TABLES

TABLE 1
Summary of Sampling Locations, Sampling Dates, and Sampling Methods
Fourth Quarter 2018 CMI Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Well	Sample Date	Sampling Method	Pump Type	Purge Rate (mL/min)*	Sample Observations**	Comments (problems, repairs, etc.)
MW-05S	10/1/2018	LF	Peristaltic	270	--	--
MW-09S	10/1/2018	LF	Peristaltic	250	Clear	--
MW-29D	10/1/2018	LF	WW	250	Clear	--
MW-30D	10/1/2018	LF	WW	300	Clear	Flow difficult to maintain. Air bubbles in flow cell.
MW-31M	10/1/2018	LF	WW	250	Clear	Higher pressure required to maintain flow (~100 psi). Some air bubbles in flow cell.
MW-33D	10/1/2018	LF	WW	250	Clear	Flow difficult to maintain.
SW-0901	10/1/2018	LF	Peristaltic	150	Clear	--
Firehouse (SSFH)	10/2/2018	Valve	Tap in kitchen	N/A	Clear	Re-sampled on 11/1/2018.
Municipal Garage	10/2/2018	Valve	Tap in bathroom	N/A	Clear	--
MW-13D	10/2/2018	LF	WW	220	--	Flow difficult to maintain (fluctuating).
MW-16S	10/2/2018	LF	WW	130	Slightly turbid	Flow difficult to maintain. Turbid (brown), then clearing.
MW-23D	10/2/2018	3x volume	WW	N/A	Clear	--
MW-24D	10/2/2018	3x volume	WW	N/A	Brown turbidity	Turbid-brown, then clearing.
MW-25D	10/2/2018	3x volume	WW	N/A	Brown turbidity	Turbid-brown, then clearing.
MW-26D	10/2/2018	3x volume	WW	N/A	Orange turbidity	Orange turbidity. Purged dry during purge.
MW-27D	10/2/2018	3x volume	WW	N/A	Clear	--
SW-0402	10/2/2018	LF	Peristaltic	300	Clear	--
SW-Q01	10/2/2018	LF	Peristaltic	300	Clear	--
MW-01M	10/3/2018	LF	WW	125	Clear	--
MW-07S	10/3/2018	LF	Peristaltic	300	Clear, slight odor	Obstruction at 17.6 ft.; set tubing to 17.4 ft. (top of screen) and sampled using low flow method.
MW-09D	10/3/2018	LF	WW	225	Clear	Flow difficult to maintain.
MW-19D	10/3/2018	LF	WW	185	--	--
MW-19S	10/3/2018	LF	WW	100	--	Flow difficult to maintain.
RW-1	10/3/2018	LF	Peristaltic	300	Clear	Obstruction at 19 ft.; Slight turbidity (red/brown) at beginning of purge, then clear.
RW-1D	10/3/2018	Valve	Valve	N/A	Clear	Purged volume of piping from main line to sample valve.
RW-2	10/3/2018	Valve	Valve	N/A	Clear	Purged volume of piping from main line to sample valve.
RW-4	10/3/2018	Valve	Valve	N/A	Clear	Purged volume of piping from main line to sample valve.
RW-9	10/3/2018	Valve	Valve	N/A	Clear	Purged volume of piping from main line to sample valve.
RW-OBS-6	10/3/2018	Valve	Valve	N/A	Clear	Purged volume of piping from main line to sample valve.
SW-0301	10/3/2018	LF	Peristaltic	350	Clear, odor	Odor detected.
MW-03M	10/4/2018	LF	WW	300	Clear, odor	Flow difficult to maintain.
MW-08D	10/4/2018	LF	WW	110	--	Flow difficult to maintain.
MW-13S	10/4/2018	Modified	WW	N/A	Slightly turbid	Used Alternate Method 1; purged well dry (~9.5 gallons) on 10/4/2018. 10/5/2018 - Purged ~1 gallon prior to sampling.
MW-24S	10/4/2018	LF	WW	200	Brown turbidity	Flow difficult to maintain.
MW-25M	10/4/2018	Packer	WW	N/A	Clear; effervescence observed in flow cell	Used Alternate Method 6; Raised pump/packer ~3 ft. and inflated packer to 125 psi. Purged a total of ~5 gallons from packed interval, which is greater than 3 packed interval volumes of 4.9 gallons. Some effervescence observed in flow cell during purge.
SR-04	10/4/2018	LF	Peristaltic	300	Clear	--
MW-12M	10/5/2018	Modified	WW	N/A	Clear; some effervescence observed	Used Alternate Method 2 (no packer present); purged ~48 gallons between 10/3/2018 and 10/4/2018 using purge pump. Parameters measured in beaker. Some issues with WW controller during purge. Collected sample on 10/5/2018 using sample pump after purging ~3 gallons. Some effervescence observed during purge and at time of sampling.
MW-16D	10/5/2018	LF	WW	190	Clear, odor	pH readings higher than typical; not used for stabilization. Problems with check valve on air hose.
SR-01	10/5/2018	LF	Peristaltic	300	Clear, odor	--
SR-08	10/5/2018	Modified	Whale pump/ Peristaltic	N/A	Clear, odor	Used Alternate Method 1; purged well dry (~11.5 gallons) with dedicated whale pump on 10/4/2018. 10/5/2018 - Purged ~1 gallon with peristaltic pump prior to sampling.
HSR-01	10/9/2018	Valve	Valve	N/A	Clear, strong odor	Strong odor. Purged volume of piping from main line to sample valve prior to sampling.
SR-03	10/9/2018	LF	Peristaltic	300	Clear, odor	--
MW-02X	10/10/2018	PDB	N/A	N/A	Clear, effervescence	2 PDBs set at 493 ft. from 9/26/2018 - 10/10/2018 (two weeks); PDBs sampled 10/10/2018.

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Fourth Quarter 2018 CMI Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Well	Sample Date	Sampling Method	Pump Type	Purge Rate (mL/min)*	Sample Observations**	Comments (problems, repairs, etc.)
MW-03X	10/10/2018	PDB	N/A	N/A	Clear, very strong odor; effervescence	2 PDBs set at 517 ft. from 9/26/2018 - 10/10/2018 (two weeks); PDBs sampled 10/10/2018. No free product detected with interface probe. Well bottom at 517.43 feet below top of riser.
MW-03XX	10/10/2018	PDB	N/A	N/A	Clear, effervescence	2 PDBs set at 813 ft. from 9/26/2018 - 10/10/2018 (two weeks); PDBs sampled 10/10/2018.
MW-12D	10/10/2018	Modified	WW	N/A	Clear, strong odor	Used Alternate Method 2; purged ~7 gallons between 10/8/2018 and 10/9/2018. Clear, strong odor. Purged ~1 gallon on 10/10/2018 and collected sample.
MW-12S	10/10/2018	Modified	WW	N/A	Slight gray turbidity with white particulates; strong odor	Used Alternate Method 1; purged ~6.5 gallons between 10/8/2018 and 10/9/2018. Slight gray turbidity with white particulates. Purged ~1 gallon on 10/10/2018 and collected sample.
MW-32X	10/10/2018	PDB	N/A	N/A	Clear, effervescence	3 PDBs set at 395 ft. from 9/26/2018 - 10/10/2018 (two weeks); PDBs sampled 10/10/2018 (also duplicate sample named MW-39X).

Notes:

- * Low-flow purge rate range of 100 mL/min - 500 mL/min as per Groundwater Field Sampling Plan (Chester Engineers, March 2015)
- ** Where sample observation column is blank, there were no unusual sample qualities
- LF Low-flow method as per Groundwater Field Sampling Plan (Chester Engineers, May 2011)
- Modified Alternate low-flow methods as per Groundwater Field Sampling Plan (Chester Engineers, March 2015)
- Packer Low-yield well sampling method as per Packed Well Purging and Sampling Procedure (per RFI procedures, Nittany Geoscience 1990)
- WW Dedicated QED well-wizard bladder pump
- PDB Passive diffusion bag
- N/A Purging rate not applicable
- Valve Residential well or operating recovery well sampled from tap
- 3x volume Three well-volume purge

TABLE 2

Groundwater COPC List
Fourth Quarter 2018 CMI Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Volatile Organic Constituents
Acetone
Acetonitrile
Benzene*
Bromobenzene
Carbon tetrachloride
Chlorobenzene*
Chloroform*
cis-1,2-Dichloroethene*
1,2-Dichloroethane*
Ethyl ether*
Hexane
Methyl chloride
Methylene chloride*
Tetrachloroethene
Tetrahydrofuran
Toluene*
Trichloroethene*
Vinyl Chloride*

* Indicates constituent requested by PADEP in October 2002 correspondence
Ethanol, methanol, and trans-1,2-dichloroethene removed as COPCs as of 2015

TABLE 3

Summary of Sample Container, Holding Time, and Preservation Requirements for the COPCs
Fourth Quarter 2018 CMI Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Analytes	Container Requirements	Holding Time	Preservation
VOCs by 8260B	3 @ 40-mL glass with Teflon-lined septum caps	14 days	Cool to 4° C, HCL to pH<2
VOCs by 524.2	4 @ 40-mL glass with Teflon-lined septum caps	14 days	Cool to 4° C HCL and Ascorbic Acid to pH<2

TABLE 4

Analytical Results Summary

Fourth Quarter 2018 CMI Groundwater Monitoring Event

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

	LOCATION ID		HSR-1	MW-01M	MW-02X	MW-03M	MW-03X	MW-03XX	MW-05S	MW-07S	MW-08D	MW-09D	MW-09S	MW-12D	MW-12M	MW-12S	MW-13D	MW-13S	MW-16D	MW-16S	MW-19D	MW-19S	MW-23D	MW-23D
	SAMPLE ID		HSR-1	MW-01M	MW-02X	MW-03M	MW-03X	MW-03XX	MW-05S	MW-07S	MW-08D	MW-09D	MW-09S	MW-12D	MW-12M	MW-12S	MW-13D	MW-13S	MW-16D	MW-16S	MW-19D	MW-19S	MW-23D	MW-51D
	SAMPLE DATE		10/9/18	10/3/18	10/10/18	10/3/18	10/10/18	10/10/18	10/1/18	10/3/18	10/4/18	10/3/18	10/1/18	10/10/18	10/5/18	10/10/18	10/2/18	10/5/18	10/5/18	10/2/18	10/3/18	10/3/18	10/2/18	10/2/18
	GWS	SOURCE																						
Acetone	38,000	A	**3 J**	**2 J**	**1 JB**	<200	<40,000	**2 JB**	<20	<20	<20	<20	<20	<200	<20	**23,000**	**1 J**	<20	<200	<20	**2 J**	<20	<5	<5
Acetonitrile	130	A	<200	<100	<100	<1,000	<200,000	<100	<100	<100	<100	<100	<100	<1,000	<100	<10,000	<100	<100	<1,000	<100	<100	<100	<20	<20
Benzene	5	E	**3,100**	**1**	**3**	**3,600**	**19,000**	**560**	<1	**6**	<1	<1	<1	**10,000**	**11**	**120,000**	<1	**250**	**76**	<1	<1	<1	<0.5	<0.5
Bromobenzene	200	M	**2 J**	<5	<5	<50	<10,000	<5	<5	<5	<5	<5	<5	<50	<5	**1,500**	<5	<5	<50	<5	<5	<5	<0.5	<0.5
Carbon Tetrachloride	5	E	<2	<1	<1	<10	<2,000	<1	<1	<1	<1	<1	<1	<10	<1	<100	**0.7 J**	<1	<10	<1	<1	<1	<0.5	<0.5
Chlorobenzene	100	E	**2,300**	**0.3 J**	<1	**1,300**	**2,600**	**220**	<1	**170**	**3**	**51**	**0.9 J**	**130**	**8**	**8,200**	<1	**440**	**28,000**	**75**	**270**	**3**	<0.5	<0.5
Chloroform	80	E	**3 J**	<1	<1	<10	**3,300,000**	<1	**4**	<1	<1	<1	**8**	<10	<1	**64 J**	**56**	<1	<10	<1	<1	**0.2 JB**	<0.5	<0.5
Methyl Chloride (Chloromethane)	30	A	<2	<1	<1	<10	**1,700 J**	**53**	<1	<1	<1	<1	<1	<10	<1	<100	<1	<1	<10	<1	<1	<1	<0.5	<0.5
1,2-Dichloroethane	5	E	**11 J**	<5	<5	<50	**270,000**	**2,500**	<5	<5	<5	<5	<5	<50	**110**	<500	<5	<5	<50	<5	<5	<5	<0.5	<0.5
cis-1,2-Dichloroethene	70	E	**1 J**	**0.9 J**	<1	<10	<2,000	<1	<1	<1	<1	**0.8 J**	<1	<10	<1	<100	**0.8 J**	<1	<10	**2**	<1	<1	<0.5	<0.5
Ethyl Ether	8,300	A	**170**	**32**	**10**	**290**	**2,700 J**	**2 J**	<5	**150**	**750 E**	**7**	**1 J**	**8,800**	<5	**8,200**	<5	**580**	**130**	**4 J**	**70**	<5	<0.5 UJ	<0.5 UJ
n-Hexane	1,500	A	**6 J**	<5	<5	<50	<10,000	<5	<5	<5	<5	<5	<5	<50	<5	<500	<5	<5	<50	<5	<5	<5	<0.5	<0.5
Methylene Chloride	5	E	**1 J**	**0.6 J**	<1	<10	**1,800,000**	**11,000 E**	<1	<1	<1	<1	<1	<10	<1	**600**	<1	<1	<10	<1	<1	<1	<0.5	<0.5
Tetrachloroethene	5	E	<2	<1	<1	<10	<2,000	<1	<1	<1	<1	<1	<1	<10	<1	<100	**2**	<1	<10	<1	<1	<1	<0.5	<0.5
Tetrahydrofuran	26	A	**76**	**4 J**	**1 J**	**82 J**	<20,000	<10	<10	**5 J**	<10	<10	<10	**16,000**	<10	**44,000**	<10	**4,900**	<100	<10	<10	<10	<5	<5
Toluene	1,000	E	**500**	<1	**0.3 J**	**4 J**	**3,600**	**270**	<1	<1	<1	<1	<1	<10	**0.3 J**	**22,000**	<1	<1	<10	<1	<1	<1	<0.5	<0.5
Trichloroethene	5	E	<2	**0.2 J**	<1	<10	<2,000	<1	<1	<1	<1	<1	<1	<10	<1	<100	**22**	<1	<10	<1	<1	<1	<0.5	<0.5
Vinyl Chloride	2	E	**2 J**	<1	<1	<10	<2,000	<1	<1	<1	<1	<1	<1	<10	<1	<100	<1	<1	<10	<1	<1	<1	<0.5	<0.5
TOTAL VOCs			**6,175**	**41**	**14.3**	**5,276**	**5,399,600**	**14,605**	**4**	**331**	**753**	**58.8**	**9.9**	**34,930**	**129.3**	**227,564**	**82.5**	**6,170**	**28,206**	**81**	**342**	**3**	**0**	**0**

Notes:

Units are µg/L.

Bold text indicates detected analyte or qualifier.

Highlighted cell indicates exceedance of GWS.

J - indicates that the value is estimated.

UJ - indicates that the constituent was not detected and the reporting limit is estimated.

B - indicates that the constituent was detected at a similar concentration in a blank and is considered not detected for total VOCs and statistical calculations.

E - indicates that the sample concentration exceeded the instrument calibration range and the value is estimated.

GWS = Groundwater Standard.

GWS Sources:

E - EPA Maximum Contaminant Level (value shown for chloroform is MCL for total trihalomethanes (TTHMs).

A - PA Act 2 SHS MSC for Residential, Used Aquifers.

M - Action level established for the former monthly groundwater monitoring conducted east of the facility.

