: 8/1/2018 11:48 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW09-8.4** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 18:46	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:46	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 18:46	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 18:46	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 18:46	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 18:46	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 18:46	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*			*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	123	1	%	81 - 118			SW846 8260C		8/9/18 18:46	TMP	A
4-Bromofluorobenzene (S)	108		%	85 - 114			SW846 8260C		8/9/18 18:46	TMP	A
Dibromofluoromethane (S)	111		%	80 - 119			SW846 8260C		8/9/18 18:46	TMP	A
Toluene-d8 (S)	101		%	89 - 112			SW846 8260C		8/9/18 18:46	TMP	A
Library Search - Volatiles											
Propane, 2,2-difluoro-	3.4	J N	ug/L				SW846 8260C		8/9/18 18:46	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897007** Date Collected: 8/1/2018 11:48 Matrix: Ground Water

Sample ID: **PAR-34-GW-2567MW09-8.4** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897008** Date Collected: 8/1/2018 12:30 Matrix: Ground Water

Sample ID: **EB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	3.7J	J	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:04	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 13:04	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:04	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 13:04	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:04	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897008** Date Collected: 8/1/2018 12:30 Matrix: Ground Water

Sample ID: **EB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 13:04	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:04	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 13:04	TMP	A
Methylene Chloride	0.59J	J	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 13:04	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 13:04	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 13:04	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 13:04	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	81 - 118	SW846 8260C		8/9/18 13:04	TMP	A
4-Bromofluorobenzene (S)	108		%	85 - 114	SW846 8260C		8/9/18 13:04	TMP	A
Dibromofluoromethane (S)	108		%	80 - 119	SW846 8260C		8/9/18 13:04	TMP	A
Toluene-d8 (S)	99.5		%	89 - 112	SW846 8260C		8/9/18 13:04	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 13:04	CPK	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897008** Date Collected: 8/1/2018 12:30 Matrix: Ground Water

Sample ID: **EB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897009** Date Collected: 8/1/2018 20:50 Matrix: Ground Water

Sample ID: **TB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE ORGANICS											
Acetone	7.8		ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 12:41	TMP	A
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C		8/9/18 12:41	TMP	A
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 12:41	TMP	A
tert-Butyl Alcohol	12.5U	U	ug/L	25.0	12.5	8.3	SW846 8260C		8/9/18 12:41	TMP	A
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2-Dibromo-3-chloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 12:41	TMP	A
1,2-Dibromoethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A

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ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897009** Date Collected: 8/1/2018 20:50 Matrix: Ground Water

Sample ID: **TB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	Cntr
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C		8/9/18 12:41	TMP	A
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 12:41	TMP	A
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C		8/9/18 12:41	TMP	A
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C		8/9/18 12:41	TMP	A
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,2,3-Trichloropropane	2.5U	U	ug/L	5.0	2.5	1.6	SW846 8260C		8/9/18 12:41	TMP	A
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C		8/9/18 12:41	TMP	A
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C		8/9/18 12:41	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	115		%	81 - 118	SW846 8260C		8/9/18 12:41	TMP	A
4-Bromofluorobenzene (S)	107		%	85 - 114	SW846 8260C		8/9/18 12:41	TMP	A
Dibromofluoromethane (S)	108		%	80 - 119	SW846 8260C		8/9/18 12:41	TMP	A
Toluene-d8 (S)	99.8		%	89 - 112	SW846 8260C		8/9/18 12:41	TMP	A

LIBRARY SEARCH - VOLATILES

No TIC's Detected	.				Lib Search VOC		8/9/18 12:41	CPK	A

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

Lab ID: **2329897009** Date Collected: 8/1/2018 20:50 Matrix: Ground Water

Sample ID: **TB-20180801** Date Received: 8/1/2018 20:50

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2329897 PQF149|Parcel 34

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2329897001	1	PAR-34-GW-2567MW01-8.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 119 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897002	1	PAR-34-GW-2567MW01R-8.2	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 120 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897003	1	PAR-34-GW-2567MW05-9.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 121 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897004	1	PAR-34-GW-2567MW06-10.2	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 120 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897005	1	PAR-34-GW-2567MW07-9.7	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 119 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897006	1	PAR-34-GW-2567MW08-8.5	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 121 and the control limits were 81 to 118. This result was reported at a dilution of 1.				
2329897007	1	PAR-34-GW-2567MW09-8.4	SW846 8260C	1,2-Dichloroethane-d4
The surrogate 1,2-Dichloroethane-d4 for method SW846 8260C was outside of control limits. The % Recovery was reported as 123 and the control limits were 81 to 118. This result was reported at a dilution of 1.				

