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:

- "Site Investigation Report for Area Upgradient of FTMM-05, Fort Monmouth, Monmouth County, New Jersey" (29 December 2020)

PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: William R. Colvin
Representative First Name: William Representative Last Name: Colvin
Title: ISE Environmental Coordinator
Phone Number: (732) 515-0874 Ext: Fax:
Mailing Address: P.O. Box 148
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: 29 December 2020

Name/Title: William R. Colvin
G-9, Army Environmental Division (DAIN-ISE)
Fort Monmouth Environmental Coordinator

Completed form should be sent to:

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Office of Brownfield & Community Revitalization
401 East State St
Mail Code: 401-05K
P.O. Box 420
Trenton, NJ 08625

DEPARTMENT OF THE ARMY
G-9, Army Environmental Division (DAIN-ISE)
FORT MONMOUTH
P.O. 148
Oceanport, New Jersey 07757

29 December 2020

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Office of Brownfield & Community Revitalization
401 East State St
Mail Code: 401-05K
P.O. Box 420
Trenton, NJ 08625

Subject: Site Investigation Report for Area Upgradient of FTMM-05
Fort Monmouth, Monmouth County, New Jersey
PI G000000032

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has completed this Site Investigation (SI) letter report to provide an overview of the results of recent 2019 and 2020 field investigations upgradient of FTMM-05 concerning monitor well M5MW16.

Site Background

The FTMM-05 landfill is in the north-central portion of the Main Post at the intersection of North Drive and Wilson Avenue. The site is bordered by Mill Creek, Lafetra Creek, and Parkers Creek to the west, Wilson Avenue to the east, North Drive to the south, and Landfill FTMM-08 to the north (**Figure 1**). FTMM-05 has also been referred to as Landfill 5 and Landfill M-5 in historical documents. The upgradient area described in this SI is located immediately east of FTMM-05, across Wilson Avenue from the FTMM-05 landfill.

FTMM-05 was used as a general purpose disposal area for domestic and industrial wastes. FTMM-05 was in operation from approximately 1952 to 1959 (Parsons, 2015). Future land use for the upgradient area is designated as office/R&D according to the FTMM Reuse and Redevelopment Plan (EDAW, Inc., 2008).

Historical investigations indicated that tetrachloroethene (PCE) was present in groundwater upgradient of FTMM-05 (Parsons, 2015). These PCE occurrences were discovered in multiple Geoprobe borings that were placed across the FTMM-05 vicinity as part of delineation and characterization of the landfill. The Army subsequently performed remedial actions to reduce the concentrations of PCE in groundwater. Injections of Hydrogen Releasing Compound (HRC®) were performed in seven distinct areas in and around the FTMM-05 landfill where elevated concentrations of PCE were detected in shallow groundwater, including the upgradient area near monitor well M5MW16 (**Figure 2**). The HRC® injections were performed over multiple 3- to 6-month time periods in 2000, 2002, 2003, 2004, and 2005 to facilitate the enhanced anaerobic degradation of PCE in groundwater. To further enhance

degradation of PCE in groundwater, RegenOx® injections were also conducted in four areas during two separate events in 2011; one of the RegenOx® injection areas was located near monitor well M5MW16.

Previous sampling from 2013 to 2014 (Parsons, 2015) indicated low-level concentrations of PCE in well M5MW16 (0.3 to 1.7 micrograms per liter [µg/L]), with some results exceeding the New Jersey Department of Environmental Quality (NJDEP) Ground Water Quality Criteria (GWQC) of 1 µg/L. In 2019, well M5MW16 was re-sampled to determine if it could be abandoned; however, the results indicated a low level exceedance of the GWQC for PCE (as described below). The exceedance was potentially a residual artifact in the well screen or sand pack and therefore not representative of site groundwater. M5MW16 was subsequently abandoned and replaced with two wells in February 2020: one at the former M5MW16 location and a second delineation well approximately 100 feet downgradient of M5MW16. Additional groundwater sampling was conducted in March and May 2020 at replacement well M5MW16R and delineation well M5MW26, as described in the Army's email to NJDEP (Department of the Army, 2020). This additional field work was subsequently approved by NJDEP (2020).

SI FIELD ACTIVITIES AND RESULTS

Three permanent monitoring wells were sampled, and groundwater samples were analyzed for volatile organic compounds (VOCs) in 2019 and 2020. Recent groundwater analytical results for the following are presented on **Table 1** and **Figure 3**:

- Permanent well M5MW16 was sampled November 2019 (and subsequently abandoned),
- Permanent well M5MW16R was sampled March and May 2020, and
- Permanent well M5MW26 was sampled March and May 2020.

Concentrations of the following constituents exceeded the current NJDEP GWQC in at least one groundwater sample analyzed for VOCs (see **Figure 3 and Table 1**):

- The PCE concentration at M5MW16 was 2.4 µg/L in November 2019, exceeding the NJDEP GWQC of 1 µg/L.
- The PCE concentration at M5MW16R was 2.9 J µg/L in March 2020 and 38.8 µg/L in May 2020, exceeding the NJDEP GWQC of 1 µg/L.
- The trichloroethene (TCE) concentration at M5MW16R was 14.5 µg/L in May 2020, exceeding the NJDEP GWQC of 1 µg/L.
- The vinyl chloride concentration at M5MW16R was 1.1 µg/L in May 2020, exceeding the NJDEP GWQC of 1 µg/L.

There were no GWQC exceedances in downgradient well M5MW26, which indicates that the VOC exceedances at M5MW16 and M5MW16R are localized in lateral extent.

NJDEP (2013) has published vapor intrusion screening levels for groundwater (31 µg/L for PCE, 2 µg/L for TCE, and 1 µg/L for vinyl chloride). Groundwater concentrations below these screening levels do not pose a vapor intrusion hazard according to the NJDEP. These NJDEP vapor intrusion screening levels were exceeded at well M5MW16R but only in the May 2020 event. Additional groundwater monitoring is warranted to determine if the M5MW16R results represent a persistent exceedance of the NJDEP vapor intrusion screening levels.

Historical quarterly and annual monitoring results for well M5MW16 were compiled from the *2015 Groundwater Sampling Report* (Appendix B of Parsons, 2016) and are presented in **Attachment C**. Detected results for well M5MW16 from 2008 to 2011 for PCE concentrations ranged from 0.86 to 6.93 µg/L, and from 0.41 to 3.2 µg/L for TCE. Therefore, the May 2020 results for PCE (38.8 µg/L) and TCE (14.5 µg/L) at well M5MW16R appear to be anomalous (unusually high) in comparison to historical trends. With the exception of the May 2020 results, the observed VOC concentrations at wells M5MW16 and M5MW16R are consistent with an overall trend of low-level VOC exceedances above the NJDEP GWQS in wells upgradient of the FTMM-05 landfill, as noted in Parsons (2015 and 2016).

The source of PCE and other VOCs in groundwater upgradient of FTMM-05 is unknown. A review of Army historical property records indicates that the former buildings that occupied the vicinity of wells M5MW16 and M5MW16R included barracks, mess halls and a general storehouse, which are not likely sources of VOCs (in comparison with industrial or waste management areas). Therefore, there is no conclusive evidence of a source of VOCs in groundwater from nearby or upgradient areas. The relatively low concentrations encountered may suggest that a minor (although unknown) release of VOCs occurred in the past.

SUMMARY AND RECOMMENDATIONS

A SI was performed that supplements the overall Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) for FTMM-05 (Parsons, 2015) to assess the groundwater upgradient of the FTMM-05 landfill. PCE and associated degradation products (TCE and VC) continue to exceed the GWQC in groundwater upgradient of FTMM-05. The findings are consistent with an overall trend of low-level VOC exceedances above the NJDEP GWQS noted in both the RI (Parsons, 2015) and in groundwater monitoring reports (Parsons, 2016). The source of PCE is unknown. Therefore, additional groundwater monitoring is warranted and should be incorporated into the Classification Exception Area (CEA) planned for FTMM-05.

Please let me know if you have any questions or comments on this report. I can be reached at (732) 515-0874; william.r.colvin18.civ@mail.mil.

Sincerely,

William R Colvin

William R. Colvin
FTMM Environmental Coordinator

cc: Ashish Joshi (e-mail and 2 hard copies)
William Colvin, BEC (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Joseph Fallon, FMERA (email)
Jodie Johnson, HGL (email)

Attachments:

Figure 1 – FTMM-05 Site Location
Figure 2 – FTMM-05 Remedial Activity Injection Areas
Figure 3 - FTMM-05 Groundwater Sampling Locations, Results, and Exceedances

Table 1 - Ground Water Monitoring Well Sampling Results – Comparison to NJDEP Ground Water Quality Criteria

Attachment A – Soil Boring Logs and Well Construction Details
Attachment B – Field Notes
Attachment C – Historical Results for Well M5MW16

REFERENCES CITED:

Department of the Army. 2020. "Re: FTMM-05 Well and Abandonment." E-mail message to NJDEP. January 22.

EDAW, Inc., 2008. *Fort Monmouth Reuse and Redevelopment Plan, Final Plan.* Prepared for Fort Monmouth Economic Revitalization Planning Authority. August 22.