TABLE 4

Analytical Results Summary

Fourth Quarter 2018 CMI Groundwater Monitoring Event

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

	LOCATION ID		MW-24D	MW-24S	MW-25D	MW-25M	MW-26D	MW-27D	MW-29D	MW-30D	MW-31M	MW-32X	MW-32X	MW-33D	RW-1	RW-1D	RW-2	RW-4	RW-9	RW-OBS-6	RW-OBS-6	SR-01	SR-01	SR-03
	SAMPLE ID		MW-24D	MW-24S	MW-25D	MW-25M	MW-26D	MW-27D	MW-29D	MW-30D	MW-31M	MW-32X	MW-39X	MW-33D	RW-1	RW-1D	RW-2	RW-4	RW-9	RW-OBS-6	RW-10	SR-01	MW-60S	SR-03
	SAMPLE DATE		10/2/18	10/4/18	10/2/18	10/3/18	10/2/18	10/2/18	10/1/18	10/1/18	10/1/18	10/10/18	10/10/18	10/1/18	10/3/18	10/3/18	10/3/18	10/3/18	10/3/18	10/3/18	10/3/18	10/5/18	10/5/18	10/9/18
	GWS	SOURCE																						
Acetone	38,000	A	<5	<20	<5	<20	<5	<5	<20	<20	<20	**3 JB**	**3 JB**	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<40
Acetonitrile	130	A	<20	<100	<20	<100	<20	<20	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200
Benzene	5	E	<0.5	**0.2 J**	<0.5	<1	<0.5	<0.5	<1	<1	<1	**140**	**140**	<1	<1	<1	<1	<1	<1	**88**	**77**	**580**	**650**	**1,000**
Bromobenzene	200	M	<0.5	**0.4 J**	<0.5	<5	<0.5	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**1 J**
Carbon Tetrachloride	5	E	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	**3**	<1	<1	<1	<1	<1	<2
Chlorobenzene	100	E	<0.5	**210**	<0.5	<1	<0.5	<0.5	<1	<1	<1	**2**	**2**	<1	**1**	<1	**17**	**2**	**0.4 J**	**150**	**140**	**76**	**79**	**1,700**
Chloroform	80	E	<0.5	<1	<0.5	<1	**0.09 J**	<0.5	<1	**3**	**7**	**33**	**31**	<1	**32**	**11**	**3**	**2**	**0.6 J**	<1	<1	<1	<1	<2
Methyl Chloride (Chloromethane)	30	A	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	**0.4 J**	**0.3 J**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
1,2-Dichloroethane	5	E	<0.5	<5	<0.5	<5	<0.5	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**18**	**12**	<5	<5	**17 J**	<5 UJ	<10
cis-1,2-Dichloroethene	70	E	<0.5	**2**	<0.5	<1	<0.5	<0.5	<1	<1	<1	**0.6 J**	**0.5 J**	<1	<1	**3**	**0.5 J**	<1	**3**	**0.4 J**	**0.3 J**	<1	<1	<2
Ethyl Ether	8,300	A	<0.5 UJ	**97**	<0.5 UJ	**150**	<0.5 UJ	<0.5 UJ	<5	<5	<5	**7**	**7**	<5	<5	<5	<5	**6**	**9**	**24**	**25**	**1,800**	**2,100**	**1,100**
n-Hexane	1,500	A	<0.5	<5	<0.5	<5	<0.5	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10
Methylene Chloride	5	E	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	**130**	**120**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
Tetrachloroethene	5	E	<0.5	<1	<0.5	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
Tetrahydrofuran	26	A	<5	<10	<5	**480**	<5	<5	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**1 J**	**1 J**	**3,000**	**3,100**	**12 J**
Toluene	1,000	E	<0.5	**0.5 J**	<0.5	<1	<0.5	<0.5	<1	<1	<1	**18**	**18**	<1	<1	<1	<1	**1 J**	<1	<1	<1	**0.3 J**	**0.3 J**	**7**
Trichloroethene	5	E	<0.5	**1**	<0.5	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	**30**	**0.7 J**	<1	**13**	<1	<1	<1	<1	<2
Vinyl Chloride	2	E	<0.5	**2**	<0.5	<1	<0.5	<0.5	<1	<1	<1	**1**	**1**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
TOTAL VOCs			**0**	**313.1**	**0**	**630**	**0.09**	**0**	**0**	**3**	**7**	**332**	**319.8**	**0**	**33**	**44**	**21.2**	**32**	**38**	**263.4**	**243.3**	**5,473.3**	**5,929.3**	**3,820**

Notes:

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GWS Sources:

E - EPA Maximum Contaminant Level (value shown for chloroform is MCL for total trihalomethanes (TTHMs).

A - PA Act 2 SHS MSC for Residential, Used Aquifers.

M - Action level established for the former monthly groundwater monitoring conducted east of the facility.

TABLE 4

Analytical Results Summary

Fourth Quarter 2018 CMI Groundwater Monitoring Event

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

	LOCATION ID		SR-04	SR-08	SW-0301	SW-0402	SW-0901	SW-Q01	FB-1	FB-2	FB-4	FB-5	TB-1	TB-2	TB-3	TB-5	TB-6	TB-7
	SAMPLE ID		SR-04	SR-08	SW-0301	SW-0402	SW0901	SW-Q01	FB-1	FB-2	FB-4	FB-5	TB-1	TB-2	TB-3	TB-5	TB-6	TB-7
	SAMPLE DATE		10/4/18	10/5/18	10/3/18	10/2/18	10/1/18	10/2/18	10/3/18	10/2/18	10/5/18	10/10/18	10/1/18	10/1/18	10/2/18	10/3/18	10/3/18	10/9/18
	GWS	SOURCE																
Acetone	38,000	A	<20	<20	<20	<20	<20	<20	<20	<5	<20	**3 J**	**0.9 J**	<20	<5	<20	<20	<20
Acetonitrile	130	A	<100	<100	<100	<100	<100	<100	<100	<20	<100	<100	<100	<100	<20	<100	<100	<100
Benzene	5	E	<1	**0.3 J**	**0.2 J**	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Bromobenzene	200	M	<5	<5	**1 J**	<5	<5	<5	<5	<0.5	<5	<5	<5	<5	<0.5	<5	<5	<5
Carbon Tetrachloride	5	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Chlorobenzene	100	E	<1	**94**	**47**	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Chloroform	80	E	**0.2 JB**	<1	<1	**1**	<1	<1	<1	**0.2 J**	**0.3 J**	<1	<1	<1	<0.5	<1	<1	<1
Methyl Chloride (Chloromethane)	30	A	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	**0.1 J**	<1	<1	<1
1,2-Dichloroethane	5	E	<5	**2 J**	**39**	<5	<5	<5	<5	<0.5	<5	<5	<5	<5	<0.5	<5	<5	<5
cis-1,2-Dichloroethene	70	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Ethyl Ether	8,300	A	<5	**2 J**	**33**	<5	<5	<5	<5	<0.5 UJ	<5	<5	<5	<5	<0.5 UJ	<5	<5	<5
n-Hexane	1,500	A	<5	<5	<5	<5	<5	<5	<5	<0.5	<5	<5	<5	<5	<0.5	<5	<5	<5
Methylene Chloride	5	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Tetrachloroethene	5	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Tetrahydrofuran	26	A	<10	<10	<10	<10	<10	<10	<10	<5	<10	<10	<10	<10	<5	<10	<10	<10
Toluene	1,000	E	<1	**0.4 J**	**0.7 J**	<1	<1	<1	<1	**0.06 J**	<1	<1	<1	<1	<0.5	<1	<1	<1
Trichloroethene	5	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
Vinyl Chloride	2	E	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<0.5	<1	<1	<1
TOTAL VOCs			**0**	**98.7**	**120.9**	**1**	**0**	**0**	**0**	**0.26**	**0.3**	**3**	**0.9**	**0**	**0.1**	**0**	**0**	**0**

Notes:

Units are µg/L.

Bold text indicates detected analyte or qualifier.

Highlighted cell indicates exceedance of GWS.

J - indicates that the value is estimated.

UJ - indicates that the constituent was not detected and the reporting limit is estimated.

B - indicates that the constituent was detected at a similar concentration in a blank and is considered not detected for total VOCs and statistical calculations.

E - indicates that the sample concentration exceeded the instrument calibration range and the value is estimated.

GWS = Groundwater Standard.

GWS Sources:

E - EPA Maximum Contaminant Level (value shown for chloroform is MCL for total trihalomethanes (TTHMs).

A - PA Act 2 SHS MSC for Residential, Used Aquifers.

M - Action level established for the former monthly groundwater monitoring conducted east of the facility.

TABLE 5

Analytical Results from the Municipal Garage and Firehouse Wells
Fourth Quarter 2018 CMI Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

	LOCATION ID	FB	TB-4	MUNICIPAL GARAGE	MUNICIPAL GARAGE	FIREHOUSE	TB	FIREHOUSE	FIREHOUSE	FB
	SAMPLE ID	FB-3	TB-4	MUN GAR	MUN GAR 2	SSFH	TB-1	SSFH	SSFH2	FB-1
	SAMPLE DATE	10/2/2018	10/2/2018	10/2/2018	10/2/2018	10/2/2018	11/1/2018	11/1/2018	11/1/2018	11/1/2018
ANALYTE	CAS NUMBER									
1,1-DICHLOROPROPENE	563-58-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROBENZENE	87-61-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-DICHLOROETHANE	107-06-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-DICHLOROPROPANE	142-28-9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-DICHLOROBENZENE	106-46-7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-BUTANONE	78-93-3	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-CHLOROTOLUENE	106-43-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ACETONE	67-64-1	<5	<5	<5	<5	**4.6 J**	<5	<5	<5	<5
BENZENE	71-43-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BROMOBENZENE	108-86-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BROMOCHLOROMETHANE	74-97-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BROMODICHLOROMETHANE	75-27-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BROMOMETHANE	74-83-9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
n-BUTYLBENZENE	104-51-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
sec-BUTYLBENZENE	135-98-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
tert-BUTYLBENZENE	98-06-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CARBON TETRACHLORIDE	56-23-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CHLOROBENZENE	108-90-7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CHLOROETHANE	75-00-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CHLOROFORM	67-66-3	**0.4 J**	<0.5	<0.5	<0.5	<0.5	<0.5	**0.1 JB**	**0.2 JB**	**1**
CHLOROTOLUENE, O-	95-49-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-DICHLOROPROPENE	10061-01-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CUMENE	98-82-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CYCLOHEXANE	110-82-7	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	<1	<1	<1	<1	<1	<1	<1	<1	<1
DIBROMOCHLOROMETHANE	124-48-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-DIBROMOETHANE	106-93-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DIBROMOMETHANE	74-95-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-DICHLOROBENZENE	95-50-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-DICHLOROBENZENE	541-73-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DICHLORODIFLUOROMETHANE	75-71-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-DICHLOROETHANE	75-34-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-DICHLOROETHENE	75-35-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-DICHLOROETHENE	156-59-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-DICHLOROETHENE	156-60-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-DICHLOROPROPANE	78-87-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,2-DICHLOROPROPANE	594-20-7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ETHYL ACETATE	141-78-6	<5	<5	<5	<5	<5	<5	<5	<5	<5
ETHYL ETHER	60-29-7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ETHYLBENZENE	100-41-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
HEXACHLOROBUTADIENE	87-68-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m,p-XYLENE	179601-23-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
METHYL CHLORIDE	74-87-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
METHYLENE CHLORIDE	75-09-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
NAPHTHALENE	91-20-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-XYLENE	95-47-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
p-ISOPROPYLTOLUENE	99-87-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
n-PROPYLBENZENE	103-65-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
STYRENE	100-42-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-TETRACHLOROETHANE	630-20-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-TETRACHLOROETHANE	79-34-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TETRACHLOROETHENE	127-18-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TETRAHYDROFURAN	109-99-9	<7	<7	<7	<7	<7	<7	<7	<7	<7
TOLUENE	108-88-3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRANS-1,3-DICHLOROPROPENE	10061-02-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRIBROMOMETHANE (BROMOFORM)	75-25-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-TRICHLOROBENZENE	120-82-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-TRICHLOROETHANE	71-55-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-TRICHLOROETHANE	79-00-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRICHLOROETHENE	79-01-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRICHLOROFLUOROMETHANE	75-69-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-TRICHLOROPROPANE	96-18-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-TRIMETHYLBENZENE	95-63-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-TRIMETHYLBENZENE	108-67-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VINYL CHLORIDE	75-01-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

Units are µg/L.

Bold text indicates detected analyte.

J indicates that the value is estimated.

B indicates that the constituent was detected at a similar concentration in a blank and is considered not detected for total VOCs and statistical calculations.

TABLE 6

Comparison of 2018 Sample Results from the Alluvial Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CHLORO-BENZENE	CHLOROFORM	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDRO-FURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
HSR-01	Minimum Result	6	3		200	2	240	3	1		150	2		1		10	190			2
	Maximum Result	4,700	540		22,000	200	4,900	800	1		400	400		1,100		1,500	17,000			190
	Mean Result	921	184		6,386	45	2,165	172	1		294	69		199		389	3,301			47
	2018 Detection	11	3		3,100	2	2,300	3	1		170	6		1		76	500			2
	Detection Count	10	4		14	10	14	10	1		13	13		8		14	14			6
MW-03S	Minimum Result	29	12.1					1.1			15									
	Maximum Result	29	12.1					17			15									
	Mean Result	29	12.1					4			15									
	2018 Detection	NA	NA					NA			NA									
	Detection Count	1	1					11			1									
MW-05S	Minimum Result							1								34				
	Maximum Result							1,200								34				
	Mean Result							129								34				
	2018 Detection							4								ND				
	Detection Count							17								1				
MW-07S	Minimum Result	4	100		6		45	7		1,270	140				6	5	370			
	Maximum Result	9	160		15,000		210	7		1,270	3,400				6	22,000	1,000			
	Mean Result	7	130		4,579		127	7		1,270	863				6	3,450	609			
	2018 Detection	ND	ND		6		170	ND		NA	150				ND	5	ND			
	Detection Count	4	2		21		20	1		1	20				1	21	7			
MW-09S	Minimum Result		12		2		0.9	1			1			3				3	2	
	Maximum Result		12		4		980	44			40			12				3	31	
	Mean Result		12		3		195	17			14			8				3	8	
	2018 Detection		ND		ND		0.9	8			1			ND				NA	ND	
	Detection Count		1		3		20	7			10			2				1	5	
MW-10S	Minimum Result				2.1	1	4				2.8			2						
	Maximum Result				15	1	68				5			2						
	Mean Result				9	1	28				4			2						
	2018 Detection				NA	NA	NA				NA			NA						
	Detection Count				2	1	18				4			1						
MW-12S	Minimum Result	140	20,000	1,500	74,000	620	6,700	64	18	2,000	4,700	240	880	540		28,000	22,000			35
	Maximum Result	60,000	160,000	21,000	430,000	35,000	21,000	71,000	19	14,000	24,000	430	230,000	150,000		340,000	110,000			1,600
	Mean Result	20,212	64,407	6,217	228,369	10,179	13,545	16,203	19	5,140	13,593	316	57,919	43,418		121,490	59,366			399
	2018 Detection	ND	23,000	ND	120,000	1,500	8,200	64	ND	NA	8,200	ND	NA	600		44,000	22,000			ND
	Detection Count	15	19	6	19	18	19	19	2	6	17	5	15	18		19	19			9
MW-13S	Minimum Result				5		440	2			190					170	0.7		2,300	
	Maximum Result				71,000		2,600	2			6,000					120,000	1,400		2,300	
	Mean Result				17,100		835	2			1,526					25,722	700		2,300	
	2018 Detection				250		440	ND			580					4,900	ND		ND	
	Detection Count				19		18	1			19					18	2		1	
MW-16S	Minimum Result				2.6		72		2		4		210						17	0.7
	Maximum Result				37		500		5		120		210						17	3
	Mean Result				15		195		3		35		210						17	1
	2018 Detection				ND		75		2		4		NA						ND	ND
	Detection Count				7		18		11		18		1						1	6
MW-19S	Minimum Result		10		2		3	11			2									
	Maximum Result		13		290		1,700	11			370									
	Mean Result		11		87		353	11			86									
	2018 Detection		ND		ND		3	ND			ND									
	Detection Count		3		10		18	1			13									
MW-24S	Minimum Result	0.5			0.2	0.4	160		0.9		33					26	0.5		0.6	0.5
	Maximum Result	28			550	0.4	890		5		650					33	1,800		3	97
	Mean Result	8			113	0.4	306		2		220					29	404		1	15
	2018 Detection	ND			0.2	0.4	210		2		97					ND	0.5		1	2
	Detection Count	4			11	1	17		5		17					3	6		9	8
RW-01	Minimum Result	16	82		0.6		1	0.5			6		600	5		58	1			
	Maximum Result	170	82		780		990	122			85		600	580		58	280			
	Mean Result	80	82		116		252	23			28		600	158		58	46			
	2018 Detection	ND	ND		ND		1	32			ND		NA	ND		ND	ND			
	Detection Count	3	1		18		22	11			16		1	8		1	8			
SR-01	Minimum Result	17	50		100		76				1,100					480	0.3			
	Maximum Result	17	50		7,300		870				7,300					13,000	200			
	Mean Result	17	50		2,189		221				3,021					4,433	50			
	2018 Detection	17	ND		580		76				1,800					3,000	0.3			
	Detection Count	1	1		14		14				14					14	4			