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 2329897 PQF149|Parcel 34

Lab ID	Sample ID	Analysis Method	Prep Method
2329897001	PAR-34-GW-2567MW01-8.5	Lib Search VOC	
2329897001	PAR-34-GW-2567MW01-8.5	SW846 8260C	
2329897002	PAR-34-GW-2567MW01R-8.2	Lib Search VOC	
2329897002	PAR-34-GW-2567MW01R-8.2	SW846 8260C	
2329897003	PAR-34-GW-2567MW05-9.5	Lib Search VOC	
2329897003	PAR-34-GW-2567MW05-9.5	SW846 8260C	
2329897004	PAR-34-GW-2567MW06-10.2	Lib Search VOC	
2329897004	PAR-34-GW-2567MW06-10.2	SW846 8260C	
2329897005	PAR-34-GW-2567MW07-9.7	Lib Search VOC	
2329897005	PAR-34-GW-2567MW07-9.7	SW846 8260C	
2329897006	PAR-34-GW-2567MW08-8.5	Lib Search VOC	
2329897006	PAR-34-GW-2567MW08-8.5	SW846 8260C	
2329897007	PAR-34-GW-2567MW09-8.4	Lib Search VOC	
2329897007	PAR-34-GW-2567MW09-8.4	SW846 8260C	
2329897008	EB-20180801	Lib Search VOC	
2329897008	EB-20180801	SW846 8260C	
2329897009	TB-20180801	Lib Search VOC	
2329897009	TB-20180801	SW846 8260C	

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Middletown, PA 07057
(717) 944-5541

CHAIN OF CUS... REQUEST FOR A...

ALL SHADED AREAS MUST BE COMP... SAMPLER. INSTRUCTIONS

2329897

COC #: P34-01-20180801 2329897 of
ALS Quote #:

Client Name Parsons Federal	
Address 100 High St. 4th Floor Boston, MA 02110	
Contact Lorraine Weber	
Phone#: 315-552-9745	
Project Name/#: Parcel 34	
Bill To: Parsons Federal	

TAT [ ] Normal-Standard TAT is 10-12 business days.
[X] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.:

Container Type: Vial
Container Size: 40 mL
Preservative: HCl

ANALYSES/METHOD REQUESTED

	Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + TICs (8260)	TOTAL # of CONTAINERS	AUTHORIZED TO RUN
						Enter Number of Containers Per Sample or Field Results Below.		
1	PAR-34-GW-2567MW01 - 8.5	7-31-18	1554	G	GW	2	2	X
2	PAR-34-GW-2567MW01R - 8.2	7-31-18	1355	G	GW	2	2	X
3	PAR-34-GW-2567MW05 - 9.5	8-01-18	1130	G	GW	2	2	X
4	PAR-34-GW-2567MW06 - 10.2	8-01-18	1255	G	GW	2	2	X
5	PAR-34-GW-2567MW07 - 9.7	7-31-18	1510	G	GW	2	2	X
6	PAR-34-GW-2567MW08 - 8.5	8-01-18	1428	G	GW	2	2	X
7	PAR-34-GW-2567MW09 - 8.4	8-01-18	1148	G	GW	2	2	X
8	EB-20180801	"	1230	G	GW	2	2	X
9	TB-20180801	"	—	G	GW	2	2	X
10								

Receipt Information (completed by Receiving Lab)
Cooler Temp: 2.6 Therm ID: 359
No. of Coolers: 1

	Y	N	Initial
Custody Seals Present?	✓		GP
(If present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. in Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?		✓	

Courier/Tracking #: SP18080007

Sample/COC Comments

ALS Field Services: __Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810-06036
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): [signature] DATE 8-1-18 TIME 1500
REVIEWED BY(signature): [signature] DATE 8/1/18 TIME 1500

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 FRANK TACCONI / PARSONS	8-1-18	1530	2 [signature] ALS B	8/1/18	1530
3 [signature] ALS B	8/1/18	1800	4 COMMON COURIER / ALS COURIER		
5 COMMON COURIER / ALS COURIER			6 [signature]	8/1/18	2050
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC
Reportable to PADEP? Yes [ ] PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite
**Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