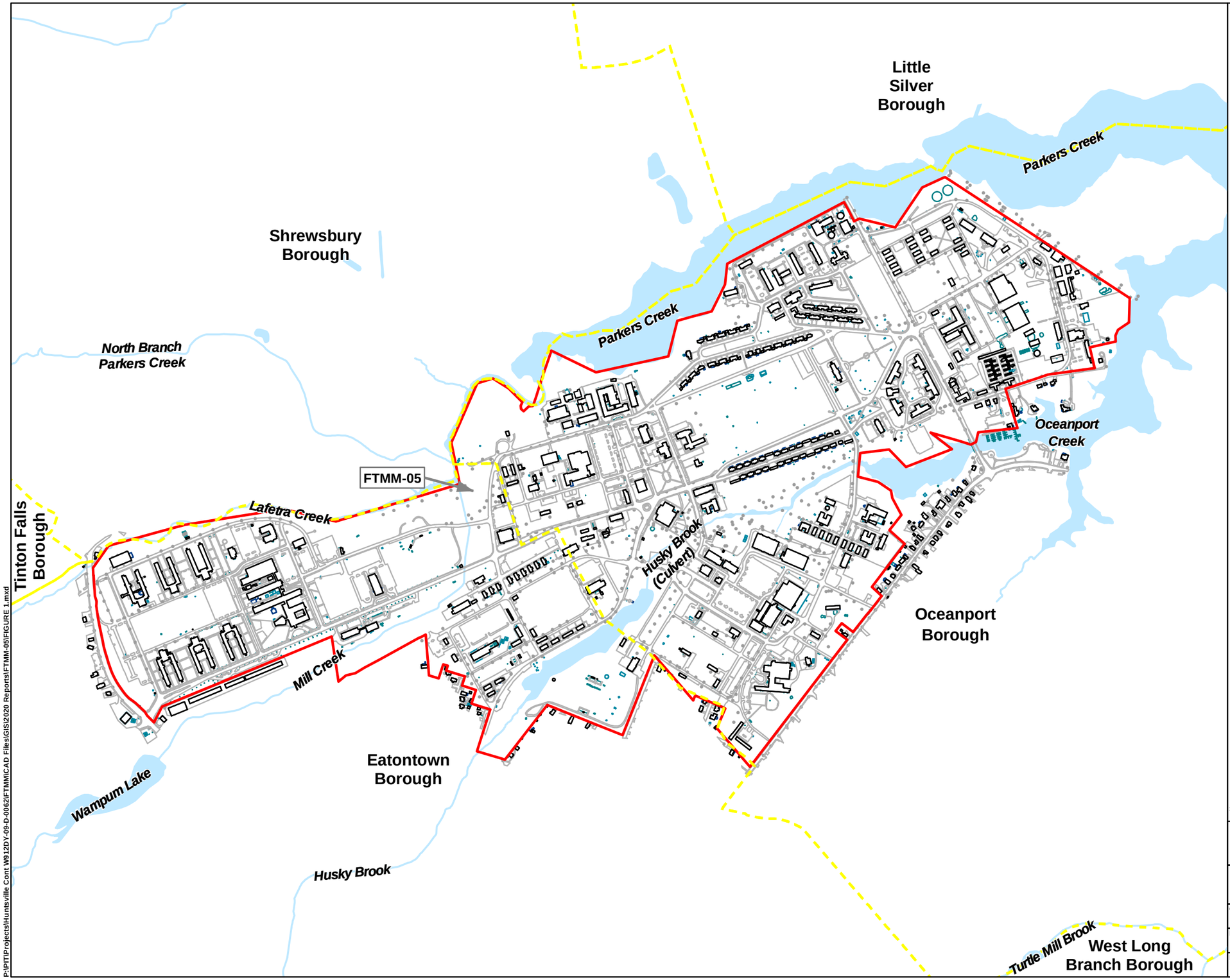
NJDEP. 2020. "Re: FTMM-05 Well and Abandonment." E-mail message to the Department of the Army. January 23.

NJDEP, 2013. *NJDEP Master Table, Generic Vapor Intrusion Screening Levels.* Posted March 2013. Available online at: https://www.nj.gov/dep/srp/guidance/vaporintrusion/vig_tables.pdf .

Parsons. 2015. *Final Remedial Investigation Report for Site FTMM-05, Fort Monmouth, Oceanport, Monmouth County, New Jersey.* Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. October.

Parsons, 2016. *Final Annual (Fourth Quarter) 2015 Groundwater Sampling Report, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. Rev 0. September.

Figures



Legend

- FTMM-05 Landfill Boundary
- Surface Water Feature
- Municipal Boundary
- Installation Boundary

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 2,000 2,500 Feet

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

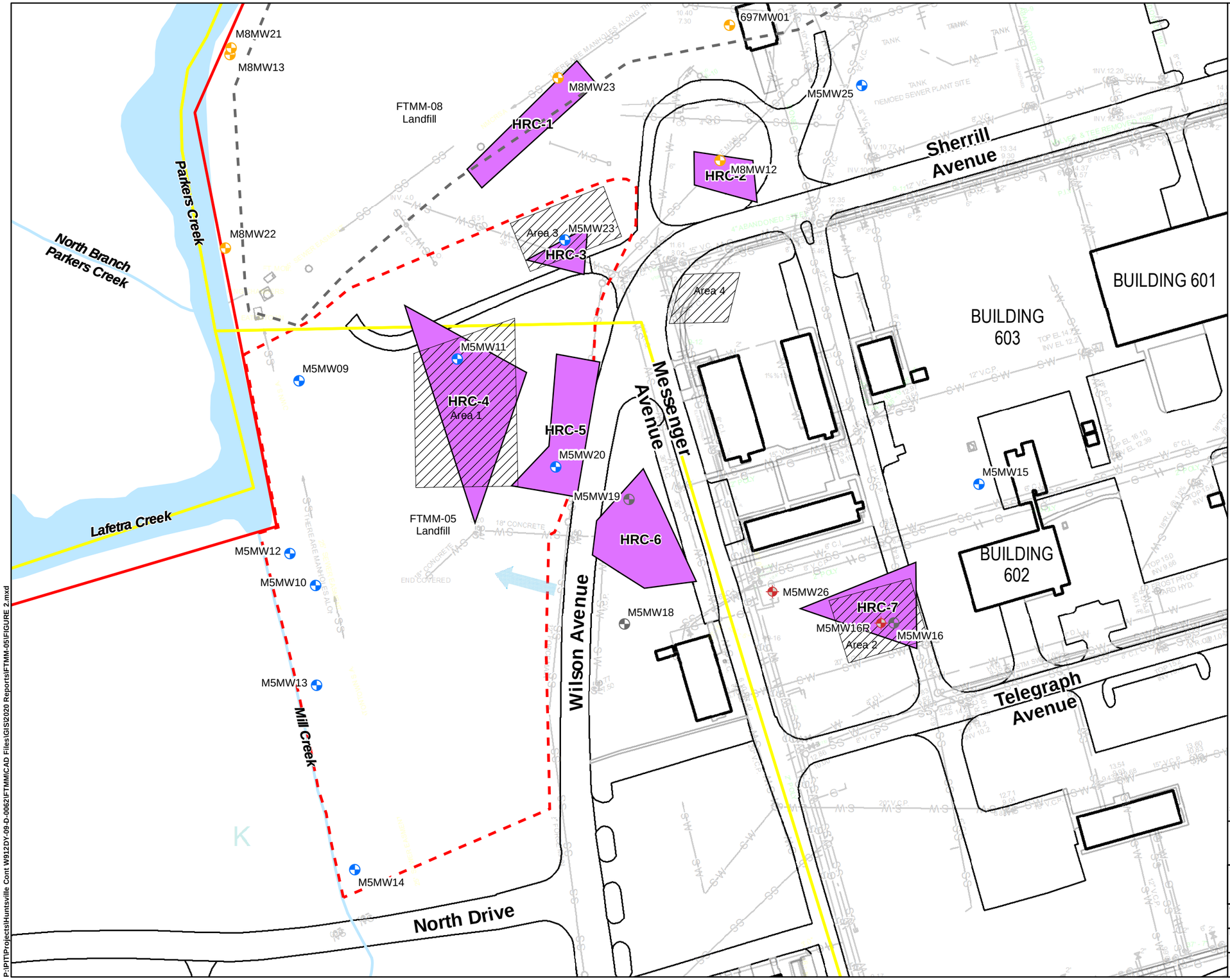
PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

FTMM-05 Location

CREATED BY: RR	REVIEWED BY: AM
DATE: September 2020	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810.02040	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2020 Reports\FTMM-05\FIGURE 1.mxd



LEGEND:

- Proposed Monitoring Well Location
- FTMM-05 Shallow Monitoring Well
- FTMM-05 Abandoned Monitoring
- FTMM-08 Shallow Monitoring Well
- Hydrogen Releasing Compound Treatment Area
- RegenOx Injection
- FTMM-05 Landfill Revised Boundary (2015)
- FTMM-08 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Municipal Boundary
- Installation Boundary
- Estimated Groundwater Flow Direction