TABLE 6

Comparison of 2018 Sample Results from the Alluvial Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CHLORO-BENZENE	CHLOROFORM	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDRO-FURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
SR-03	Minimum Result				1,000	1	210	990		5,470	180	54		400		12	3			
	Maximum Result				118,460	1	8,410	990		5,470	5,970	1,400		400		27,000	9,850			
	Mean Result				28,798	1	2,301	990		5,470	1,515	727		400		5,502	1,844			
	2018 Detection				1,000	1	1,700	ND		NA	1,100	ND		ND		12	7			
	Detection Count				16	1	16	1		1	15	2		1		16	16			
SR-04	Minimum Result				0.7		2				33		260	7,669		12	13,038			
	Maximum Result				95		110				1,700		260	7,669		100	13,038			
	Mean Result				15		27				495		260	7,669		42	13,038			
	2018 Detection				ND		ND				ND		NA	ND		ND	ND			
	Detection Count				8		8				9		1	1		4	1			
SR-08	Minimum Result	2			0.3	1	94				2	78				4	0.4			0.8
	Maximum Result	17			5,600	2	4,900				770	78				440	7,500			130
	Mean Result	5			924	2	1,313				126	78				124	1,027			23
	2018 Detection	2			0.3	ND	94				2	ND				ND	0.4			ND
	Detection Count	9			14	7	14				13	1				4	14			6
SW-0301	Minimum Result	2			0.2	1	45	0.8		1,060	4	3	220	1,300,000		12	0.7			1
	Maximum Result	71,000			1,600	28	940	22,000		1,060	1,000	3	51,000	1,300,000		50	10,000			1,500
	Mean Result	6,474			191	13	441	11,000		1,060	116	3	25,610	1,300,000		31	885			219
	2018 Detection	39			0.2	1	47	ND		NA	33	ND	NA	ND		ND	0.7			ND
	Detection Count	11			11	13	13	2		1	13	1	2	1		2	12			7
SW-0402	Minimum Result		610,000					0.8								220	4.7			
	Maximum Result		610,000					14								220	4.7			
	Mean Result		610,000					4								220	4.7			
	2018 Detection		ND					1								ND	ND			
	Detection Count		1					4								1	1			
SW-0901	Minimum Result		73		7.6		20	2			11		350							
	Maximum Result		73		7.6		20	2			11		350							
	Mean Result		73		7.6		20	2			11		350							
	2018 Detection		ND		ND		ND	ND			ND		NA							
	Detection Count		1		1		1	1			1		1							
SW-K01	Minimum Result							0.9	0.9						2				1	
	Maximum Result							1	4						4				2	
	Mean Result							1	2						3				1	
	2018 Detection							NA	NA						NA				NA	
	Detection Count							2	3						2				2	
SW-N01	Minimum Result	2,800	22					1			110									
	Maximum Result	2,800	22					1			110									
	Mean Result	2,800	22					1			110									
	2018 Detection	NA	NA					NA			NA									
	Detection Count	1	1					1			1									
SW-Q01	Minimum Result	7.8			66	9	1				4.2	89				68	1.1			
	Maximum Result	7.8			66	9	4,300				4.2	89				68	97			
	Mean Result	7.8			66	9	436				4.2	89				68	49			
	2018 Detection	ND			ND	ND	ND				ND	ND				ND	ND			
	Detection Count	1			1	1	11				1	1				1	2			

NOTES:

Units are ug/L

ND indicates that the constituent was not detected.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

A blank entry indicates that the constituent has not been detected since 1990 (note that the sampling record for a given location may begin after 1990).

TABLE 7

Relative Percent Difference of 2018 Sample Results from the Alluvial Aquifer Compared with the Historical Results

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC_ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CHLORO-BENZENE	CHLOROFORM	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDRO-FURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
HSR-01	RPD Minimum	83%	Equal		1450%	Equal	858%	Equal	Equal		13%	200%		Equal		660%	163%			Equal
	RPD Maximum	-100%	-99%		-86%	-99%	-53%	-100%	Equal		-58%	-99%		-100%		-95%	-97%			-99%
	RPD Average	-99%	-98%		-51%	-96%	6%	-98%	Equal		-42%	-91%		-99%		-80%	-85%			-96%
MW-03S	RPD Minimum																			
	RPD Maximum	NA	NA					NA			NA									
	RPD Average																			
MW-05S	RPD Minimum							300%												
	RPD Maximum							-100%								ND<Hist.				
	RPD Average							-97%												
MW-07S	RPD Minimum				Equal		278%				7%					Equal				
	RPD Maximum	ND<Hist.	ND<Hist.		-100%		-19%	ND<Hist.		NA	-96%				ND<Hist.	-100%	ND<Hist.			
	RPD Average				-100%		34%				-83%					-100%				
MW-09S	RPD Minimum						Equal	700%			Equal									
	RPD Maximum				ND<Hist.		-100%	-82%			-98%			ND<Hist.				NA	ND<Hist.	
	RPD Average						-100%	-53%			-93%									
MW-10S	RPD Minimum										NA									
	RPD Maximum				NA	NA	NA				NA			NA						
	RPD Average										NA									
MW-12S	RPD Minimum		15%		62%	142%	22%	Equal			74%			11%		57%	Equal			
	RPD Maximum	ND<Hist.	-86%	ND<Hist.	-72%	-96%	-61%	-100%		NA	-66%		NA	-100%		-87%	-80%			ND<Hist.
	RPD Average		-64%		-47%	-85%	-39%	-100%			-40%			-99%		-64%	-63%			
MW-13S	RPD Minimum				4900%		Equal				205%					2782%				
	RPD Maximum				-100%		-83%	ND<Hist.			-90%					-96%	ND<Hist.		ND<Hist.	
	RPD Average				-99%		-47%				-62%					-81%				
MW-16S	RPD Minimum						4%		Equal		Equal									
	RPD Maximum				ND<Hist.		-85%		-60%		-97%		NA						ND<Hist.	ND<Hist.
	RPD Average						-61%		-27%		-89%									
MW-19S	RPD Minimum						Equal													
	RPD Maximum				ND<Hist.		-100%	ND<Hist.			ND<Hist.									
	RPD Average						-99%													
MW-24S	RPD Minimum				Equal	Equal	31%		122%		194%						Equal		67%	300%
	RPD Maximum	ND<Hist.			-100%	Equal	-76%		-60%		-85%					ND<Hist.	-100%		-67%	-98%
	RPD Average				-100%	Equal	-31%		3%		-56%						-100%		-14%	-86%
RW-01	RPD Minimum						Equal	6300%												
	RPD Maximum	ND<Hist.	ND<Hist.		ND<Hist.		-100%	-74%			ND<Hist.		NA	ND<Hist.		ND<Hist.	ND<Hist.			
	RPD Average						-100%	38%												
SR-01	RPD Minimum	Equal			480%		Equal				64%					525%	Equal			
	RPD Maximum	Equal	ND<Hist.		-92%		-91%				-75%					-77%	-100%			
	RPD Average	Equal			-74%		-66%				-40%					-32%	-99%			
SR-03	RPD Minimum				Equal	Equal	710%				511%					Equal	133%			
	RPD Maximum				-99%	Equal	-80%	ND<Hist.		NA	-82%	ND<Hist.		ND<Hist.		-100%	-100%			
	RPD Average				-97%	Equal	-26%				-27%					-100%	-100%			
SR-04	RPD Minimum																			
	RPD Maximum				ND<Hist.		ND<Hist.				ND<Hist.		NA	ND<Hist.		ND<Hist.	ND<Hist.			
	RPD Average																			
SR-08	RPD Minimum	Equal			Equal		Equal				Equal						Equal			
	RPD Maximum	-88%			-100%		-98%				-100%	ND<Hist.				ND<Hist.	-100%			ND<Hist.
	RPD Average	-63%			-100%		-93%				-96%						-100%			
SW-0301	RPD Minimum	1850%			Equal	Equal	4%				725%						Equal			
	RPD Maximum	-100%			-100%	-96%	-95%	ND<Hist.		NA	-97%		NA	ND<Hist.		ND<Hist.	-100%			ND<Hist.
	RPD Average	-99%			-100%	-92%	-89%				-72%						-100%			
SW-0402	RPD Minimum							26%												
	RPD Maximum		ND<Hist.					-93%								ND<Hist.	ND<Hist.			
	RPD Average							-76%												
SW-0901	RPD Minimum																			
	RPD Maximum		ND<Hist.		ND<Hist.		ND<Hist.	ND<Hist.			ND<Hist.		NA							
	RPD Average																			
SW-K01	RPD Minimum																			
	RPD Maximum							NA	NA						NA				NA	
	RPD Average																			
SW-N01	RPD Minimum																			
	RPD Maximum	NA	NA					NA			NA									
	RPD Average																			
SW-Q01	RPD Minimum																			
	RPD Maximum	ND<Hist.			ND<Hist.	ND<Hist.	ND<Hist.					ND<Hist.				ND<Hist.	ND<Hist.			
	RPD Average																			

NOTES:

Entries in this table are relative percentage difference of 2018 results relative to statistics derived from historic detections.

Equal — An entry of Equal indicates that the 2018 detection is equal to the historic statistic. In some cases this may reflect analytes not previously analyzed at particular wells.

-35% — An entry less than 0% indicates that the 2018 detection is less than the historic statistic.

5% — An entry greater than 0% indicates that the 2018 detection is greater than the historic statistic.

ND<Hist. — An entry of ND<Hist. indicates that a 2018 nondetection was made at an LOQ that was less than an historic detection.

A blank entry indicates that a compound was not detected in 2018 and that the compound was either not detected in the past or was detected at a concentration below (or equal to) the 2018 LOQ.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

TABLE 8

Comparison of 2018 Sample Results from the Shallow Bedrock Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC_ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CARBON TETRACHLORIDE	CHLORO-BENZENE	CHLOROFORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDROFURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
MW-08D	Minimum Result	94	16		3			3	160			4,750	640			9		180	2			
	Maximum Result	94	2,900		5,300			36	160			4,750	8,400			9		3,400	2			
	Mean Result	94	1,458		3,138			13	160			4,750	3,048			9		1,299	2			
	2018 Detection	ND	ND		ND			3	ND			NA	750			ND		ND	ND			
	Detection Count	1	2		11			19	1			1	23			1		8	1			
MW-09D	Minimum Result	1			0.6			5	2		0.8		6			3		80		9	6	5.3
	Maximum Result	3			18			1,600	22		9		89			3		80		12	14	6
	Mean Result	2			5			505	7		3		29			3		80		11	10	6
	2018 Detection	ND			ND			51	ND		0.8		7			ND		ND		NA	ND	ND
	Detection Count	4			8			24	6		14		24			1		1		3	5	2
MW-10D	Minimum Result								1.2				1.9			6		4				
	Maximum Result								1.2				7			6		14				
	Mean Result								1.2				4			6		10				
	2018 Detection								NA				NA			NA		NA				
	Detection Count								1				8			1		3				
MW-12D	Minimum Result	250	13,000	1,000	2			40	270				6,400			200		1,100	130			
	Maximum Result	390	13,000	1,000	33,000			360	270				38,000			200		50,000	720			
	Mean Result	320	13,000	1,000	16,977			223	270				15,611			200		21,672	407			
	2018 Detection	ND	ND	ND	10,000			130	ND				8,800			ND		16,000	ND			
	Detection Count	2	1	1	20			15	1				19			1		19	3			
MW-13D	Minimum Result		1		0.9		0.7		25		0.8						1.1		1.8		7	
	Maximum Result		1		0.9		1		480		4						12		1.8		3,200	
	Mean Result		1		0.9		1		104		2						4		1.8		779	
	2018 Detection		1		ND		0.7		56		0.8						2		ND		22	
	Detection Count		1		1		6		23		12						17		1		23	
MW-15D	Minimum Result	1											4.5									
	Maximum Result	26											6.4									
	Mean Result	9											6									
	2018 Detection	NA											NA									
	Detection Count	12											5									
MW-16D	Minimum Result				56	3		18,000			3	539	120		180,000				1			6
	Maximum Result				2,900	6		130,000			2,200	539	1,500		180,000				1			1,100
	Mean Result				702	5		48,914			1,102	539	309		180,000				1			145
	2018 Detection				76	ND		28,000			ND	NA	130		NA				ND			ND
	Detection Count				18	2		19			2	1	15		1				1			11
MW-17D	Minimum Result				130			30					240					30				
	Maximum Result				210			210					1,200					35				
	Mean Result				170			105					554					33				
	2018 Detection				NA			NA					NA					NA				
	Detection Count				2			15					15					2				
MW-19D	Minimum Result		2		1			34					56									
	Maximum Result		14		44			370					190									
	Mean Result		9		16			239					97									
	2018 Detection		2		ND			270					70									
	Detection Count		3		14			19					19									
MW-20D	Minimum Result		14					6					2									
	Maximum Result		14					53					16									
	Mean Result		14					17					6									
	2018 Detection		NA					NA					NA									
	Detection Count		1					13					12									
MW-23D	Minimum Result								2										1.7		3	
	Maximum Result								2										1.7		3	
	Mean Result								2										1.7		3	
	2018 Detection								ND										ND		ND	
	Detection Count								1										1		1	
MW-24D	Minimum Result																		0.9		16	
	Maximum Result																		0.9		16	
	Mean Result																		0.9		18	
	2018 Detection																		ND		ND	
	Detection Count																		1		1	
MW-25D	Minimum Result	0.5																			3	
	Maximum Result	0.5																			3	
	Mean Result	0.5																			3	
	2018 Detection	ND																			ND	
	Detection Count	1																			1	
MW-26D	Minimum Result								0.1	1.1											0.5	
	Maximum Result								2.82	1.1											0.5	
	Mean Result								1	1.1											0.5	
	2018 Detection								0.09	ND											ND	
	Detection Count								117	1											1	
MW-27D	Minimum Result																		1.7			
	Maximum Result																		1.7			
	Mean Result																		1.7			
	2018 Detection																		ND			
	Detection Count																		1			
MW-30D	Minimum Result								1													
	Maximum Result								4													
	Mean Result								3													
	2018 Detection								3													
	Detection Count								7													