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April 10, 2019

Mr. Kent Friesen
Parsons - Federal Services

Certificate of Analysis

Project Name:	**Ft. Monmouth GW Sampling**	Workorder:	**3025272**
Purchase Order:	**PO-00065450**	Workorder ID:	**PQF178|Parcel 34**

Dear Mr. Friesen:

Enclosed are the analytical results for samples received by the laboratory on Friday, March 29, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Julien Chambert , Ms. Cris Grill , Ms. Lorraine Weber

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3025272 PQF178|Parcel 34

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3025272001	PAR-34-GW-2567MW01R - 7.6	Water	3/28/2019 16:41	3/29/2019 21:08	Collected by Client

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SAMPLE SUMMARY

Workorder: 3025272 PQF178|Parcel 34

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3025272 PQF178|Parcel 34

Lab ID: **3025272001** Date Collected: 3/28/2019 16:41 Matrix: Water

Sample ID: **PAR-34-GW-2567MW01R - 7.6** Date Received: 3/29/2019 21:08

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
LIBRARY SEARCH - VOLATILES												
No TIC's Detected	.						Lib Search VOC			4/8/19 15:23	CPK	B
VOLATILE ORGANICS												
Acetone	5.9		ug/L	5.0	3.8	1.6	SW846 8260C			4/8/19 15:23	TMP	B
Benzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Bromobenzene	0.75U	U	ug/L	1.0	0.75	0.20	SW846 8260C			4/8/19 15:23	TMP	B
Bromochloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Bromodichloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Bromoform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Bromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
2-Butanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			4/8/19 15:23	TMP	B
tert-Butyl Alcohol	14.7J	J	ug/L	25.0	12.5	8.3	SW846 8260C			4/8/19 15:23	TMP	B
n-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
tert-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
sec-Butylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Carbon Tetrachloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Chlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Chlorodibromomethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Chloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Chloroform	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Chloromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
o-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
p-Chlorotoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,2-Dibromo-3-chloropropane	0.020U	U	ug/L	0.020	0.020	0.0049	SW846 8011	4/5/19	BS	4/6/19 17:10	BS	D
1,2-Dibromoethane	0.020U	U	ug/L	0.020	0.020	0.00098	SW846 8011	4/5/19	BS	4/6/19 17:10	BS	D
1,2-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,3-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,4-Dichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Dichlorodifluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,2-Dichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
cis-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
trans-1,2-Dichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,3-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
2,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,2-Dichloropropane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B

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ANALYTICAL RESULTS

Workorder: 3025272 PQF178|Parcel 34

Lab ID: **3025272001** Date Collected: 3/28/2019 16:41 Matrix: Water

Sample ID: **PAR-34-GW-2567MW01R - 7.6** Date Received: 3/29/2019 21:08

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared	By	Analyzed	By	Cntr
1,1-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
cis-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
trans-1,3-Dichloropropene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Ethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Hexachlorobutadiene	3.8U	U	ug/L	5.0	3.8	0.43	SW846 8260C			4/8/19 15:23	TMP	B
2-Hexanone	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			4/8/19 15:23	TMP	B
Isopropylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
p-Isopropyltoluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Methyl t-Butyl Ether	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
4-Methyl-2-Pentanone(MIBK)	3.8U	U	ug/L	5.0	3.8	1.6	SW846 8260C			4/8/19 15:23	TMP	B
Methylene Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Naphthalene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
n-Propylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Styrene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1,1,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1,2,2-Tetrachloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Tetrachloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Toluene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Total Xylenes	2.3U	U	ug/L	3.0	2.3	1.0	SW846 8260C			4/8/19 15:23	TMP	B
1,2,3-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,2,4-Trichlorobenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1,1-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,1,2-Trichloroethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Trichloroethene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Trichlorofluoromethane	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,2,3-Trichloropropane	0.020U	U	ug/L	0.020	0.020	0.00098	SW846 8011	4/5/19	BS	4/6/19 17:10	BS	D
1,2,4-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
1,3,5-Trimethylbenzene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
Vinyl Chloride	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
o-Xylene	0.75U	U	ug/L	1.0	0.75	0.33	SW846 8260C			4/8/19 15:23	TMP	B
mp-Xylene	1.5U	U	ug/L	2.0	1.5	0.66	SW846 8260C			4/8/19 15:23	TMP	B