N

1 inch = 100 feet

0 25 50 100 150 200 Feet

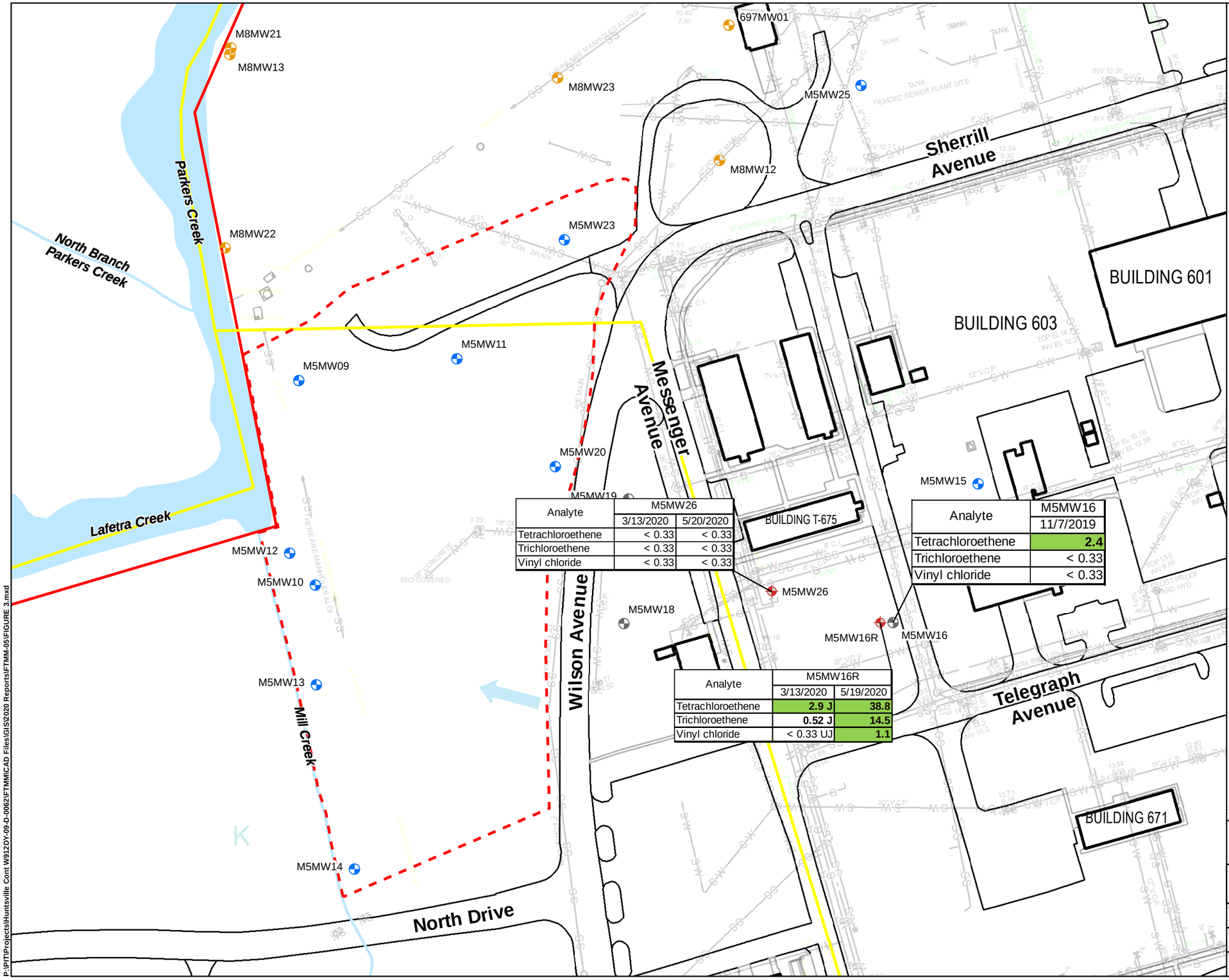
Source: FTMM Supplied CAD, 2013.

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

FTMM-05 REMEDIAL ACTIVITY INJECTION AREAS

CREATED BY: RR	REVIEWED BY: AM
DATE: SEP. 2020	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06030	FILE: FIGURE 2.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2020 Reports\FTMM-05\FIGURE 2.mxd



Analyte	M5MW26	
	3/13/2020	5/20/2020
Tetrachloroethene	< 0.33	< 0.33
Trichloroethene	< 0.33	< 0.33
Vinyl chloride	< 0.33	< 0.33

Analyte	M5MW16
	11/7/2019
Tetrachloroethene	**2.4**
Trichloroethene	< 0.33
Vinyl chloride	< 0.33

Analyte	M5MW16R	
	3/13/2020	5/19/2020
Tetrachloroethene	**2.9 J**	**38.8**
Trichloroethene	**0.52 J**	**14.5**
Vinyl chloride	< 0.33 UJ	**1.1**

LEGEND:

- Proposed Monitoring Well Location
- Shallow Monitoring Well
- Abandoned Monitoring Well
- FTMM-03 Shallow Monitoring Well
- FTMM-08 Shallow Monitoring Well
- FTMM-05 Landfill Revised Boundary (2015)
- Surface Water Feature
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Municipal Boundary
- Installation Boundary
- Estimated Groundwater Flow Direction

Analyte	NJ Ground Water Quality Criteria	
Tetrachloroethene	1	3
Trichloroethene	1	1
Vinyl chloride	1	1

N

1 inch = 100 feet

0 25 50 100 150 200 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

FTMM-05 GROUNDWATER SAMPLING LOCATIONS, RESULTSM AND EXCEEDANCES

CREATED BY: RR	REVIEWED BY: AM
DATE: SEP. 2020	FIGURE NUMBER: FIGURE 3
PROJECT NUMBER: 748810-06030	FILE: FIGURE 3.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2020 Reports\FTMM-05\FIGURE 3.mxd

Tables

Table 1 - Ground Water Monitoring Well Sampling Results – Comparison to NJDEP Ground Water Quality Criteria

TABLE 1
DETECTED GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GWQC
SITE FTMM-05
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	M5MW16	M5MW16R		M5MW26	
Sample ID		M5MW16-GW 13.0	M5MW16R-GW-MW-01-10	M5MW16R-GW-MW-01-11.5	M5MW26-GW-MW-01-11.5	M5MW26R-GW-MW-01-12
Sample Date		11/7/2019	3/13/2020	5/19/2020	3/13/2020	5/20/2020
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
Cis-1,2-Dichloroethene	70	**1.9**	**0.46 J**	**5.9**	< 0.33	**0.4 J**
Tetrachloroethene	1	**2.4**	**2.9 J**	**38.8**	< 0.33	< 0.33
Trichloroethene	1	< 0.33	**0.52 J**	**14.5**	< 0.33	< 0.33
Vinyl chloride	1	< 0.33	< 0.33 UJ	**1.1**	< 0.33	< 0.33

Footnote:
Bold chemical dectection
Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

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

- 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

Attachment A
Soil Boring Logs and Well Construction Details

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - 68
PROJECT LOCATION: FTMM- 68 or Parcel
PROJECT NUMBER:

GROUNDWATER OBSERVATIONS
WATER LEVEL: 5.95
DATE: 2-11-20
TIME: 1455
MEAS. FROM: TOC

INSPECTOR: Kevin McMullin
DRILLER: Joe B
WEATHER: Low 40's / Rain
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe®
DATE/TIME START: 2-11-20 / 1330
DATE/TIME FINISH: 2-11-20 / 1410
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: MSMW16R
LOCATION DESCRIPTION: Grass Surface
LOCATION PLAN: Ft. Monmouth, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-2" - Top Soil		
				0	2-60" - Moist, M. dense, Orange Brown F-M Sand, Some Sub Rounded Medium grain		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4				0			
				0			
5				0	60-120" - Wet, M. dense, Brown - light Brown, F-M Sand, Some Silt		▽ @ ~6 bgs
				0			
6				0			
				0			
7				0			
				0			
8				0			
				0			
9				0			
				0			
10			120/120	0			

Remarks: All soil screened with PID. All soil cuttings containerized 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

Soil Boring Log

CLIENT: USACE

PROJECT NAME: FTMM 6.4

PROJECT LOCATION: FTMM- 6.4 or Parcel

PROJECT NUMBER:

GROUNDWATER OBSERVATIONS

WATER LEVEL: See Page 1

DATE:

TIME:

MEAS. FROM:

INSPECTOR: See Page 1

DRILLER:

WEATHER:

CONTRACTOR: East Coast Drilling, Inc.