TABLE 8

Comparison of 2018 Sample Results from the Shallow Bedrock Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CARBON TETRACHLORIDE	CHLORO-BENZENE	CHLOROFORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDROFURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
MW-33D	Minimum Result		9.3																			
	Maximum Result		9.3																			
	Mean Result		9.3																			
	2018 Detection		ND																			
	Detection Count		1																			
FIREHOUSE	Minimum Result		4.6																			
	Maximum Result		4.6																			
	Mean Result		4.6																			
	2018 Detection		4.6																			
	Detection Count		1																			
MUNCPL GAR	Minimum Result								0.1								0.2				0.2	
	Maximum Result								3								0.2				3	
	Mean Result								1								0.2				2	
	2018 Detection								ND								ND				ND	
	Detection Count								10								1				2	
RW-01D	Minimum Result								3		2								5.72	6	30	
	Maximum Result								25		5								52	6	890	
	Mean Result								9		3								29	6	210	
	2018 Detection								11		3								ND	NA	30	
	Detection Count								20		14								2	1	25	
RW-02	Minimum Result	5.27			3	3		11	3	12	0.5		4	7		40	5	28	2	16	0.7	1
	Maximum Result	13,000			16,107	3		4,996	12,000	12	0.5		520	11		7,500	5	2,000	18,000	16	0.7	1
	Mean Result	2,145			1,914	3		462	1,589	12	0.5		130	9		2,183	5	640	2,628	16	0.7	1
	2018 Detection	ND			ND	ND		17	3	ND	0.5		ND	ND		ND	ND	ND	ND	NA	0.7	ND
	Detection Count	10			18	1		22	9	1	1		7	2		5	1	5	15	1	1	1
RW-04	Minimum Result	2	9		0.6		1	0.9	2				6						0.8			
	Maximum Result	4,100	9,400		12		390	170	62				1,100						25			
	Mean Result	613	3,157		3		57	24	13				159						7			
	2018 Detection	18	ND		ND		3	2	2				6						1			
	Detection Count	23	3		7		23	19	20				21						9			
RW-09	Minimum Result	8			2			0.4	0.6		1		8					44	29		2	
	Maximum Result	1,557			66			11	47		6		36					44	29		31	
	Mean Result	120			24			6	11		3		15					44	29		8	
	2018 Detection	12			ND			0.4	0.6		3		9					ND	ND		13	
	Detection Count	18			3			2	15		11		16					1	1		12	
RW-OBS-08	Minimum Result	3	89		71	1		130	712		0.4		24	2		48		1	0.7			11
	Maximum Result	1,123	89		1,761	2		2,249	712		0.9		310	26		1,840		177	459			11
	Mean Result	116	89		418	2		585	712		0.6		77	10		844		35	134			11
	2018 Detection	ND	ND		88	ND		150	ND		0.4		24	ND		ND		1	ND			ND
	Detection Count	11	1		15	2		15	1		2		15	8		2		11	12			1

NOTES:

Units are ug/L

ND indicates that the constituent was not detected.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

A blank entry indicates that the constituent has not been detected since 1990 (note that the sampling record for a given location may begin after 1990).

TABLE 9

Relative Percent Difference of 2018 Sample Results from the Shallow Bedrock Aquifer Compared with the Historical Results

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC_ID	Data	1,2-DICHLORO-ETHANE	ACETONE	ACETONITRILE	BENZENE	BROMO-BENZENE	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLOROFORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-CHLORO-ETHENE	TETRA-HYDRO-FURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL-CHLORIDE
MW-08D	RPD Minimum							Equal					17%									
	RPD Maximum	ND<Hist.	ND<Hist.		ND<Hist.			-92%	ND<Hist.			NA	-91%			ND<Hist.		ND<Hist.	ND<Hist.			
	RPD Average							-76%					-75%									
MW-09D	RPD Minimum							920%			Equal		17%									
	RPD Maximum				ND<Hist.			-97%	ND<Hist.		-91%		-92%			ND<Hist.		ND<Hist.		NA	ND<Hist.	ND<Hist.
	RPD Average							-90%			-69%		-76%									
MW-10D	RPD Minimum												NA									
	RPD Maximum								NA				NA			NA		NA				
	RPD Average												NA									
MW-12D	RPD Minimum				499900%			225%					38%					1355%				
	RPD Maximum	ND<Hist.	ND<Hist.		-70%			-64%	ND<Hist.				-77%			ND<Hist.		-68%	ND<Hist.			
	RPD Average				-41%			-42%					-44%					-26%				
MW-13D	RPD Minimum		Equal				Equal		124%		Equal						82%				214%	
	RPD Maximum		Equal				-30%		-88%		-80%						-83%		ND<Hist.		-99%	
	RPD Average		Equal				-24%		-46%		-67%						-50%				-97%	
MW-15D	RPD Minimum																					
	RPD Maximum	NA											NA									
	RPD Average																					
MW-16D	RPD Minimum				36%			58%					8%									
	RPD Maximum				-97%			-76%			ND<Hist.	NA	-91%		NA							ND<Hist.
	RPD Average				-89%			-43%					-59%									
MW-17D	RPD Minimum																					
	RPD Maximum				NA			NA					NA					NA				
	RPD Average																					
MW-19D	RPD Minimum																					
	RPD Maximum		Equal					694%					25%									
	RPD Average		-86%		ND<Hist.			-27%					-63%									
			-78%					13%					-28%									
MW-20D	RPD Minimum																					
	RPD Maximum		NA					NA					NA									
	RPD Average																					
MW-23D	RPD Minimum																					
	RPD Maximum								ND<Hist.										ND<Hist.		ND<Hist.	
	RPD Average																					
MW-24D	RPD Minimum																					
	RPD Maximum																		ND<Hist.		ND<Hist.	
	RPD Average																					
MW-25D	RPD Minimum																					
	RPD Maximum																				ND<Hist.	
	RPD Average																					
MW-26D	RPD Minimum								Equal													
	RPD Maximum								-97%	ND<Hist.												
	RPD Average								-88%													
MW-27D	RPD Minimum																					
	RPD Maximum																		ND<Hist.			
	RPD Average																					
MW-30D	RPD Minimum								200%													
	RPD Maximum								-25%													
	RPD Average								11%													
MW-33D	RPD Minimum																					
	RPD Maximum																					
	RPD Average																					
FIREHOUSE	RPD Minimum		Equal																			
	RPD Maximum		Equal																			
	RPD Average		Equal																			
MUNCPL GAR	RPD Minimum																					
	RPD Maximum								ND<Hist.												ND<Hist.	
	RPD Average																					
RW-01D	RPD Minimum								267%		50%										Equal	
	RPD Maximum								-56%		-40%								ND<Hist.	NA	-97%	
	RPD Average								27%		-9%										-86%	
RW-02	RPD Minimum							55%	Equal		Equal										Equal	
	RPD Maximum	ND<Hist.			ND<Hist.			-100%	-100%	ND<Hist.	Equal		ND<Hist.	ND<Hist.		ND<Hist.	ND<Hist.	ND<Hist.	ND<Hist.	NA	Equal	
	RPD Average							-66%	-100%		Equal										Equal	
RW-04	RPD Minimum	800%					200%	122%	Equal				Equal						25%			
	RPD Maximum	-100%	ND<Hist.		ND<Hist.		-99%	-99%	-97%				-99%						-96%			
	RPD Average	-97%					-95%	-92%	-85%				-96%						-85%			
RW-09	RPD Minimum	50%						Equal	Equal		200%		13%								550%	
	RPD Maximum	-99%			ND<Hist.			-96%	-99%		-50%		-75%					ND<Hist.	ND<Hist.		-58%	
	RPD Average	-90%						-93%	-95%		18%		-41%								54%	
RW-OBS-06	RPD Minimum				24%			15%			Equal		Equal					Equal				
	RPD Maximum	ND<Hist.	ND<Hist.		-95%			-93%	ND<Hist.		-50%		-92%	ND<Hist.		ND<Hist.		-99%	ND<Hist.			ND<Hist.
	RPD Average				-79%			-74%			-33%		-69%					-97%				

NOTES:

Entries in this table are relative percentage difference of 2018 results relative to statistics derived from historic detections.

Equal	An entry of Equal indicates that the 2018 detection is equal to the historic statistic. In some cases this may reflect analytes not previously analyzed at particular wells.
-35%	An entry less than 0% indicates that the 2018 detection is less than the historic statistic.
5%	An entry greater than 0% indicates that the 2018 detection is greater than the historic statistic.
ND<Hist.	An entry of ND<Hist. indicates that a 2018 nondetection was made at an LOQ that was less than an historic detection.
	A blank entry indicates that a compound was not detected in 2018 and that the compound was either not detected in the past or was detected at a concentration below (or equal to) the 2018 LOQ.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

TABLE 10

Comparison of 2018 Sample Results from the Intermediate-Depth Bedrock Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC ID	Data	1,2-DICHLORO-ETHANE	ACETONE	BENZENE	BROMO-BENZENE	CHLORO-BENZENE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-HYDROFURAN	TOLUENE	TRICHLORO-ETHENE
MW-01M	Minimum Result	0.6	2	1		0.3	1,500	0.9		12		220	0.6	4		0.2
	Maximum Result	18	14,000	1,500		0.3	4,500	1		110		220	1,600	9		0.2
	Mean Result	10	3,027	230		0.3	2,475	1		37		220	561	6		0.2
	2018 Detection	ND	2	1		0.3	ND	0.9		32		NA	0.6	4		0.2
	Detection Count	9	10	17		1	4	4		16		1	5	12		1
MW-03M	Minimum Result	210		2,500	42	960	5,700			210	3	6,100	340,000	22	1	
	Maximum Result	98,000		52,000	42	16,000	160,000			580	8	9,400	490,000	5,512	33,000	
	Mean Result	57,535		17,824	42	5,372	52,140			315	5	8,125	400,000	974	11,076	
	2018 Detection	ND		3,600	ND	1,300	ND			290	ND	NA	ND	82	4	
	Detection Count	6		19	1	19	5			13	3	4	5	14	16	
MW-08M	Minimum Result			0.5						17				7	0.7	
	Maximum Result			6.6						186				40	0.7	
	Mean Result			2						60				19	0.7	
	2018 Detection			NA						NA				NA	NA	
	Detection Count			13						15				7	1	
MW-12M	Minimum Result	26		2		1			472						0.3	
	Maximum Result	4,800		11		22			472						92	
	Mean Result	923		4		5			472						33	
	2018 Detection	110		11		8			NA						0.3	
	Detection Count	17		11		13			1						6	
MW-17M	Minimum Result			1.6			2.1								1.2	
	Maximum Result			3.3			2.1								1.7	
	Mean Result			2			2.1								1	
	2018 Detection			NA			NA								NA	
	Detection Count			2			1								2	
MW-25M	Minimum Result	3.6	6.4	1		7				16				251	1.6	
	Maximum Result	5.8	60	470		7				330				1,500	6.5	
	Mean Result	5	42	147		7				149				749	3	
	2018 Detection	ND	ND	ND		ND				150				480	ND	
	Detection Count	2	3	15		1				19				19	4	
MW-31M	Minimum Result						1.8									
	Maximum Result						92									
	Mean Result						20									
	2018 Detection						7									
	Detection Count						19									

NOTES:

Units are ug/L

ND indicates that the constituent was not detected.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

A blank entry indicates that the constituent has not been detected since 1990 (note that the sampling record for a given location may begin after 1990).

TABLE 11

Relative Percentage Difference of 2018 Sample Results from the Intermediate-Depth Bedrock Aquifer Compared with Historical Results

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC. ID	Data	1,2-DICHLORO-ETHANE	ACETONE	BENZENE	BROMO-BENZENE	CHLORO-BENZENE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	ETHANOL	ETHYL ETHER	HEXANE	METHANOL	METHYLENE CHLORIDE	TETRA-HYDROFURAN	TOLUENE	TRICHLORO-ETHENE
MW-01M	RPD Minimum		Equal	Equal		Equal		Equal		167%			Equal	Equal		Equal
	RPD Maximum	ND<Hist.	-100%	-100%		Equal	ND<Hist.	-10%		-71%		NA	-100%	-56%		Equal
	RPD Average		-100%	-100%		Equal		-3%		-14%			-100%	-35%		Equal
MW-03M	RPD Minimum			44%		35%				38%				273%	300%	
	RPD Maximum	ND<Hist.		-93%		-92%	ND<Hist.			-50%		NA	ND<Hist.	-99%	-100%	
	RPD Average			-80%		-76%				-8%				-92%	-100%	
MW-08M	RPD Minimum															
	RPD Maximum			NA						NA				NA	NA	
	RPD Average															
MW-12M	RPD Minimum	323%		450%		700%									Equal	
	RPD Maximum	-98%		Equal		-64%			NA						-100%	
	RPD Average	-88%		175%		53%									-99%	
MW-17M	RPD Minimum															
	RPD Maximum			NA			NA								NA	
	RPD Average															
MW-25M	RPD Minimum									836%				91%		
	RPD Maximum	ND<Hist.	ND<Hist.	ND<Hist.		ND<Hist.				-55%				-68%	ND<Hist.	
	RPD Average									0%				-36%		
MW-31M	RPD Minimum						289%									
	RPD Maximum						-92%									
	RPD Average						-65%									

NOTES:

Entries in this table are relative percentage difference of 2018 results relative to statistics derived from historic detections.

Equal	An entry of Equal indicates that the 2018 detection is equal to the historic statistic. In some cases this may reflect analytes not previously analyzed at particular wells.
-35%	An entry less than 0% indicates that the 2018 detection is less than the historic statistic.
5%	An entry greater than 0% indicates that the 2018 detection is greater than the historic statistic.
ND<Hist.	An entry of ND<Hist. indicates that a 2018 nondetection was made at an LOQ that was less than an historic detection.
	A blank entry indicates that a compound was not detected in 2018 and that the compound was either not detected in the past or was detected at a concentration below (or equal to) the 2018 LOQ.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

TABLE 12

Comparison of 2018 Sample Results from the Deep Bedrock Aquifer with Statistics from Historical Samples

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC_ID	Data	1,2-DICHLORO-ETHANE	ACETONE	BENZENE	CHLORO-BENZENE	CHLOROFORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	METHANOL	METHYLENE CHLORIDE	TETRA-HYDROFURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
MW-02X	Minimum Result	2		3	1	14				10		7	1	0.3			
	Maximum Result	12		200	1	14				82		7	8	9			
	Mean Result	7		38	1	14				32		7	5	2			
	2018 Detection	ND		3	ND	ND				10		ND	1	0.3			
	Detection Count	2		12	1	1				11		1	4	11			
MW-03X	Minimum Result	230,000	100,000	19,000	2,200	1,200,000	990	81	510	1,600	210	1,500,000	1,400	3,000	51	59	60
	Maximum Result	760,000	100,000	73,000	28,000	5,600,000	2,600	120	2,200	3,800	8,300	3,500,000	68,000	37,000	51	59	68
	Mean Result	365,294	100,000	38,857	10,371	3,088,235	1,621	95	1,280	2,522	4,608	1,982,353	13,717	14,119	51	59	64
	2018 Detection	270,000	ND	19,000	2,600	3,300,000	1,700	ND	NA	2,700	NA	1,800,000	ND	3,600	NA	ND	ND
	Detection Count	17	1	14	14	17	9	3	4	9	8	17	6	16	1	1	2
MW-03XX	Minimum Result	2,200		560	220	1	53			2		11,000	25	270			5
	Maximum Result	10,000		3,900	1,500	35,000	120			5		62,000	25	2,000			5
	Mean Result	5,123		1,563	567	7,553	79			3		27,923	25	766			5
	2018 Detection	2,500		560	220	ND	53			2		11,000	ND	270			ND
	Detection Count	13		13	13	5	12			6		13	1	13			1
MW-32X	Minimum Result			16	1	3	0.4	0.6		5		34		2			0.5
	Maximum Result			2,600	45	40,000	22	3		71		66,000		630			5
	Mean Result			528	8	7,693	7	1		23		13,347		126			2
	2018 Detection			140	2	33	0.4	0.6		7		130		18			1
	Detection Count			13	8	12	7	4		10		12		13			7

NOTES:

Units are ug/L

ND indicates that the constituent was not detected.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

A blank entry indicates that the constituent has not been detected since 1990 (note that the sampling record for a given location may begin after 1990).