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1-Chloro-2-Fluorobenzene (S)	87.4		%	70 - 130	SW846 8011	4/5/19	BS	4/6/19 17:10	BS	D

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	81 - 118	SW846 8260C			4/8/19 15:23	TMP	B
4-Bromofluorobenzene (S)	104		%	85 - 114	SW846 8260C			4/8/19 15:23	TMP	B

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ANALYTICAL RESULTS

Workorder: 3025272 PQF178|Parcel 34

Lab ID: **3025272001** Date Collected: 3/28/2019 16:41 Matrix: Water

Sample ID: **PAR-34-GW-2567MW01R - 7.6** Date Received: 3/29/2019 21:08

Parameters	Results	Flag	Units	LOQ	LOD	DL	Method	Prepared By	Analyzed	By	*Cntr*
Dibromofluoromethane (S)	95.3		%	80 - 119			SW846 8260C		4/8/19 15:23	TMP	B
Toluene-d8 (S)	101		%	89 - 112			SW846 8260C		4/8/19 15:23	TMP	B

Vanessa N. Badman

Mrs. Vanessa N Badman
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3025272 PQF178|Parcel 34

Lab ID	Sample ID	Analysis Method	Prep Method
3025272001	PAR-34-GW-2567MW01R - 7.6	Lib Search VOC	
3025272001	PAR-34-GW-2567MW01R - 7.6	SW846 8011	SW846 8011
3025272001	PAR-34-GW-2567MW01R - 7.6	SW846 8260C	

3025272

ALS Environmental
34 Dogwood Lane
Middletown, PA 07057
(717) 944-5541

CHAIN OF CU
REQUEST FOR

3025272

COC #: P34-01-20190328 | 1 of 1
ALS Quote #:

ALL SHADED AREAS MUST BE CO
SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Parsons Federal
Address: 100 High St. 4th Floor
Boston, MA 02110
Contact: Lorraine Weber
Phone#: 315-552-9745
Project Name/#: Parcel 34
Bill To: Parsons Federal

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.
Date Required: Approved?
Email? [X]-Y lorraine.weber@parsons.com
Fax? [ ]-Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	VOCs + TICs (8260C)	VOCs + TICs (8+10) 8011						TOTAL # of CONTAINERS	AUTHORIZED TO RUN
Container Type					Vial	Vial							
Container Size					40 mL	40 mL							
Preservative					HCl	4c							
					ANALYSES/METHOD REQUESTED								
					Enter Number of Containers Per Sample or Field Results Below.								
1 PAR-34-GW-2567MW01R-7.6	3-28-19	1641	G	GW	X2	X2						4	X
2						DW							
3						4/1							
4													
5													
6													
7													
8													
9													
10													

Receipt Information (completed by Receiving Lab)
Cooler Temp: 0°C Therm ID: 352
No. of Coolers: ____ Y N Initial
Custody Seals Present? [ ] [ ]
(if present) Seals Intact? [ ] [ ]
Received on Ice? [ ] [ ]
COC/Labels Complete/Accurate? [ ] [ ]
Cont. in Good Cond.? [ ] [ ]
Correct Containers? [ ] [ ]
Correct Sample Volumes? [ ] [ ]
Correct Preservation? [ ] [ ]
Headspace/Volatiles? [ ] [ ]
Courier/Tracking #:
Sample/COC Comments

ALS Field Services: __Pickup __Labor
__Composite Sampling __Rental Equipment
__Other:

Project Comments: 748810-05030
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): F. Ulmer Date 3-29-19 0740
REVIEWED BY(signature): Date 3-29-19 0800

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 F. Ulmer / PARSONS	3-29-19	1350	3	3-29-19	1515
3	3-29-19	1800	4 COMMON COURIER / ALS COURIER		
5 COMMON COURIER / ALS COURIER			6	3/29/19	2108
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC
Reportable to PADEP? Yes [ ]
PWSID #
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite
**Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client: Pursens | Work Order #: 3025272 | Initials: DN | Date: 4/1

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number:			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		(YES)	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		YES	(NO)
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?		(YES)	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	(N/A)	YES	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	N/A	YES	NO
13b. Did the client provide a SDWA PWS ID#?	N/A	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	N/A	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	N/A	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	N/A	YES	NO

Cooler #:

Temperature (°C): 1 | 0

Thermometer ID: 352

COMMENTS (Required for all NO responses above and any sample non-conformance):

# of bottles written at receipt.

Rev. 1/10/2019