RIG TYPE: Geoprobe(R)

DATE/TIME START:

DATE/TIME FINISH:

WEIGHT OF HAMMER: N/A

DROP OF HAMMER: N/A

TYPE OF HAMMER: N/A

BORING/WELL ID: MSMW16R

LOCATION DESCRIPTION

LOCATION PLAN

Ft. Monmouth, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	@ -36- Vst, V. Stiff, Green, Clay, Some Dark Gray Fine Sand		
				0			
1				0			
				0			
2				0			
				0			
3			36/36	0	EOB @ 13 bgs		
					2" Well installed. See Construction Log for Details		
4							
5							
6							
7							
8							
9							
20							

Remarks: See Page 1

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 - Stickup)

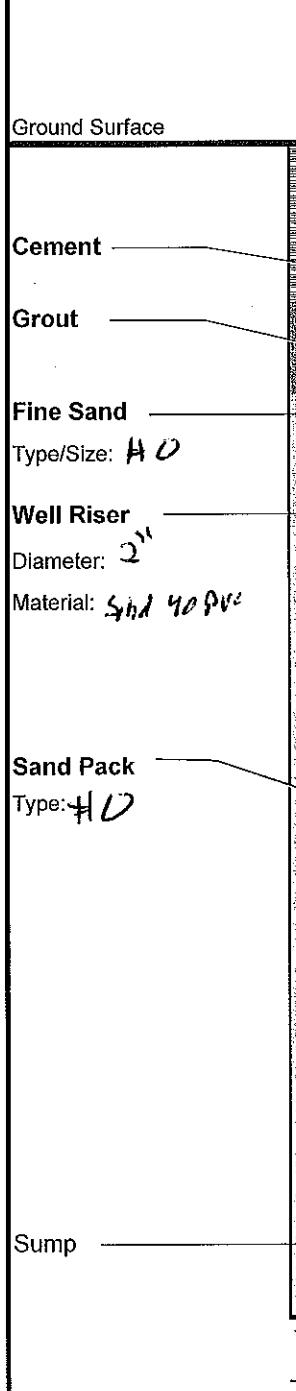
Client: USACE

Well ID: ~~MW~~ MSMW16R

NJBWA Permit No.

Date Well Installed: 2-11-20

Location: FTMM-68



	Depth Below Ground Surface (ft)
Top of Grout	1.0 ~~0.5~~ (2)
Top of Fine Sand	2.0
Top of Sand Pack	2.0
Top of Screen	3.0
Well Screen Diameter: 2" Slot Size: 0.10 Material: Schd 40 PVC	
Bottom of Screen	13.0
Bottom of Sump	13.5
Bottom of Borehole	13.5

Top of Confining Unit (if present): NA

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - 64
PROJECT LOCATION: FTMM- 68 or Parcel
PROJECT NUMBER:

GROUNDWATER OBSERVATIONS
WATER LEVEL: 6.39
DATE: 2-12-20
TIME: 1430
MEAS. FROM: TOC

INSPECTOR: Kevin McMullin
DRILLER: Joe B
WEATHER: Low 40's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe® 1454
DATE/TIME START: 2-12-20 / 1320
DATE/TIME FINISH: 2-12-20 / 1340
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: MSMW26
LOCATION DESCRIPTION: Grass Surface
LOCATION PLAN: Ft. Monmouth, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-2" - Top Soil		
				0			
1				0	2-60" - Moist, M. Dense, Orange		
				0	Brown, F-M, Sand, Some		
2				0	Sub rounded Gravel		
				0			
3				0			
				0			
4				0			
				0			
5				0	60-120" - Wet, M. Dense, Brown - light		
				0	Brown, F-M Sand, Some Silt		
6				0			
				0			
7				0			
				0			
8				0			
				0			
9				0			
				0			
10			20/120	0			

Remarks: All Soil screened with PID and containerized 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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM 68
PROJECT LOCATION: FTMM- 68 or Parcel
PROJECT NUMBER:

GROUNDWATER OBSERVATIONS
WATER LEVEL: See Page 2
DATE:
TIME:
MEAS. FROM:

INSPECTOR: See Page 2
DRILLER:
WEATHER:
CONTRACTOR: East Coast Drilling, Inc.
RIG TYPE: Geoprobe(R)
DATE/TIME START:
DATE/TIME FINISH:
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: MSMV26
LOCATION DESCRIPTION
Grass Surface
LOCATION PLAN
Ft. Monmouth, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-36" - Wet, V. Stiff, Green Clay		
				0	Some Dark Gray Fine Sand		
1				0			
				0	EOB @ 13' bgs		
2				0			
				0	2" PVC Well installed		
3			36/36	0			
					See Construction Log for		
4					Details		
5							
6							
7							
8							
9							
10							

Remarks: See Page 1

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

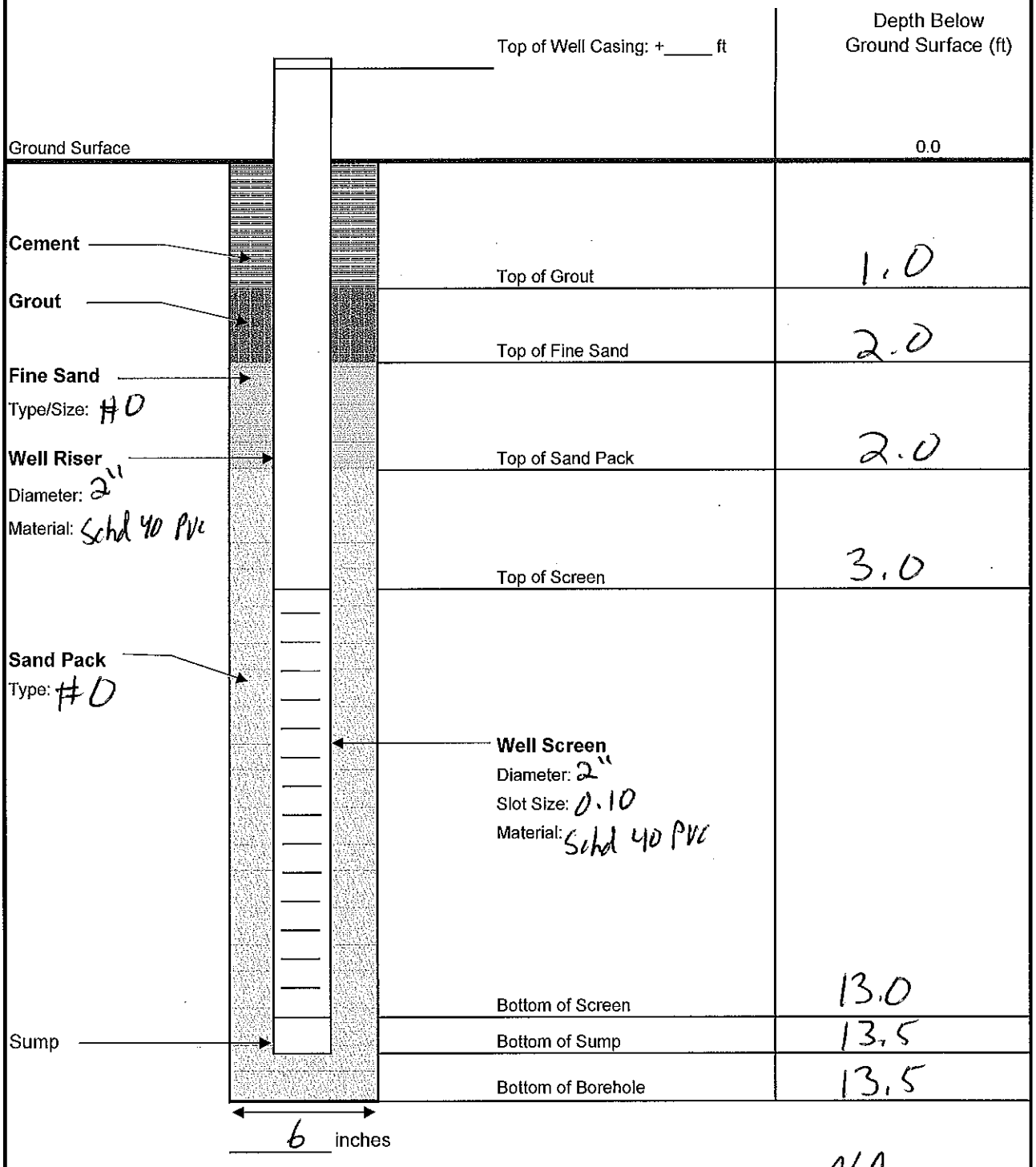
PARSONS

Well Construction Detail (Single Cased - Stickup)

Client: USACE

Well ID: MSMW26 NJBWA Permit No.