TABLE 13

Relative Percentage Difference of 2018 Sample Results from the Deep Bedrock Aquifer Compared with the Historical Results

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

LOC_ID	Data	1,2-DICHLORO-ETHANE	ACETONE	BENZENE	CHLORO-BENZENE	CHLOROFORM	CHLORO-METHANE	CIS-1,2-DICHLORO-ETHENE	ETHANOL	ETHYL ETHER	METHANOL	METHYLENE CHLORIDE	TETRA-HYDROFURAN	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRICHLORO-ETHENE	VINYL CHLORIDE
MW-02X	RPD Minimum			Equal						Equal			Equal	Equal			
	RPD Maximum	ND<Hist.		-99%		ND<Hist.				-88%		ND<Hist.	-88%	-97%			
	RPD Average			-92%						-69%			-80%	-87%			
MW-03X	RPD Minimum	17%		Equal	18%	175%	72%			69%		20%		20%			
	RPD Maximum	-64%	ND<Hist.	-74%	-91%	-41%	-35%		NA	-29%	NA	-49%	ND<Hist.	-90%	NA		
	RPD Average	-26%		-51%	-75%	7%	5%			7%		-9%		-75%			
MW-03XX	RPD Minimum	14%		Equal	Equal		Equal			Equal		Equal		Equal			
	RPD Maximum	-75%		-86%	-85%	ND<Hist.	-56%			-60%		-82%	ND<Hist.	-87%			ND<Hist.
	RPD Average	-51%		-64%	-61%		-33%			-40%		-61%		-65%			
MW-32X	RPD Minimum			775%	100%	1000%	Equal	Equal		40%		282%		800%			100%
	RPD Maximum			-95%	-96%	-100%	-98%	-80%		-90%		-100%		-97%			-80%
	RPD Average			-73%	-76%	-100%	-94%	-54%		-70%		-99%		-86%			-33%

NOTES:

Entries in this table are relative percentage difference of 2018 results relative to statistics derived from historic detections.

Equal	An entry of Equal indicates that the 2018 detection is equal to the historic statistic. In some cases this may reflect analytes not previously analyzed at particular wells.
-35%	An entry less than 0% indicates that the 2018 detection is less than the historic statistic.
5%	An entry greater than 0% indicates that the 2018 detection is greater than the historic statistic.
ND<Hist.	An entry of ND<Hist. indicates that a 2018 nondetection was made at an LOQ that was less than an historic detection.
	A blank entry indicates that a compound was not detected in 2018 and that the compound was either not detected in the past or was detected at a concentration below (or equal to) the 2018 LOQ.

NA indicates that the well was not sampled and/or the constituent was not analyzed.

TABLE 14

Comparison of 2018 VOC Concentrations Detected at Monitoring Well MW-32X with Historical Data
Fourth Quarter 2018 Groundwater Monitoring Event
Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

	Sample Date and Type														1% of the Solubility Limit***
Analyte Name	**3/9/05 Bailer**	**3/9/05 PDB**	**6/1/06 PDB**	**8/29/07 PDB**	**11/5/08 PDB***	**2/4/09 PDB****	**3/3/10 PDB***	**5/18/11 PDB***	**8/29/12 PDB†**	**10/23/13 PDB***	**3/16/15 PDB***	**5/25/16 PDB***	**8/30/17 PDB***	**10/10/18 PDB***	
1,2-DICHLOROETHANE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<1	<1	<1	<5	
ACETONE	<20	<20	10 JB	20 JB	<1000	<200	< 2,000	13 JB	13 JB	<20	<20	<20	<20	3 JB	miscible
ACETONITRILE	<100	<100	<100	<100	<5000	<1,000	< 10,000	<100	<100	<100	<100	<100	<100	<100	
BENZENE	<5	34	65	310	1,200	1,500	2,600	170	140	16	450	90	150	140	17,805
BROMOBENZENE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<5	<5	<5	<5	
CARBON TETRACHLORIDE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<1	<1	<1	<1	
CHLOROBENZENE	<5	<5	<5	3 J	<250	45 J	< 500	3 J	2 J	<5	9	1	2	2	4,900
CHLOROFORM	<5	<5	81	2,900	18,000	22,000	40,000	2,800	2,900	3 J	3,300	230	73	33	80,000
CHLOROMETHANE	<5	<5	<5	<5	<250	22 J	< 500	8	4 J	<5	11	1	0.8 J	0.4 J	61,800
CIS-1,2-DICHLOROETHENE	<5	<5	<5	1 J	<250	<50	< 500	<5	<5	<5	3	<1	0.6 J	0.6 J	
ETHANOL	<1000	<1000	<1000	<1000	<1000	<1,000	< 1,000	<1000	<1000	<1000	NA	NA	0	NA	
ETHYL ETHER	<5	21	33	55	<250	71	< 500	9	7	<5	19	5 J	6	7	604,000
HEXANE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<5	<5	<5	<5	
METHANOL	<1000	<1000	<1000	<1000	<1000	<1,000	< 1,000	<1000	<1000	<1000	NA	NA	0	NA	
METHYLENE CHLORIDE	<5	<5	230	5,700	28,000	36,000	66,000	5,300	5,400	34	12,000	970	400	130	200,000
TETRACHLOROETHENE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<1	<1	<1	<1	
TETRAHYDROFURAN	<10	<10	<10	<10	<250	<100	< 1,000	<10	<10	<10	<10	<10	<10	<10	
TOLUENE	1	7	2 J	44	260	480	630	33	22	3 J	99	13	26	18	5,324
TRANS-1,2-DICHLOROETHENE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	NA	NA	0	NA	
TRICHLOROETHENE	<5	<5	<5	<5	<250	<50	< 500	<5	<5	<5	<1	<1	<1	<1	
VINYL CHLORIDE	<5	<5	<5	1 J	<250	<50	< 500	1 J	1 J	<5	5	0.5 J	1 J	1	27,000
Total VOC Concentration	**1**	**62**	**411**	**9,014**	**47,460**	**60,118**	**109,230**	**8,337**	**8,476**	**56**	**15,896**	**1,310.5**	**659.4**	**332**	

Notes:
All units are in mg/l.
NA - Not analyzed.
PDB - indicates sample collected using passive diffusion bag that was submerged in well for approximately two weeks.
Bailer - Indicates that the sample was collected without purging the well, using a dedicated disposable bailer.
Shading indicates that the constituent was detected.
J indicates the value is estimated. J-qualified values are included in Total VOC calculation.
B indicates that the constituent was detected in a blank at a similar concentration. B-qualified values are not included in Total VOC calculation.
* Primary sample shown, duplicate sample had similar results.
** Resample.
*** Source of solubility limits: 25 Pa Code, Chapter 250, Appendix A, Table 5.
† Primary sample shown. Duplicate sample results were similar except for chloroform (770 mg/l).

TABLE 15

Water Level Measurements

Fourth Quarter 2018 Groundwater Monitoring Event

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Well Name	Reference Elevation	Reference Point	September 27, 2018	
			DTW (ft)	WLE (ft amsl)
Brady	460.59	TOC (PVC)	18.06	442.53
HSR-01*	434	pump intake	1.77	435.77
MW-01M	472.67	TOReducer	27.42	445.25
MW-01S	471.04	TOC	7.71	463.33
MW-02D	465.83	TOR	19.18	446.65
MW-02M	466.03	TOR	19.92	446.11
MW-02S	465.88	TOR	6.17	459.71
MW-02X	466.59	TOC	26.02	440.57
MW-03D	467.07	TOR	15.85	451.22
MW-03M	467.88	WWFP	30.49	437.39
MW-03S	466.79	TOR	14.03	452.76
MW-03X	467.86	TOR	31.60	436.26
MW-03XX	474.30	TOC	39.56	434.74
MW-04D	456.20	WWFP	12.39	443.81
MW-04S	455.64	TOC	12.37	443.27
MW-05D	465.74	WWFP	20.28	445.46
MW-05S	465.56	TOR	17.26	448.30
MW-07D	453.69	WWFP	12.24	441.45
MW-07S	453.47	TOR	9.01	444.46
MW-08D	453.24	WWFP	9.96	443.28
MW-08M	454.37	TOReducer	15.04	439.33
MW-08S**	-	WWFP	6.66	-
MW-09D	453.69	WWFP	12.33	441.36
MW-09S	452.74	TOR	12.53	440.21
MW-10D	461.11	WWFP	18.03	443.08
MW-10S	461.65	WWFP	18.79	442.86
MW-11D	470.29	WWFP	22.28	448.01
MW-12D	456.64	WWFP	13.79	442.85
MW-12M	456.05	TOReducer	17.59	438.46
MW-12S	455.86	WWFP	14.34	441.52
MW-13D	461.85	WWFP	19.17	442.68
MW-13S	456.11	WWFP	10.79	445.32
MW-14D	453.96	TOR	12.04	441.92
MW-14M	454.23	TOR	13.55	440.68
MW-15D	457.14	WWFP	15.00	442.14
MW-15S	456.98	TOR	13.94	443.04
MW-16D	456.89	WWFP	15.20	441.69
MW-16S	456.52	WWFP	13.07	443.45
MW-17D	455.26	TOR	13.62	441.64
MW-17M	455.45	TOR	16.40	439.05
MW-17S	454.84	TOR	11.74	443.10
MW-19D	453.14	WWFP	12.20	440.94
MW-19M	453.57	TOReducer	13.08	440.49
MW-19S	453.2	WWFP	10.81	442.39
MW-20D	451.82	WWFP	NM	NM
MW-23D	466.52	WWFP	19.90	446.62
MW-24D	468.96	WWFP	19.76	449.20
MW-24S	456.27	WWFP	12.68	443.59
MW-25D	471.05	WWFP	19.76	451.29
MW-25M	460.27	TOR	18.18	442.09
MW-26D	471.36	WWFP	17.62	453.74
MW-26S	462.90	TOR	9.87	453.03
MW-27D	472.43	WWFP	11.80	460.63
MW-27S	453.94	WWFP	8.85	445.09
MW-28D	475.06	WWFP	15.35	459.71
MW-28S	454.67	TOR	10.51	444.16
MW-29D	473.08	WWFP	8.51	464.57

TABLE 15

Water Level Measurements

Fourth Quarter 2018 Groundwater Monitoring Event

Cherokee Pharmaceuticals, LLC, Riverside, Pennsylvania

Well Name	Reference Elevation	Reference Point	September 27, 2018	
			DTW (ft)	WLE (ft amsl)
MW-30D	475.88	WWFP	19.43	456.45
MW-31D	475.57	WWFP	22.54	453.03
MW-31M	476.36	TOReducer	23.69	452.67
MW-32D	465.72	WWFP	19.15	446.57
MW-32X	467.85	TOC	30.12	437.73
MW-33D	476.23	WWFP	26.89	449.34
MW-34D	475.38	WWFP	26.39	448.99
MW-35D	480.03	TOR	33.24	446.79
MW-38D	460.95	TOReducer	40.96	419.99
Neaus	456.36	TOC	13.21	443.15
OBS-01	466.62	TOC	19.25	447.37
OBS-05	464.87	TOC	22.88	441.99
OMW-01	472.43	TOC	19.67	452.76
PW-1	472.45	TOC	17.56	454.89
PW-2	470.57	TOC	15.95	454.62
PW-3	466.86	TOC (PVC)	21.48	445.38
PZ-01	465.52	TOC	24.33	441.19
PZ-02	465.9	TOR (PVC)	24.30	441.60
RW-1	465.17	TOC	14.26	450.91
RW-1D	470.08	TOC	99.03	371.05
RW-2	465.02	TOC	15.33	449.69
RW-4	470.19	TOC	67.61	402.58
RW-5	473.02	TOC	11.99	461.03
RW-7	468.34	TOC	22.28	446.06
RW-8	466.38	TOR	7.47	458.91
RW-9	466.49	TOC	54.82	411.67
RW-OBS-6	460.94	TOC	64.35	396.59
Schreiber	464.11	TOC (PVC)	20.74	443.37
SR-01	454.18	TOR	12.99	441.19
SR-02	453.88	TOR	13.09	440.79
SR-03	453.35	TOR	12.47	440.88
SR-04	453.97	TOR	11.17	442.80
SR-05	454	TOR	13.02	440.98
SR-06	453.93	TOR	12.85	441.08
SR-07	453.87	TOR	13.19	440.68
SR-08	453.99	TOR	12.51	441.48
SR-09	453.73	TOR	12.25	441.48
SW-0301	461.25	TOR (PVC)	10.25	451.00
SW-0402	464.75	TOR (PVC)	16.07	448.68
SW-0901	455.71	TOR (PVC)	11.26	444.45
SW-2503	457.19	TOR (PVC)	11.10	446.09
SW-2504	457.5	TOR (PVC)	11.14	446.36
SW-2701	455.77	TOR (PVC)	14.49	441.28
SW-K01	464.59	TOR (PVC)	11.56	453.03
SW-N01	461.86	TOR (PVC)	10.49	451.37
SW-Q01	460.78	TOR (PVC)	12.87	447.91

Notes:

* HSR-1 elevation estimated using estimated pump setting and transducer reading (i.e., ft above transducer).

** MW-08S was previously damaged and has not been resurveyed.

DTW - Depth to Water

WLE - Water Level Elevation

TOC - Top of Casing

TOR - Top of Riser

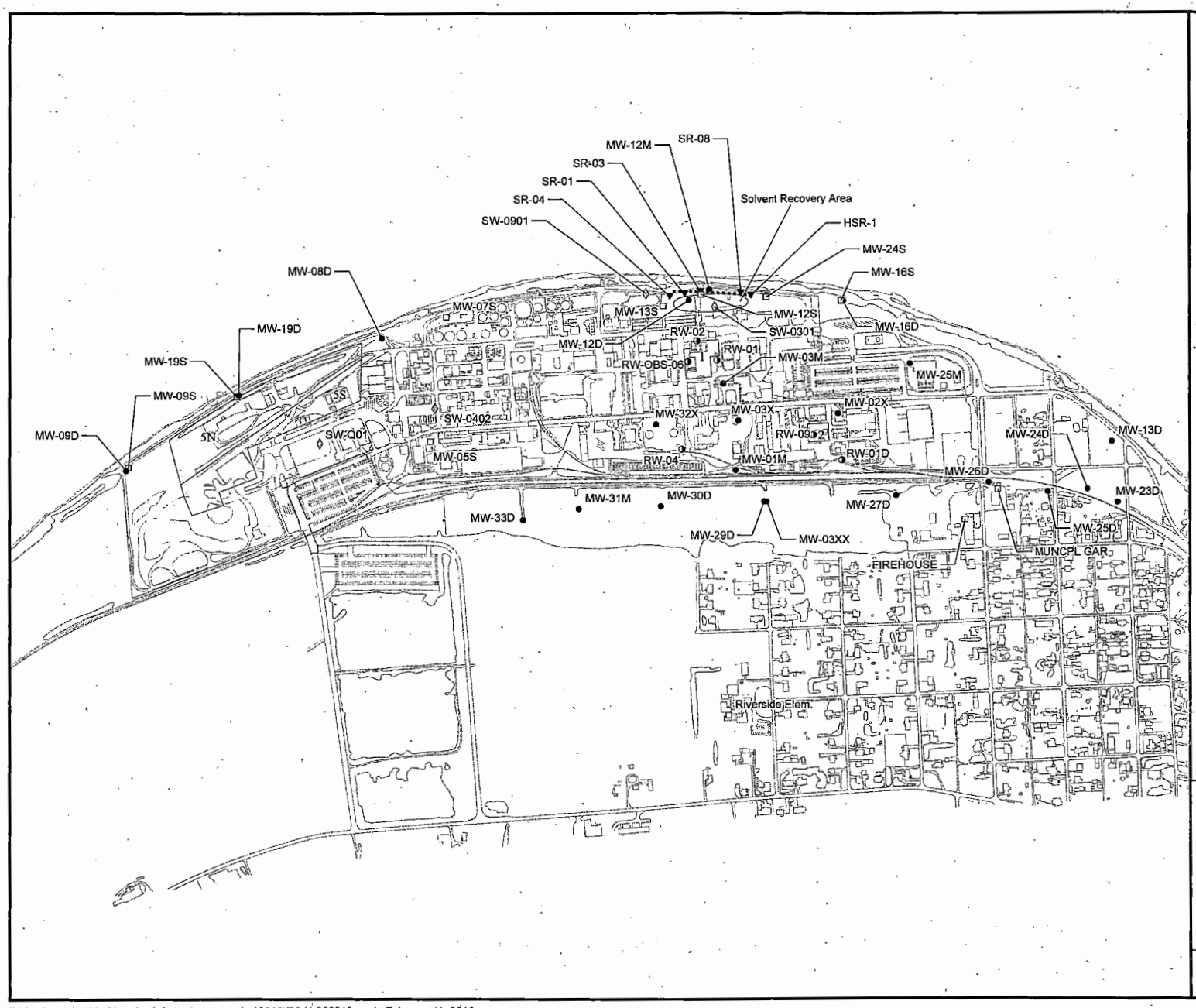
TOReducer - Top of Reducer

WWFP - Well Wizard Face Plate

ft amsl - feet above mean sea level

NM - Not Measured

FIGURES



True North

LEGEND

Well Type

- Alluvium Monitoring Well
- Alluvium Source Well
- Deep Bedrock Monitoring Well
- Intermediate Depth Bedrock Monitoring We
- Potable Water Supply Well
- Shallow Bedrock Monitoring Well
- Solvent Recovery Area Well
- SWMU 1 or 2 Recovery Well
- HSR-1 Screened Interval
- Solid Waste Management Units 1 and 2, Solvent Recovery Area, and Landfill Zone 5

Notes:

1. Due to the scale at which this map is displayed some well symbols may be difficult to see due t overlap from adjacent wells.

600 300 0 600
Feet

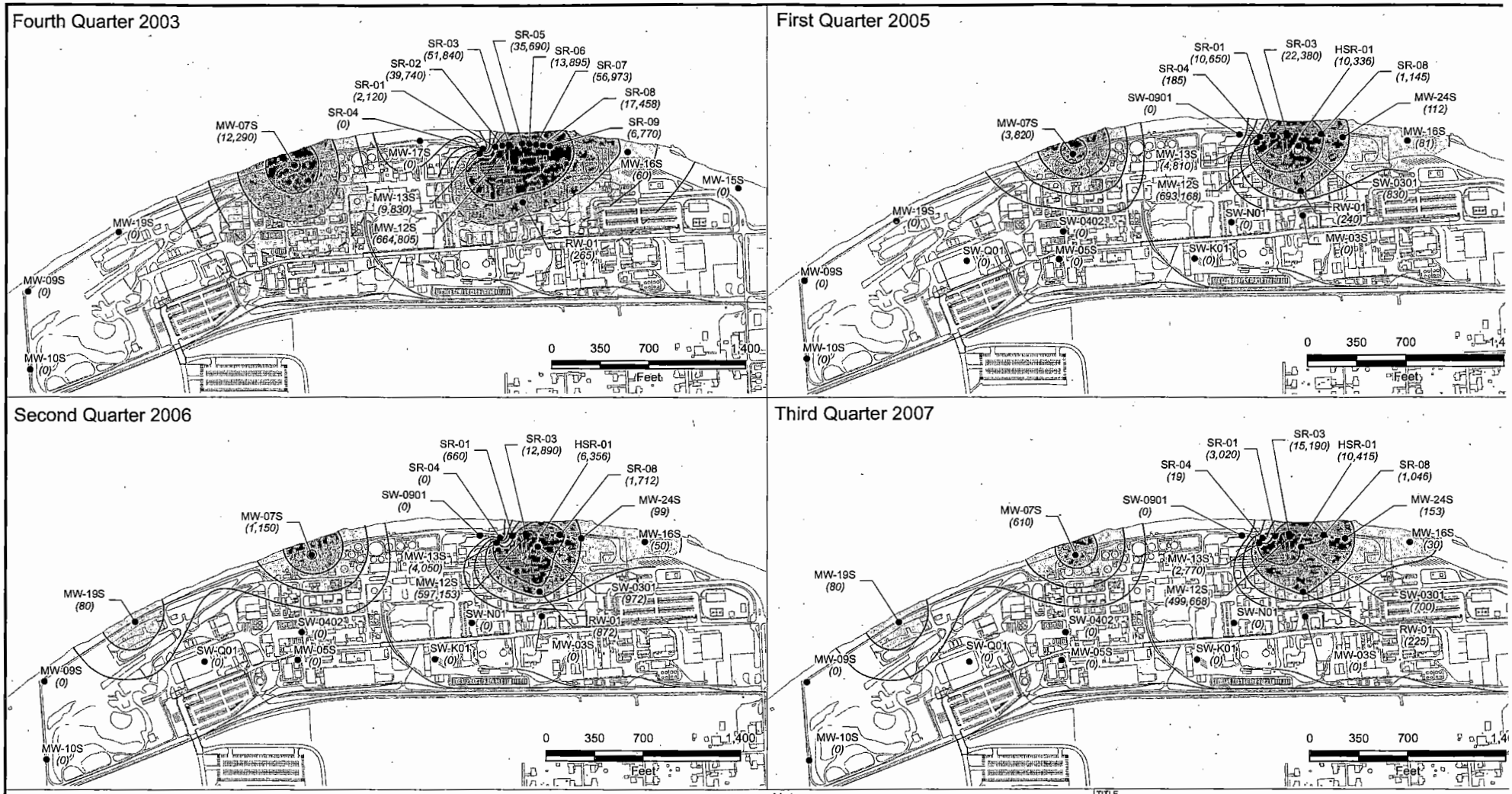
FIGURE 1

CMI Groundwater
Performance Monitoring Locations,
Fourth Quarter 2018

Cherokee Pharmaceuticals LLC,
A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f08-H-356618.mxd; February 11, 2019



LEGEND

- Sample Location
- Isoconcentration Contour (ug/L) *dashed where inferred*
- HSR-1 Screened Interval

Total VOC Concentrations (ug/L)

1-9.99	1,000-9,999
10-99.99	10,000-99,999
100-999.9	>100,000

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

Contours terminated at eastern extent of data limits and are representative of historical data in this area.

TITLE

FIGURE 2A
Total Net Exceedance Concentrations for Volatile Organic Compounds, Alluvial Aquifer, Fourth Quarter 2003 - Third Quarter 2007

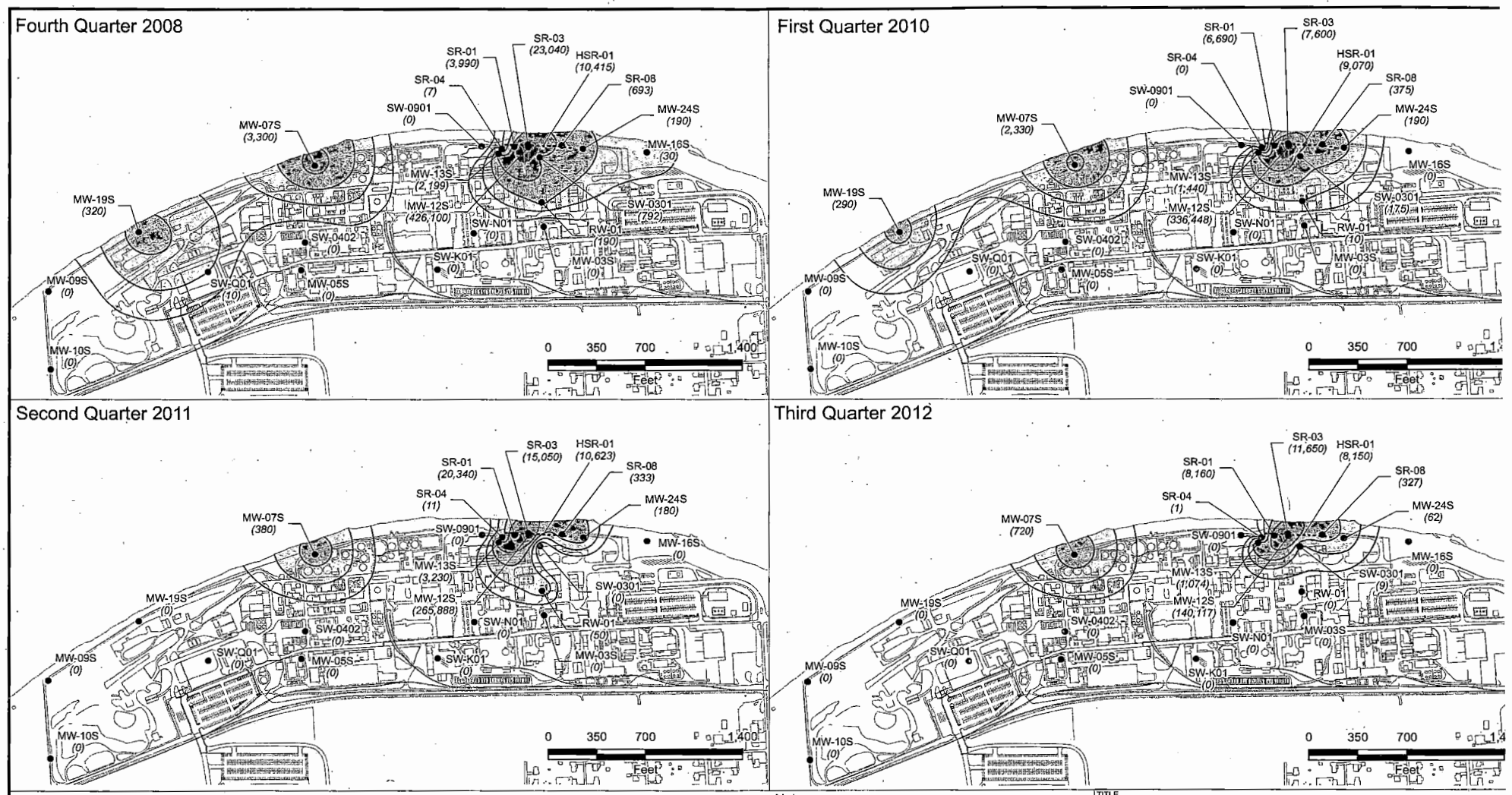
CLIENT

Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp., Riverside, Pennsylvania

HATCH

1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f12a-H-356618-001.cdr



LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)
- HSR-1 Screened Interval

Total VOC Concentrations (ug/L)

1-9.99	1,000-9,999
10-99.99	10,000-99,999
100-999.9	>100,000

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

Contours terminated at eastern extent of data limits and are representative of historical data in this area.

TITLE

FIGURE 2B
Total Net Exceedance Concentrations for Volatile Organic Compounds, Alluvial Aquifer, Fourth Quarter 2008 - Third Quarter 2012

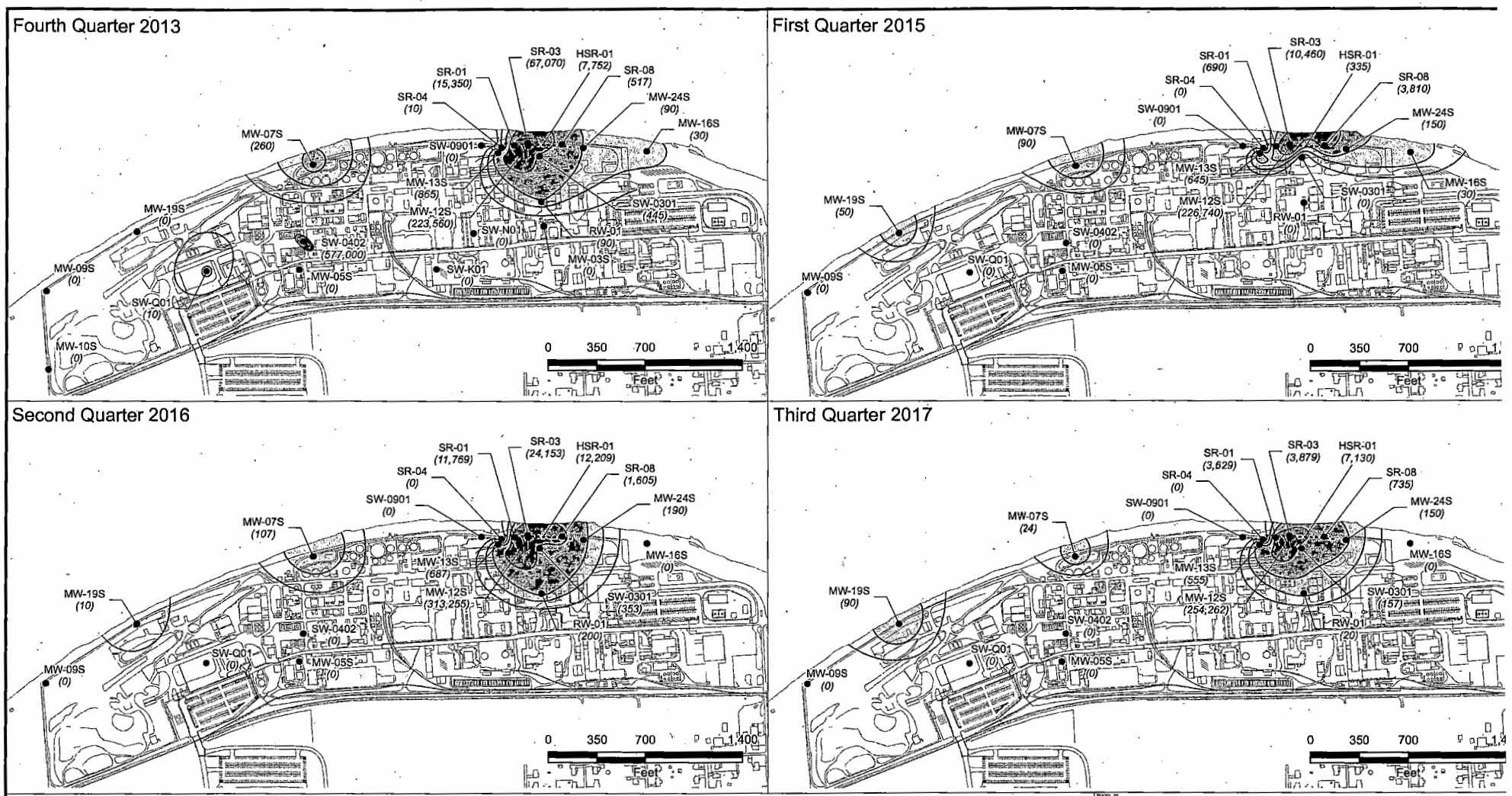
CLIENT

Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH

1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5926_Cherokee\gis\data\arcmap_doc\2018\f12b-H-356618-001.cdr



Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

Contours terminated at eastern extent of data limits and are representative of historical data in this area.