Date Well Installed: 2-12-20 Location: M5 FTMM-68



Attachment B
Field Notes

Oceanport, NS — USACE

FTMM-68 +22 — 3-12-20

Weather - Low 50s, Cloudy
Activity - LFPS
Equipment - 2x YSI, 2x IP, 2x MP-50, 2x Battery, 2x 6AL, PPE, Handtools,
Personnel - KM + AFM - Parsons

Activity
0730 - All onsite, HSE, Calibrate Equipment
0830 - KM Setup + LFPS FTMM-68-MW-39 (Vert Profile)
1005 - Collect FTMM-68-GW-MW-39-52.5
1030 - KM Setup + LFPS FTMM-68-MW-39 (Vert Profile)
1205 - Collect FTMM-68-GW-MW-39-47.5
0840 - AFM LFPS FTMM-22-KW-20
0940 - Collect FTMM-22-GW-KW-20-31 (Acq/MS/MSD)
1055 - AFM LFPS FTMM-22-KW-2
1135 - Collect FTMM-22-GW-MW-2-7.2
1220 - KM Setup + LFPS FTMM-68-800MW02
1305 - Collect FTMM-68-GW-800MW02-12.5
1320 - KM Setup + LFPS FTMM-68-800MW01
1445 - Collect FTMM-68-GW-800MW01-10
1200 - AFM Setup + LFPS FTMM-22-GW-KW-21
1255 - Collect FTMM-22-GW-KW-21-20
1325 - AFM Setup + LFPS FTMM-22-GW-KW-1-6
1410 - Collect FTMM-22-GW-KW-1-6
• Return to gas Station Inventory Bottleware + Finalize Paperwork @
1530 - Offsite

Oceanport, NS — USACE

FTMM-68 — 3-13-20

Weather - Low 50s Rain
Activity - LFPS
Equipment - 2x YSI, 2x IP, 2x MP50, 2x Battery, 2x 6AL, PPE,
Personnel - KM + AFM - Parsons

Activity
0730 - All onsite, HSE, Calibrate equipment
0825 - KM Setup + LFPS MSMW26-GW-MW-01
• Unable to Vertical Profile, Screen not fully Saturated •
1130 Collect MSMW26-GW-MW-01-10
0830 - AFM Setup + LFPS PAR-82-GW-MW-01
0945 - Collect PAR-82-GW-MW-01-9
1030 - AFM Setup + LFPS MSMW16R
1125 - Collect MSMW16R-GW-MW-01-10
1200 - Return to Gas Station Inventory Bottles & Finalize Paperwork
1230 - All offsite.

PROJECT SITE/LOCATION: FTMM 05
DATE: 3/13/20
WEATHER: 50s, cloudy/rain

CONSULTING FIRM: PARSONS
FIELD PERSONNEL: ASM

MONITOR WELL #: MSMW16R
WELL PERMIT #: -

WELL DEPTH: 13.0 feet
WELL DIAMETER: 2 inches

SCREENED/OPEN INTERVAL: 3 - 13

PID/FID READINGS:
BACKGROUND: - ppm
BENEATH OUTER CAP: - ppm
BENEATH INNER CAP: - ppm

PUMPING INFORMATION:
PUMP INTAKE DEPTH: 10.0 feet below TOC
DEPTH TO WATER BEFORE PUMP INSTALLATION: 7.34 feet below TOC
MAKE/MODEL OF PUMP: GRP Sample Pro 1.75" Bladder Pump

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6520
SERIAL #: 14H102660 2
TEMP. CORRECTION VALUE: 0.07

Time	PURGING	SAMPLING	pH (units)		SPECIFIC CONDUCTIVITY (mS/cm)		REDOX POTENTIAL (mV)		DISSOLVED OXYGEN (mg/L)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE	READING	CHANGE	READING	CHANGE	READING	CHANGE	READING	CHANGE	READING	CHANGE		
1030	x		6.62		0.109		49.3		3.25		71.1				200	7.34
1035	x		6.27		0.105		40.3		0.68		65.6		10.63			
1040	x		6.18		0.099		42.4		0.48		58.9		10.53			
1045	x		6.16		0.093		45.3		0.41		56.3		10.48			
1050	x		6.15		0.092		46.8		0.39		52.0		10.50			
1055	x		6.14		0.091		48.1		0.42		47.2		10.43			
1100	x		6.13		0.090		49.0		0.43		41.8		10.41			
1105	x		6.12		0.090		49.5		0.43		40.2		10.40			
1110	x		6.12		0.090		48.8		0.42		37.6		10.43			
1115	x		6.12		0.090		49.0		0.44		37.3		10.56			
1120	x		6.12		0.090		48.4		0.44		36.9		10.59			
1125		x	6.11		0.091		47.5		0.43		36.4		10.62			

SAMPLING INFORMATION:
Sample ID: ~~FTMM-05-GW-MSMW16R-10~~ (QFM)
Sample Time: 1125 MSMW16R-GW-MW-01-10
Comments: VOCs

QA/QC INFORMATION:
Duplicate Collected?:
MS/MSD Collected?:
Filtering?:

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%.

ANALYST NAME & SIGNATURE: Aaron FM — DATE: 3/13/20
REVIEWER NAME & SIGNATURE: Kevin McMillan — DATE: 3-13-20

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET 1 OF 2

PROJECT SITE/LOCATION: FTMM / Davenport NS
CONSULTING FIRM: PARSONS
DATE: 3-13-20
FIELD PERSONNEL: KM
WEATHER: Low 50's Rain

MONITOR WELL #: MSMV26
WELL DEPTH: 15 feet
PUMP INTAKE DEPTH: 12.0 ft to TOC
WELL PERMIT #:
WELL DIAMETER: 2 inches
SCREENED/OPEN INTERVAL: 5-15 ft to TOC

PID/FID READINGS:
BACKGROUND: 0 ppm
BENEATH OUTER CAP: 0 ppm
BENEATH INNER CAP: 0 ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 7.4 ft to TOC
DEPTH TO PRODUCT: — ft to TOC ; PRODUCT THICKNESS: — ft
MAKE/MODEL OF PUMP: QED Bladder Pump 177

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6920
SERIAL #:
TEMP. CORRECTION VALUE: 0.14

Time	PURGING	SAMPLING	pH (units) READING	pH CHANGE	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL CHANGE	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE	TURBIDITY (NTU) READING	TURBIDITY CHANGE	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
0825	X		7.24		0.085		128.5		6.26		1410		10.02		175	7.50
0830	X		5.71		0.071		134.0		4.75		706		9.81		175	7.50
0835	X		5.38		0.071		132.8		4.33		702		9.83		175	7.50
0840	X		5.39		0.071		127.3		4.00		842		9.83		175	7.50
0845	X		5.43		0.071		124.7		4.00		800		9.85		175	7.50
0850	X		5.43		0.071		121.9		3.75		733		9.86		225	7.50
0855	X		5.45		0.072		120.0		3.69		688		9.84		225	7.50
0900	X		5.47		0.073		118.5		3.62		600		9.88		225	7.50
0905	X		5.47		0.073		118.0		3.58		564		9.91		225	7.50
0910	X		5.48		0.074		116.8		3.50		473		9.94		225	7.50
0915	X		5.48		0.075		117.6		3.46		388		9.93		225	7.50
0920	X		5.49		0.075		117.3		3.33		306		9.94		225	7.50
0925	X		5.47		0.076		118.6		3.30		252		9.91		225	7.50
0930	X		5.48		0.076		118.9		3.30		206		9.92		225	7.50
0935	X		5.47		0.078		119.3		3.29		179		9.93		225	7.50
0940	X		5.49		0.077		119.3		3.29		147		9.94		225	7.50
0945	X		5.48		0.077		120.6		3.27		150		9.94		225	7.50
0950	X		5.50		0.077		120.2		3.21		128		9.93		225	7.50
0955	X		5.49		0.077		120.8		3.29		122		9.98		225	7.50
1000	X		5.49		0.077		121.8		3.31		119		9.97		225	7.50
1005	X		5.49		0.077		121.3		3.33		99		9.98		225	7.50
1010	X		5.49		0.079		123.4		3.33		103		10.00		225	7.50
1015	X		5.49		0.077		123.8		3.31		101		10.01		225	7.50
1020	X	X	5.49		0.078		123.1		3.30		100		10.00		224	7.50

SAMPLING INFORMATION:
Sample ID: ~~BS~~ MSMV26-GW-MV-01-12
Sample Time: ~~1020~~ (MS) 1130
Comments: 2011 / 8260

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: Kevin McMullin / [signature] DATE: 3-13-20

REVIEWER NAME & SIGNATURE: Aaron FM [signature] DATE: 3/17/20

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET 2 OF 2

PROJECT SITE/LOCATION: FTMM Bayonne NJ
DATE: 3-13-20
WEATHER: Low 50s Rain
CONSULTING FIRM: PARSONS
FIELD PERSONNEL: KM

MONITOR WELL #: MSMW26
WELL PERMIT #:
WELL DEPTH: 15 feet
WELL DIAMETER: 2 inches
PUMP INTAKE DEPTH: 12.0 ft to TOC
SCREENED/OPEN INTERVAL: 5-15 ft to TOC

PID/FID READINGS:
BACKGROUND: 0 ppm
BENEATH OUTER CAP: 0 ppm
BENEATH INNER CAP: 0 ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 7.4 ft to TOC
DEPTH TO PRODUCT: — ft to TOC ; PRODUCT THICKNESS: — ft
MAKE/MODEL OF PUMP: QED Bladder Pump 1.75

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6920
SERIAL #:
TEMP. CORRECTION VALUE: 0.1 M