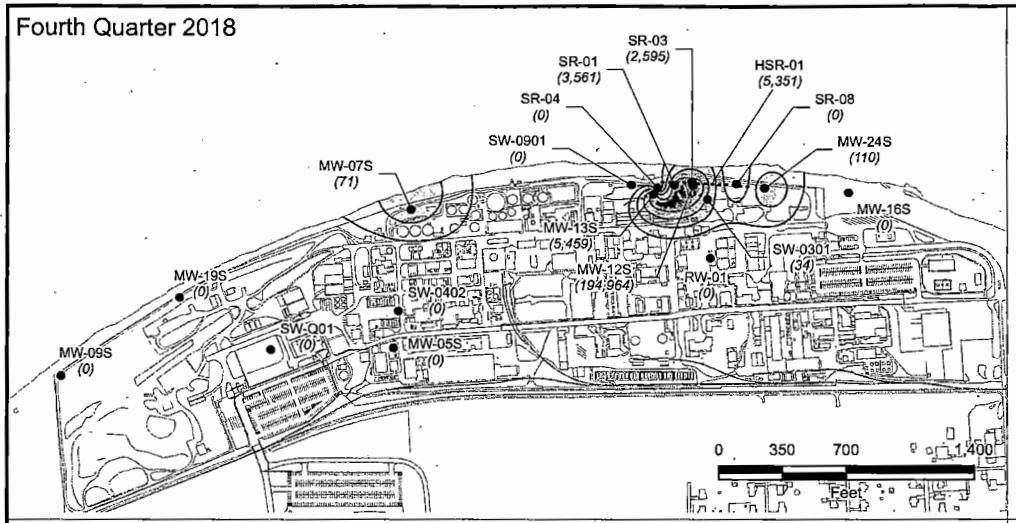
TITLE
FIGURE 2C
Total Net Exceedance Concentrations for Volatile Organic Compounds, Alluvial Aquifer, Fourth Quarter 2013 - Third Quarter 2017

CLIENT
Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH
1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f12c-H-356618-001.cdr

Fourth Quarter 2018



First Quarter 2020

Second Quarter 2021

Third Quarter 2022

LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)
- HSR-1 Screened Interval

Total VOC Concentrations (ug/L)

1-9.99	1,000-9,999
10-99.99	10,000-99,999
100-999.9	>100,000

N
W E
S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

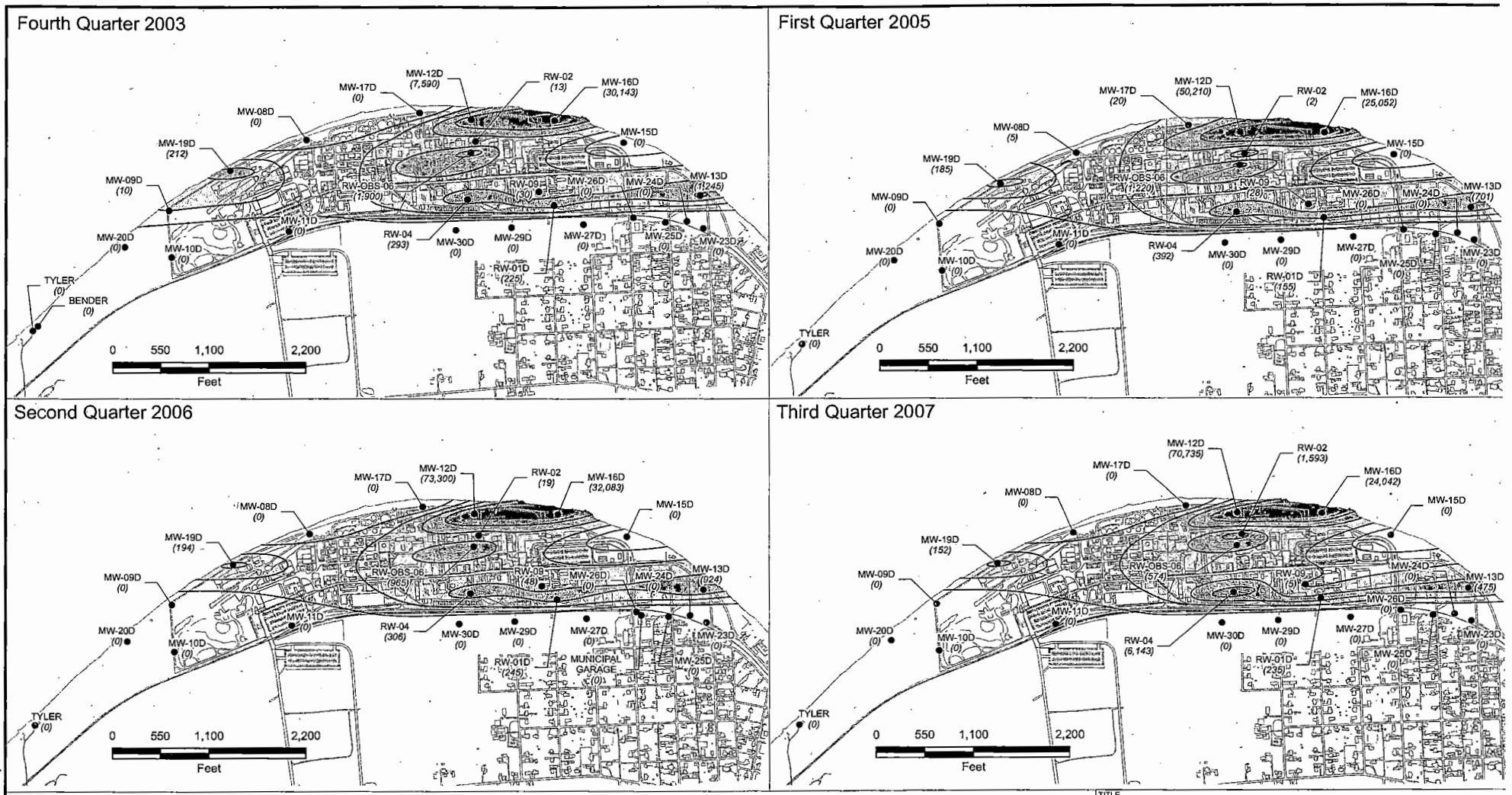
Contours terminated at eastern extent of data limits and are representative of historical data in this area.

TITLE
FIGURE 2D
Total Net Exceedance Concentrations for Volatile Organic Compounds, Alluvial Aquifer, Fourth Quarter 2018

CLIENT
Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp., Riverside, Pennsylvania

HATCH
1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2016\f12d-H-356618-001.cdr



LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)

Total VOC Concentrations (ug/L)

- 1-9.99
- 10-99.99
- 100-999.9
- 1,000-9,999
- 10,000-99,999

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

TITLE

FIGURE 3A
Total Net Exceedance Concentrations
for Volatile Organic Compounds, Shallow Bedrock Aquifer,
Fourth Quarter 2003 - Third Quarter 2007

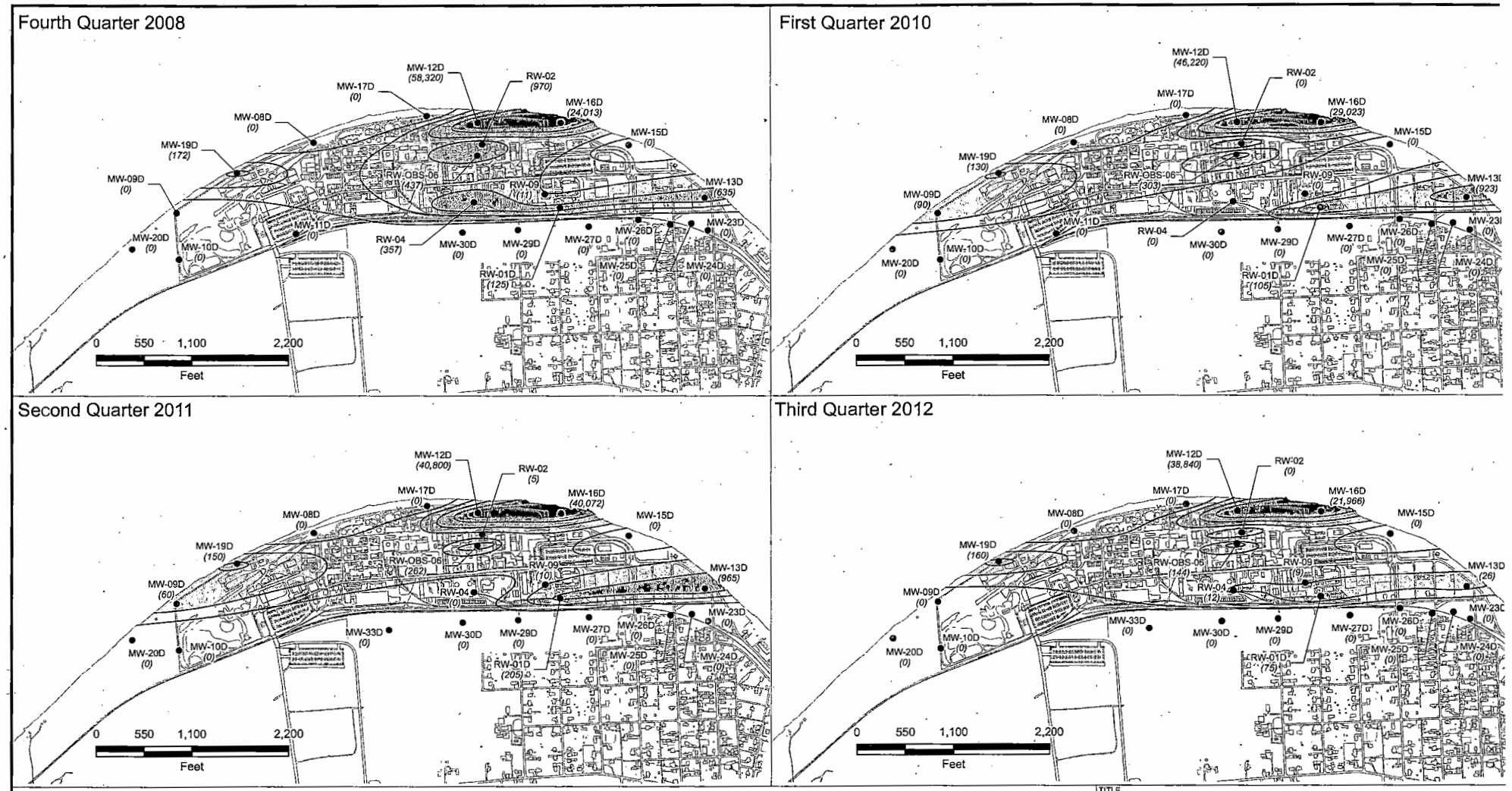
CLIENT

Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp
Riverside, Pennsylvania

HATCH

1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f13a-H-356618-001.cdr



LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)

Total VOC Concentrations (ug/L)

- 1-9.99
- 10-99.99
- 100-999.9
- 1,000-9,999
- 10,000-99,999

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

TITLE

FIGURE 3B
Total Net Exceedance Concentrations
for Volatile Organic Compounds, Shallow Bedrock Aquifer,
Fourth Quarter 2008 - Third Quarter 2012

CLIENT

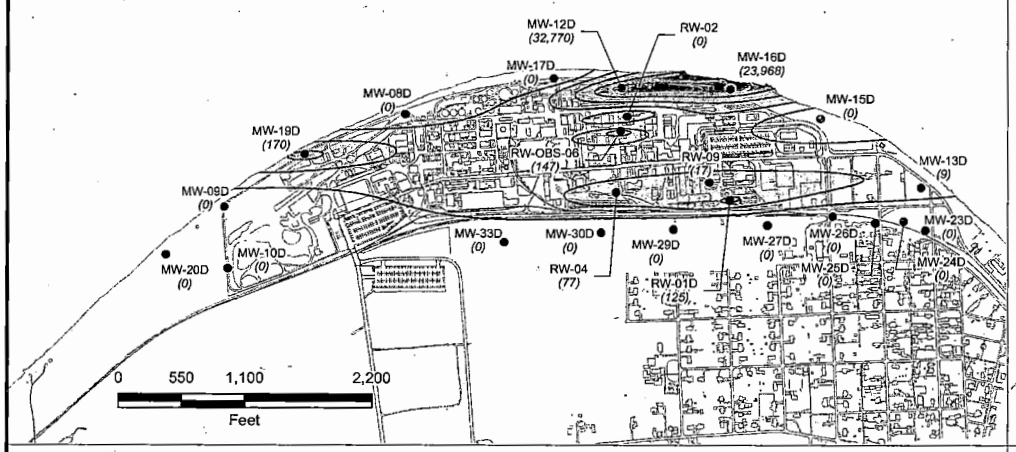
Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp
Riverside, Pennsylvania

HATCH

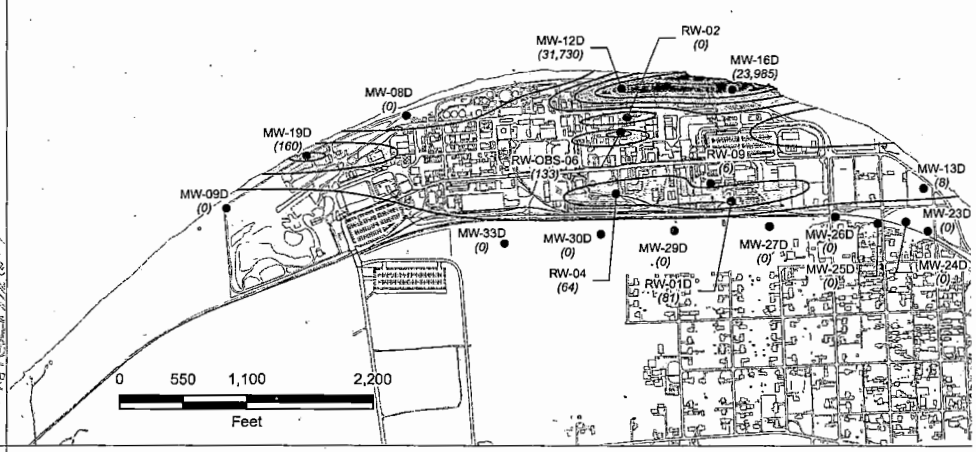
1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f13b-H-356618-001.cdr

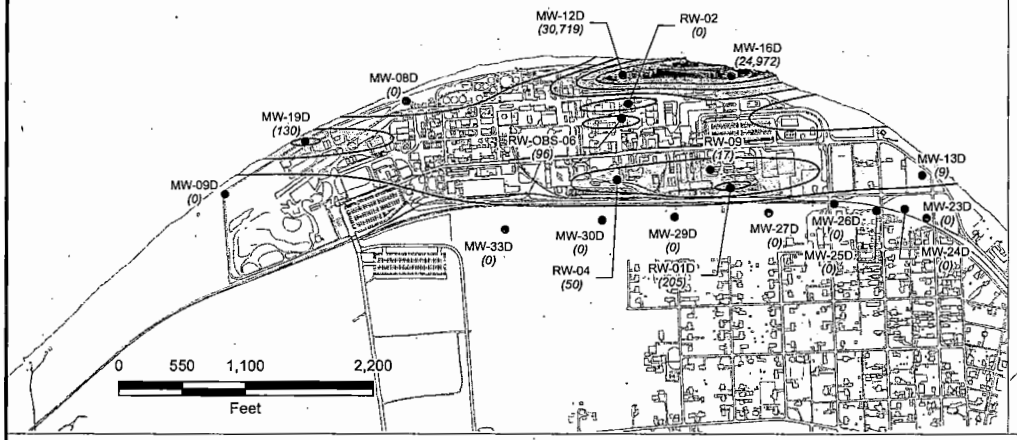
Fourth Quarter 2013



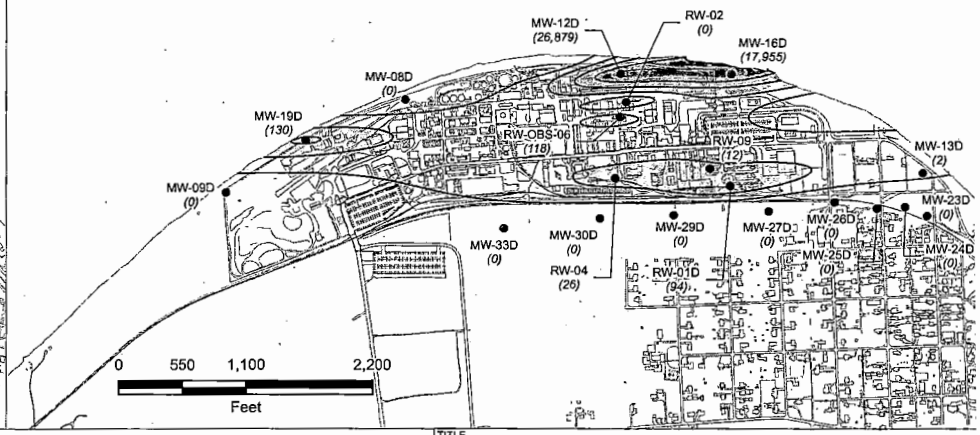
First Quarter 2015



Second Quarter 2016



Third Quarter 2017



LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)