Time	PURGING	SAMPLING	pH (units) READING	pH CHANGE	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE	REDOX POTENTIAL (mV) READING	REDOX POTENTIAL CHANGE	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE	TURBIDITY (NTU) READING	TURBIDITY CHANGE	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
1020	X		5.49		0.078		124.1		3.27		97		10.23		225	7.50
1025	X		5.49		0.078		122.8		3.25		93		10.27		225	
1030	X		5.49		0.079		126.3		3.21		90		10.31		225	
1035	X		5.48		0.079		126.9		3.18		84		10.33		225	
1040	X		5.47		0.079		127.2		3.15		79		10.26		225	
1045	X		5.49		0.079		127.6		3.10		73		10.25		225	
1050	X		5.49		0.080		128.2		3.10		70		10.30		225	
1055	X		5.49		0.080		128.8		3.06		69		10.31		225	
1100	X		5.49		0.080		129.1		3.06		66		10.33		225	
1105	X		5.49		0.080		129.4		3.06		62		10.37		225	
1110	X		5.49		0.080		130.3		3.06		60		10.29		225	
1115	X		5.49		0.080		130.6		3.04		54		10.38		225	
1120	X		5.47		0.081		130.4		3.04		49		10.38		225	
1125	X		5.49		0.078		130.1		3.03		51		10.36		225	
1130		X	5.50		0.079		130.1		3.03		48		10.34		226	

SAMPLING INFORMATION:
Sample ID: MSMW26-GW-MV-01-12
Sample Time: 1130
Comments: 8011 14260

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: Kevin McMullen DATE: 3-13-20
REVIEWER NAME & SIGNATURE: Aaron FM DATE: 3/13/20

LOW FLOW GROUND WATER SAMPLING - DATA SHEET

SHEET 1 OF 1

PROJECT SITE/LOCATION: FTMM 82 | CONSULTING FIRM: PARSONS
DATE: 3/13/20 | FIELD PERSONNEL: AFM
WEATHER: 30s, rain

MONITOR WELL #: PAR-82-MW-01 | WELL DEPTH: 13.0 feet | PUMP INTAKE DEPTH: 9.0 ft to TOC
WELL PERMIT #: - | WELL DIAMETER: 2 inches | SCREENED/OPEN INTERVAL: 3 - 13 ft to TOC

PID/FID READINGS:
BACKGROUND: - ppm
BENEATH OUTER CAP: - ppm
BENEATH INNER CAP: - ppm

GAUGING/PUMPING INFORMATION:
INITIAL DEPTH TO WATER (BEFORE PUMP INSTALLATION): 5.10 ft to TOC
DEPTH TO PRODUCT: - ft to TOC ; PRODUCT THICKNESS: - ft
MAKE/MODEL OF PUMP: QED Sample Pro 1.75" Bladder Pump

WATER QUALITY METER INFORMATION:
INSTRUMENT MAKE/MODEL: YSI 6920
SERIAL #: 14H102206
TEMP. CORRECTION VALUE: 0.07

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)
0830	x		8.94		0.092		12.3		3.00		860		10.64		250	5.07
0835	x		7.55		0.087		50.7		1.46		770		10.39			5.07
0840	x		7.12		0.087		63.3		1.25		642		10.31			
0845	x		6.85		0.088		73.2		1.38		389		10.31			
0850	x		6.76		0.089		77.7		1.41		307		10.30			
0855	x		6.71		0.089		79.7		1.42		268		10.32			
0900	x		6.62		0.090		84.3		1.39		206		10.42			
0905	x		6.55		0.090		88.5		1.36		173		10.56			
0910	x		6.54		0.090		89.8		1.39		116		10.62			
0915	x		6.51		0.091		91.4		1.35		71.5		10.73			
0920	x		6.50		0.091		91.8		1.32		49.2		10.79			
0925	x		6.49		0.091		92.3		1.30		32.7		10.83			
0930	x		6.47		0.090		94.4		1.28		30.1		10.87			
0935	x		6.47		0.089		94.8		1.25		28.6		10.90			
0940	x		6.46		0.090		96.6		1.24		27.9		10.93			
0945		x	6.45		0.090		97.0		1.22		27.5		10.95			

SAMPLING INFORMATION:
Sample ID: PAR-82-GW-MW-01-9
Sample Time: 0945
Comments: PCBs

QA/QC INFORMATION:
Duplicate Collected?:
MS/MSD Collected?:
Filtering?:

ADDITIONAL OBSERVATIONS/COMMENTS:
Clarity: cloudy
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: Aaron FM | DATE: 3/13/20
REVIEWER NAME & SIGNATURE: Kevin McMullen | DATE: 3-13-20

Attachment C
Historical Results for Well M5MW16

Table 3
Historical Groundwater Analytical Results
Site FTMM-05 Closed Solid Waste Landfill
Annual (Fourth Quarter) 2015 Groundwater Sampling Report
Fort Monmouth, New Jersey

				M5MW14													M5MW16							
Round No.	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	44	45	46	47	47 Dup	LF48	LF49	LF50	LF51	LF52	LF53	LF54	LF55	38	39	40	41	42	43	44	45
Date Collected				11/10/2008	2/26/2009	6/12/2009	9/18/2009	9/18/2009	12/28/2009	3/31/2010	6/30/2010	9/26/2010	1/11/2011	2/23/2011	6/8/2011	8/13/2011	3/11/2008	6/3/2008	8/25/2008	11/10/2008	2/26/2009	6/12/2009	9/18/2009	12/28/2009
ANALYTE/Lab ID				80404.08	90077.08	90235.08	90390.08	90390.03	90490.08	10115.1	10298.1	10411.1	1101907	1106510	1124308	1134006	80077.09	80185	80306.1	80404.1	90077.1	90235.09	90390.09	90490.09
Volatile Organic Compounds (µg/L)																								
Acetone	6000	NLE	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.32	<0.32	<0.32	<7.9	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	1	80	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.23	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	300	NLE	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.22	<0.22	<0.22	<2.9	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	700	NLE	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.18	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	70	80	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.35	<0.35	<0.35	<0.21	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600	NLE	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.16	<0.16	<0.16	<0.29	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	1	7	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.15	<0.15	<0.15	<0.28	ND	ND	ND	ND	ND	ND	ND	ND
cis-l,2-Dichloroethene	70	70	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.22	8.48	3.23	13.2	4.23	14.93	5.14	1.87	2.52
trans -1,2-Dichloroethene	100	100	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.14	<0.14	<0.31	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	3	5	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.26	<0.26	<0.26	<0.2	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1	5	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.14	<0.14	<0.14	<0.32	6.93	4.42	5.92	4.43	1.75 J	2.99	1.95	4.9
Toluene	600	1000	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.15	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	1	5	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.11	<0.11	<0.11	<0.21	0.74 J	0.75 J	1.99 J	1.36 J	1.58 J	0.5 J	ND	ND
Vinyl chloride	1	2	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.22	<0.22	<0.22	<0.27	ND	ND	1.2 J	ND	1.28 J	ND	ND	ND
TICs*	500	NLE	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	0	0	0	ND	ND	ND	ND	ND	ND	ND	ND
Metals (µg/L)																								
Aluminum	200	NLE	121000	NA	NA	NA	NA	NA	NA	21.2	ND	ND	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	6	6	20.70	NA	NA	NA	NA	NA	NA	10.4	6.04 ER	15.4	<6.0	<6.0	<6.0	<6.0	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	3	10	89.30	NA	NA	NA	NA	NA	NA	ND	1.24 ER	ND	<3.0	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA
Barium	6000	2000	699.00	NA	NA	NA	NA	NA	NA	26	25.6	30.7	<200	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	1	4	2.10	NA	NA	NA	NA	NA	NA	ND	ND	ND	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	4	5	9.50	NA	NA	NA	NA	NA	NA	ND	ND	ND	<3.0	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NLE	NLE	45400.00	NA	NA	NA	NA	NA	NA	43800	45000	63300	45600	51000	59700	54300	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	70	100	191.00	NA	NA	NA	NA	NA	NA	ND	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NLE	NLE	18.30	NA	NA	NA	NA	NA	NA	ND	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1300	1300	65.60	NA	NA	NA	NA	NA	NA	ND	2.22 ER	7.02 ER	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NLE	431000	NA	NA	NA	NA	NA	NA	1080	563	701	5010	1550	13900	11500	NA	NA	NA	NA	NA	NA	NA	NA
Lead	5	15	22.70	NA	NA	NA	NA	NA	NA	ND	ND	ND	<3.0	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NLE	NLE	62700	NA	NA	NA	NA	NA	NA	16000	16300	20600	20200	17800	18900	19800	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	NLE	331	NA	NA	NA	NA	NA	NA	16.5	14.7	17.4	75	27.6	112	79.3	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2	2	0.26	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	<0.2	0.28	0.46	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	NLE	187	NA	NA	NA	NA	NA	NA	ND	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NLE	NLE	137000	NA	NA	NA	NA	NA	NA	12900	12200	15700	13200	13200	12000	12700	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	40	50	29.60	NA	NA	NA	NA	NA	NA	60.8	NR	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Silver	40	NLE	ND	NA	NA	NA	NA	NA	NA	2.04	ND	ND	<10	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	50000	NLE	21500	NA	NA	NA	NA	NA	NA	8060	8900	11100	42400	10200	64600	89400	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	2	2	5.50	NA	NA	NA	NA	NA	NA	ND	ND	ND	<2.0	<2.0	<2.0	<2.0	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NLE	NLE	108	NA	NA	NA	NA	NA	NA	ND	ND	ND	<50	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	NLE	233	NA	NA	NA	NA	NA	NA	1.44 ER	ND	ND	<20	<20	71.8	35.8	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Shaded cells = concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for total VOCs and SVOCs. No individual compound can exceed 100 µg/L.

NJDEP = NJDEP Ground Water Quality Standards 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

b - Elevated sample detection limit due to difficult sample matrix

MCLs for bromodichlormethane and chloroform are for total trihalomethanes

Table 3
Historical Groundwater Analytical Results
Site FTMM-05 Closed Solid Waste Landfill
Annual (Fourth Quarter) 2015 Groundwater Sampling Report
Fort Monmouth, New Jersey

				M5MW16																				
Round No.	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	LF46	LF47	LF48	LF48 Dup	LF49	LF49 Dup	LF50	LF51	LF51 Dup	LF52	LF52 Dup	LF53	LF53 Dup	LF54	LF54 Dup	LF55	LF55 Dup	LF56	LF56 Dup	LF57	LF57 Dup
Date Collected				3/30/2010	6/30/2010	9/27/2010	9/27/2010	1/4/2011	1/4/2011	2/23/2011	4/12/2011	4/12/2011	4/15/2011	4/15/2011	4/22/2011	4/22/2011	4/29/2011	4/29/2011	6/6/2011	6/6/2011	7/5/2011	7/5/2011	7/29/2011	7/29/2011
ANALYTE/Lab ID				10113	10298.1	10412.04	10412.03	1100704	1100703	1106505	1114204	1114203	1E+06	1E+06	1116505	1116503	1E+06	1E+06	1123704	1123703	1E+06	1E+06	1131505	1131503
Volatile Organic Compounds (µg/L)																								
Acetone	6000	NLE	-	ND	ND	ND	ND	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<7.6	<7.6	15.3	15.8
Bromodichloromethane	1	80	-	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.23	<0.23	<0.23	<0.23
2-Butanone	300	NLE	-	ND	ND	ND	ND	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<2.9	<2.9	<2.9	<2.9
Carbon disulfide	700	NLE	-	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.18	<0.18	0.4 J	0.42 J
Chloroform	70	80	-	ND	ND	ND	ND	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.21	<0.21	2.9	2.9
1,3-Dichlorobenzene	600	NLE	-	ND	ND	ND	ND	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.29	<0.29	<0.29	<0.29
1,1-Dichloroethene	1	7	-	ND	ND	ND	ND	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.28	<0.28	<0.28	<0.28
cis-l,2-Dichloroethene	70	70	-	10.26	10.27	1.71	1.84	4.64	4.37	33.47	8.45	9.11	4.13	3.57	16.63	15.21	8.57	8.94	5.17	4.97	2.1	2.1	22	23.2
trans -1,2-Dichloroethene	100	100	-	ND	ND	ND	ND	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.31	<0.31	<0.31	<0.31
Methylene chloride	3	5	-	ND	ND	ND	ND	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	1.2	<0.2	<0.2	<0.2
Tetrachloroethene	1	5	-	1.36	1.56	3.39	3.86	3.72	3.6	<0.14	0.86	0.88	1.57	<0.14	1.12	0.94	0.88	1.06	0.96	0.88	1.8	1.8	3.2	3.2
Toluene	600	1000	-	ND	ND	ND	ND	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.15	<0.15	<0.15	<0.15
Trichloroethene	1	5	-	1.84	1.13	0.73	0.81	0.45 J	0.41 J	0.97	0.88	0.94	0.44 J	0.42 J	1.54	1.36	0.89	1.02	0.38 J	0.35 J	<0.21	<0.21	1.9	2.1
Vinyl chloride	1	2	-	ND	1.15	ND	ND	<0.22	<0.22	1.65	0.34 J	0.36 J	<0.22	<0.22	0.46 J	0.41 J	0.28 J	0.27 J	0.33 J	0.28 J	<0.27	<0.27	1.9	2
TICs*	500	NLE	-	ND	ND	ND	ND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metals (µg/L)																								
Aluminum	200	NLE	121000	334	155	203	210	208	225	297	NA	NA	NA	NA	NA	NA	NA	NA	398	788	NA	NA	NA	NA
Antimony	6	6	20.70	6.25 ER	ND	ND	ND	<6.0	<6.0	<6.0	NA	NA	NA	NA	NA	NA	NA	NA	<6.0	<6.0	NA	NA	NA	NA
Arsenic	3	10	89.30	1.26 ER	4.51 ER	4.68 ER	4.52 ER	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA	6.8	6.5	NA	NA	NA	NA
Barium	6000	2000	699.00	66.7	128	91.2	91.7	<200	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA	<200	<200	NA	NA	NA	NA
Beryllium	1	4	2.10	0.079 ER	0.124 ER	0.171	0.213 ER	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	<1.0	<1.0	NA	NA	NA	NA
Cadmium	4	5	9.50	0.667 ER	0.785 ER	ND	ND	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA	<3.0	<3.0	NA	NA	NA	NA
Calcium	NLE	NLE	45400.00	11500	14600	8510	8610	<5000	<5000	7180	NA	NA	NA	NA	NA	NA	NA	NA	6320	5660	NA	NA	NA	NA
Chromium	70	100	191.00	ND	ND	ND	ND	<10	<10	<10	<0.01 a	<0.01 a	NA	NA	NA	NA	NA	NA	<10	<10	<0.01 a	<0.01 a	NA	NA
Cobalt	NLE	NLE	18.30	0.746	2.24	0.84	0.742	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA
Copper	1300	1300	65.60	ND	3.15 ER	1.09 ER	1.05 ER	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA
Iron	300	NLE	431000	12700	15500	5640	5400	563	586	8110	17500	15200	8210	8740	10500	12400	8390	7740	9280	10400	5440	7110	74300	160000 b
Lead	5	15	22.70	ND	ND	ND	ND	<3.0	<3.0	<3.0	NA	NA	NA	NA	NA	NA	NA	NA	<3.0	<3.0	NA	NA	NA	NA
Magnesium	NLE	NLE	62700	4400	6260	3670	3710	<5000	<5000	<5000	NA	NA	NA	NA	NA	NA	NA	NA	<5000	<5000	NA	NA	NA	NA
Manganese	50	NLE	331	57.4	87.8	65.2	65.4	35.4	35.8	33.3	106	107	132	134	34.9	33.1	73.6	70.6	45.3	43.2	27.3	27.9	79.8	108 b
Mercury	2	2	0.26	0.12 ER	ND	ND	ND	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.2	NA	NA	NA	NA
Nickel	100	NLE	187	2.27 ER	5.05	3.12 ER	3.07 ER	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA
Potassium	NLE	NLE	137000	5510	5410	4350	4290	<10000	<10000	<10000	NA	NA	NA	NA	NA	NA	NA	NA	<10000	<10000	NA	NA	NA	NA
Selenium	40	50	29.60	7.16	NR	1.56 ER	ND	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA
Silver	40	NLE	ND	ND	2.81	1.05 ER	0.606	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA
Sodium	50000	NLE	21500	50600	93500	109000	109000	52600	52900	37400	NA	NA	NA	NA	NA	NA	NA	NA	106000	101000	NA	NA	NA	NA
Thallium	2	2	5.50	ND	ND	ND	ND	<2.0	<2.0	<2.0	NA	NA	NA	NA	NA	NA	NA	NA	<2.0	<2.0	NA	NA	NA	NA
Vanadium	NLE	NLE	108	1.04 ER	ND	ND	ND	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA
Zinc	2000	NLE	233	19.9 ER	46.7	43.5	44.1	50.9	61	50.8	NA	NA	NA	NA	NA	NA	NA	NA	56.9	56.7	NA	NA	NA	NA

Notes:
Shaded cells = concentrations exceed the NJDEP GWQS
*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for total VOCs and SVOCs. No individual compound can exceed 100 µg/L.

NJDEP = NJDEP Ground Water Quality Standards as per N.J.A.C. 7:9-6 (July 22, 2010)
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b - Elevated sample detection limit due to difficult sample matrix
MCLs for bromodichlormethane and chloroform are for total trihalomethanes

Table 3
Historical Groundwater Analytical Results
Site FTMM-05 Closed Solid Waste Landfill
Annual (Fourth Quarter) 2015 Groundwater Sampling Report
Fort Monmouth, New Jersey

				M5MW16			M5MW18																	M5MW19			
Round No.				LF58		LF59	28	39	40	41	42	43	44	45	45 Dup	LF46		LF47		LF48		LF49	LF50	LF51	LF52	38	39	40	41
Date Collected	**NJDEP GWQS**	**USEPA MCL**	**Weston 1995 Background (Main Post)**	8/13/2011		8/19/2011	3/11/2008	6/3/2008	8/25/2008	11/10/2008	2/26/2009	6/12/2009	9/18/2009	12/28/2009	12/28/2009	3/31/2010		6/29/2010		9/26/2010		1/4/2011	2/23/2011	6/6/2011	8/13/2011	3/11/2008	6/3/2008	8/25/2008	11/10/2008
ANALYTE/Lab ID				1134013		1134805	80077.10	80185.10	80306.10	80404.10	90077.10	90235.10	90390.10	90490.10	90490.03	10115		10294		10411.1		1100707	1106504	1123705	1134009	80077	80185	80306.1	80404.11
Volatile Organic Compounds (µg/L)																													
Acetone	6000	NLE	-	11.6		<7.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.32	<0.32	<0.32	<7.6	ND		ND		ND
Bromodichloromethane	1	80	-	<0.23		<0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.12	<0.12	<0.12	<0.23	ND		ND		ND
2-Butanone	300	NLE	-	7.4		<2.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.22	<0.22	<0.22	<2.9	ND		ND		ND
Carbon disulfide	700	NLE	-	<0.18		<0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.12	<0.12	<0.12	<0.18	ND		ND		ND
Chloroform	70	80	-	1.7		0.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.35	<0.35	<0.35	<0.21	ND		ND		ND
1,3-Dichlorobenzene	600	NLE	-	<0.29		<0.29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.16	<0.16	<0.16	<0.29	ND		ND		ND
1,1-Dichloroethene	1	7	-	<0.28		<0.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.15	<0.15	<0.15	<0.28	ND		ND		ND
cis-l,2-Dichloroethene	70	70	-	50		29.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.12	<0.12	<0.12	<0.22	1.25	J	1.11	J	0.57	J	8.5
trans -1,2-Dichloroethene	100	100	-	<0.31		<0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.14	<0.14	<0.14	<0.31	ND		ND		ND		ND
Methylene chloride	3	5	-	0.5	J	<0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.26	<0.26	<0.26	<0.2	ND		ND		ND		ND
Tetrachloroethene	1	5	-	3.2		3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.14	<0.14	<0.14	<0.32	0.58	J	ND		0.75	J	2.01
Toluene	600	1000	-	<0.15		<0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.12	<0.12	<0.12	<0.15	ND		ND		ND		ND
Trichloroethene	1	5	-	3.2		2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28	J	ND		ND		<0.11	0.16	<0.11	<0.21	1.34	J	ND		0.33	J	3.68
Vinyl chloride	1	2	-	7.1		3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		<0.22	<0.22	<0.22	<0.27	ND		ND		ND		ND
TICs*	500	NLE	-	0		0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND		0	0	0	0	ND		ND		ND		ND
Metals (µg/L)																													
Aluminum	200	NLE	121000	7510		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.6		ND		44.2		<200	<200	<200	<200	NA		NA		NA		NA
Antimony	6	6	20.70	<6.0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		9.81	ER	<6.0	<6.0	<6.0	<6.0	NA		NA		NA		NA
Arsenic	3	10	89.30	24.5		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.77	ER	3.26	ER	1.38	ER	<3.0	<3.0	9.4	3.3	NA		NA		NA		NA
Barium	6000	2000	699.00	242		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	131		112		259		<200	<200	416	229	NA		NA		NA		NA
Beryllium	1	4	2.10	1.2		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<1.0	<1.0	<1.0	<1.0	NA		NA		NA		NA
Cadmium	4	5	9.50	<3.0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.23	ER	1.07	ER	0.66	ER	<3.0	<3.0	<3.0	<3.0	NA		NA		NA		NA
Calcium	NLE	NLE	45400.00	30300		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27200		27200		23400		19500	27500	28300	34000	NA		NA		NA		NA
Chromium	70	100	191.00	90.4		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<10	<10	<10	<10	NA		NA		NA		NA
Cobalt	NLE	NLE	18.30	<50		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<50	<50	<50	<50	NA		NA		NA		NA
Copper	1300	1300	65.60	<10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		4.85	ER	ND		<10	<10	<10	<10	NA		NA		NA		NA
Iron	300	NLE	431000	49800		12700	NA	NA	NA	NA	NA	NA	NA	NA	NA	32400		21700		19100		4270	22800	76400	33200	NA		NA		NA		NA
Lead	5	15	22.70	12.2		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		2.99	ER	ND		<3.0	<3.0	3.0	<3.0	NA		NA		NA		NA
Magnesium	NLE	NLE	62700	13700		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4830		4770		4030		<5000	<5000	<5000	5880	NA		NA		NA		NA
Manganese	50	NLE	331	112		73.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	61.4		63.2		42.6		41.9	69.7	74.1	61.6	NA		NA		NA		NA
Mercury	2	2	0.26	<0.2		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		NA	<0.2	<0.2	<0.2	NA		NA		NA		NA
Nickel	100	NLE	187	39.7		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		0.446	ER	1.1	ER	<10	<10	<10	<10	NA		NA		NA		NA
Potassium	NLE	NLE	137000	11800		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9040		8550		9820		<10000	<10000	<10000	<10000	NA		NA		NA		NA
Selenium	40	50	29.60	14.4		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.9		NR		ND		<10	<10	<10	<10	NA		NA		NA		NA
Silver	40	NLE	ND	<10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		4.35	ER	2.09		<10	<10	<10	<10	NA		NA		NA		NA
Sodium	50000	NLE	21500	615000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9240		8930		19700		16700	10600	10700	17000	NA		NA		NA		NA
Thallium	2	2	5.50	<2.0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND		ND		ND		<2.0	<2.0	<2.0	<2.0	NA		NA		NA		NA
Vanadium	NLE	NLE	108	<50		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.17	ER	ND		ND		<50	<50	<50	<50	NA		NA		NA		NA
Zinc	2000	NLE	233	144		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.9	ER	3.32	ER	5.55		<20	<20	<20	<20	NA		NA		NA		NA

Notes:

Shaded cells = concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for total VOCs and SVOCs. No individual compound can exceed 100 µg/L.

NJDEP = NJDEP Ground Water Quality Standards 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

b - Elevated sample detection limit due to difficult sample matrix

MCLs for bromodichlormethane and chloroform are for total trihalomethanes

Table 4
Groundwater Analytical Results - 2013, 2014 and 2015
Site FTMM-05 Closed Solid Waste Landfill
Annual (Fourth Quarter) 2015 Groundwater Sampling Report
Fort Monmouth, New Jersey

Loc ID	NJDEP GWQS	2015-06 USEPA MCL	M5MW13		M5MW14			M5MW16				
Sample ID			FTMM-5-GW-M5MW13-12.87	FTMM-5-GW-M5MW13-7.87	FTMM-5-GW-M5MW14-13.65	FTMM-5-GW-M5MW14-18.63	FTMM-5-GW-M5MW14-8.63	FTMM-5-GW-M5MW16-14.57	FTMM-5-GW-M5MW16-8.8	FTMM-5-GW-M5MW16-14.5	FTMM-5-GW-M5MW16-14.57	FTMM-5-GW-M5MW16-14.57
Sample Date			8/27/2013	8/27/2013	8/27/2013	8/27/2013	8/27/2013	8/27/2013	8/27/2013	8/28/2013	12/18/2014	12/14/2015
QA/QC			SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
Sample Method			PDB	PDB	PDB	PDB	PDB	PDB	PDB	LFPS	PDB	PDB
Volatile Organic Compounds (µg/l)												
1,1,1,2-Tetrachloroethane	1	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	30	200	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	3	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	50	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	1	7	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	0.03	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	9	70	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	0.02	0.2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromoethane	0.03	0.05	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	600	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	2	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	1	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	600	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	75	75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Chlorotoluene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Acetone	6,000	NLE	**1.8 J**	**1.5 J**	**2.2 J**	**2 J**	**2.8 J**	**2.2 J**	**2.3 J**	**1.5 J**	**3.3 J**	**4.6 B**
Benzene	1	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	1	80	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	4	80	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	1	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	50	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorodibromomethane	1	80	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	5	NLE	< 1	< 1	< 1	< 1	< 1	**0.54 J**	**0.37 J**	**0.5 J**	< 1	< 1
Chloroform	70	80	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cis-1,2-Dichloroethene	70	70	< 1	< 1	< 1	< 1	< 1	**8**	**6**	**8.7**	**1.6 J**	**1.1 J**
Cis-1,3-Dichloropropene	1	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cymene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	1,000	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethyl benzene	700	700	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene	1	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene	700	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Meta/Para Xylene	1,000	NLE	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methyl bromide	10	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl butyl ketone	300	NLE	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl chloride	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl ethyl ketone	300	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl isobutyl ketone	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl Tertbutyl Ether	70	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methylene chloride	3	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	300	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ortho Xylene	1,000	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Chlorotoluene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Propylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	100	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tert Butyl Alcohol	100	NLE	NA	NA	NA	NA	NA	NA	NA	NA	< 20 UJ	< 20
tert-Butylbenzene	100	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	1	5	< 1	< 1	< 1	< 1	< 1	**0.3 J**	**0.67 J**	**0.86 J**	**1.7 J**	**2.3 J**
Toluene	600	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Total TIC, Volatile	500	NLE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1,000	10,000	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Trans-1,2-Dichloroethene	100	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trans-1,3-Dichloropropene	1	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	1	5	< 1	< 1	< 1	< 1	< 1	**0.45 J**	**0.43 J**	**0.47 J**	< 1	**0.25 J**
Trichlorofluoromethane	2,000	NLE	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl chloride	1	2	< 1	< 1	< 1	< 1	< 1	**2.2 J**	**1.2 J**	**2.6 J**	< 1	< 1