Total VOC Concentrations (ug/L)

- 1-9.99
- 10-99.99
- 100-999.9
- 1,000-9,999
- 10,000-99,999

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

TITLE

FIGURE 3C
Total Net Exceedance Concentrations
for Volatile Organic Compounds, Shallow Bedrock Aquifer,
Fourth Quarter 2013 - Third Quarter 2017

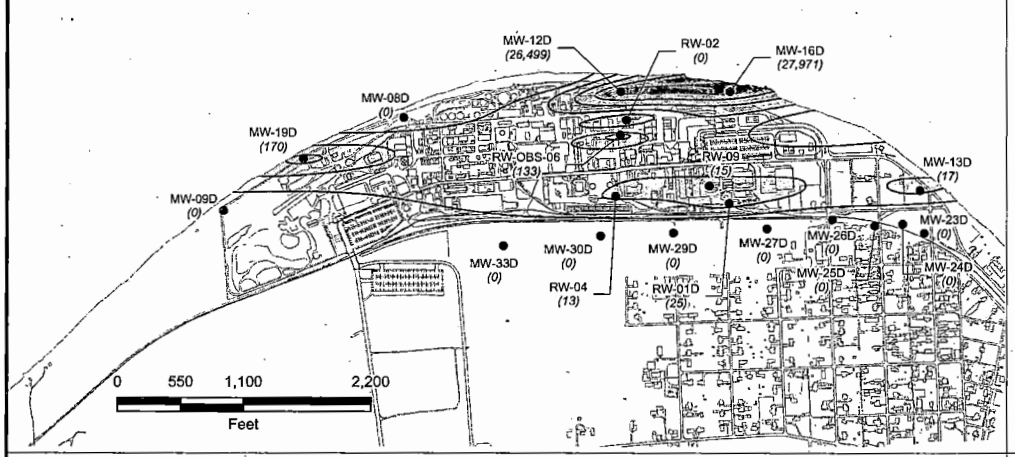
CLIENT
Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp
Riverside, Pennsylvania

HATCH

1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gis\data\arcmap_doc\2018\f13c-H-356618-001.cdr

Fourth Quarter 2018



First Quarter 2020

Second Quarter 2021

Third Quarter 2022

LEGEND

- Sample Location
- Isoconcentration Contour (ug/L)

Total VOC Concentrations (ug/L)

- 1-9.99
- 10-99.99
- 100-999.9
- 1,000-9,999
- 10,000-99,999

N W E S

Notes:
Posted values are the sum of VOC concentrations above groundwater standard (GWS) concentrations. For each detected VOC at each location, the GWS concentration was subtracted from the detected VOC concentration. If a VOC concentration was less than its GWS concentration, its difference was set to zero. The differences were then summed for each location.

TITLE

FIGURE 3D
Total Net Exceedance Concentrations
for Volatile Organic Compounds, Shallow Bedrock Aquifer,
Fourth Quarter 2018

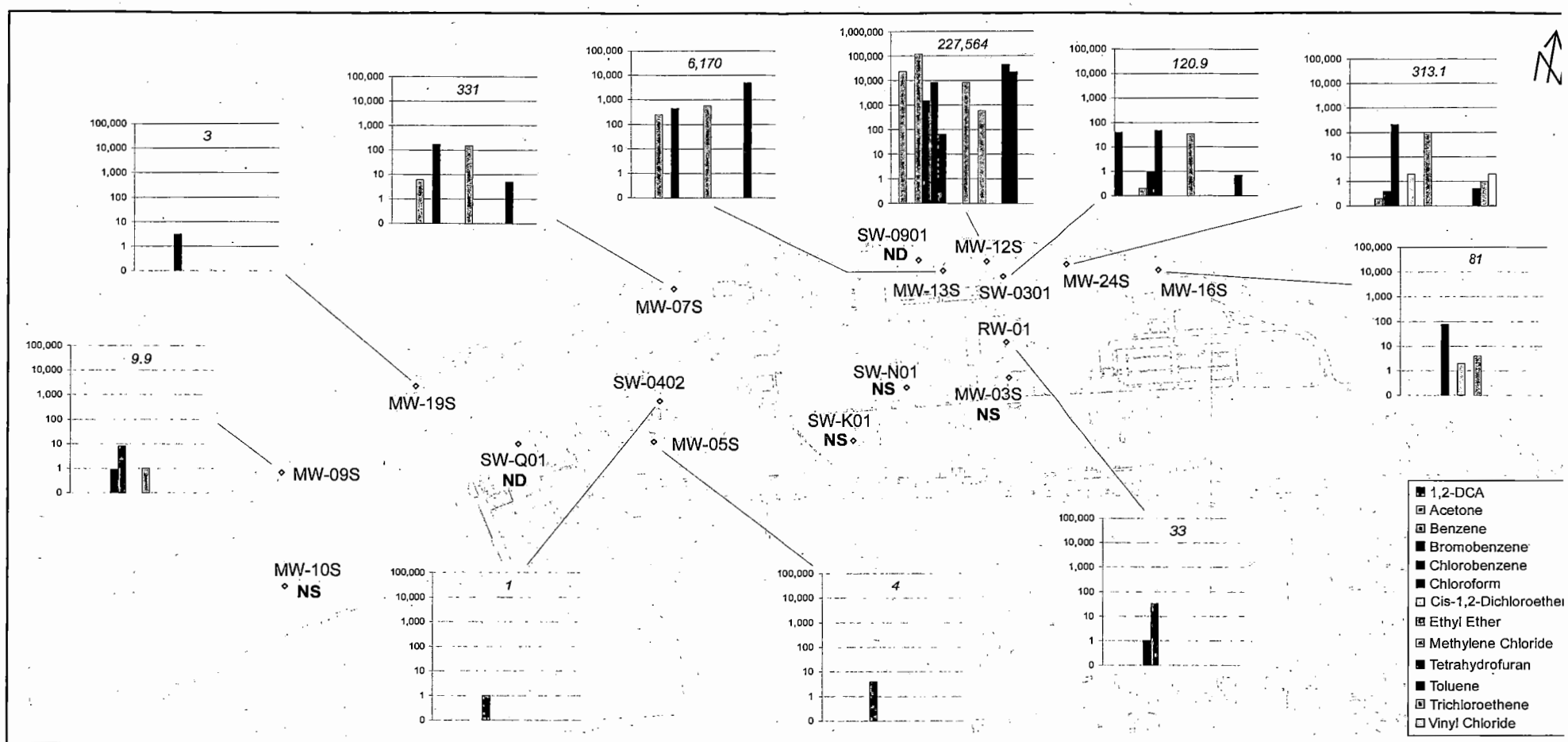
CLIENT

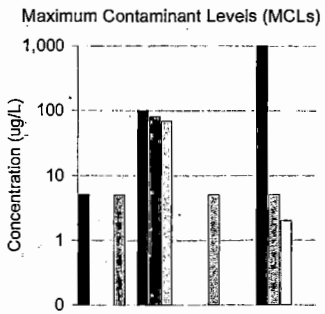
Cherokee Pharmaceuticals LLC, A Subsidiary of Merck Sharp & Dohme Corp
Riverside, Pennsylvania

HATCH

1315 WEST COLLEGE AVENUE, SUITE 100
STATE COLLEGE, PA 16801
(814) 231-2170

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f13d-H-356618-001.cdr





Scale (feet)

0 500 1000

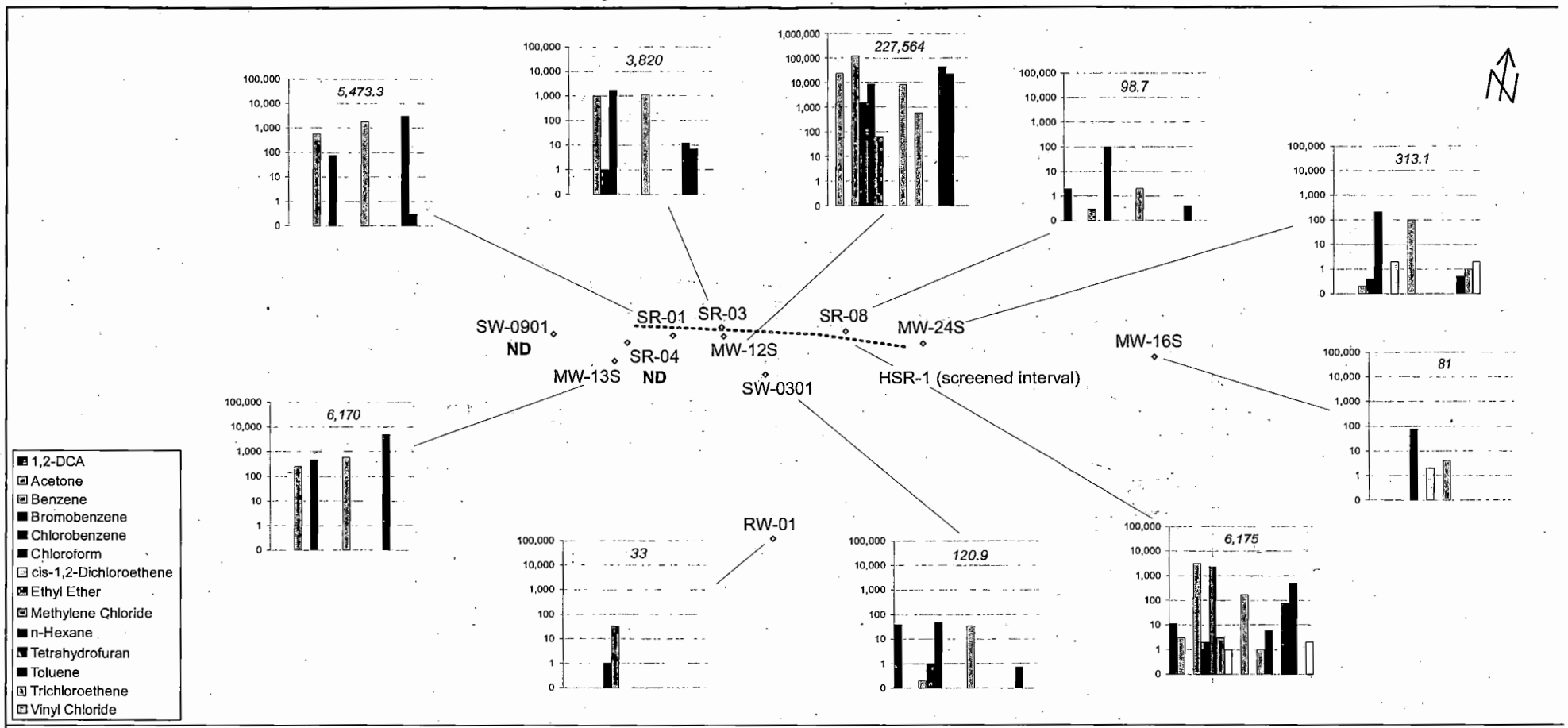
Values shown are total VOC concentrations in u
(i.e., the sum of individual VOC concentrations)

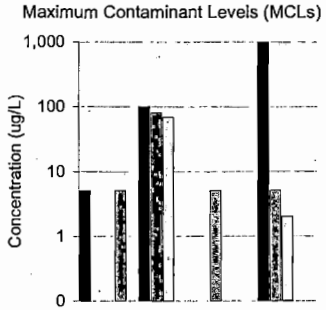
ND Not detected

NS Not sampled

FIGURE 4
Map Showing Concentration Bar Graphs for Volatile Organic Compounds
Detected in the Alluvial Aquifer, Fourth Quarter 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH



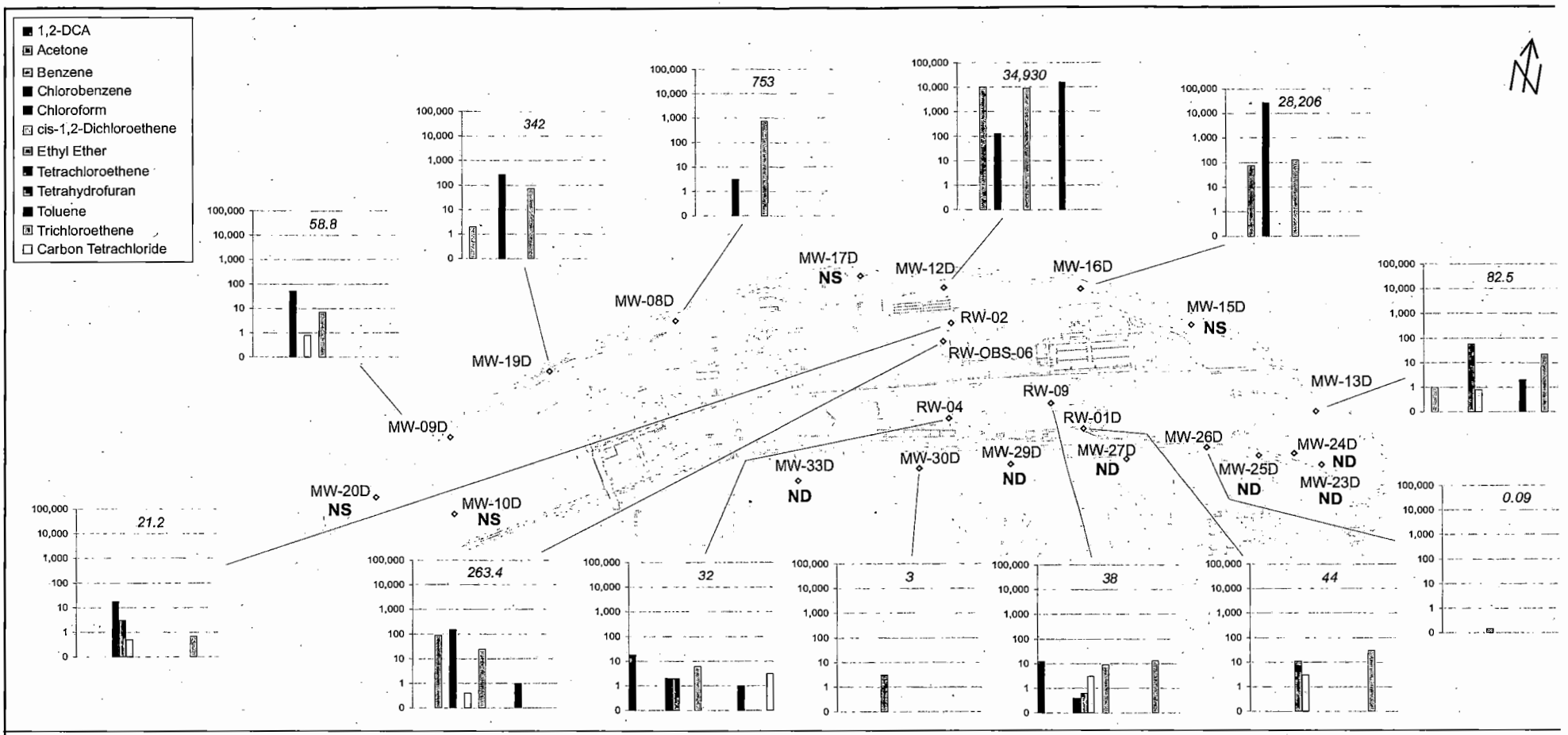


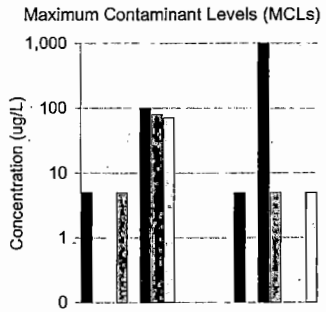
Values shown are total VOC concentrations ir
(i.e., the sum of individual VOC concentration

ND Not detected

FIGURE 5
Map Showing Concentration Bar Graphs for Volatile Organic Compounds Detected in the Vicinity of the Solvent Recovery Area of the Alluvial Aquifer, Fourth Quarter 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH





Scale (feet)

0 700 1400

Values shown are total VOC concentrations in
(i.e., the sum of individual VOC concentrations

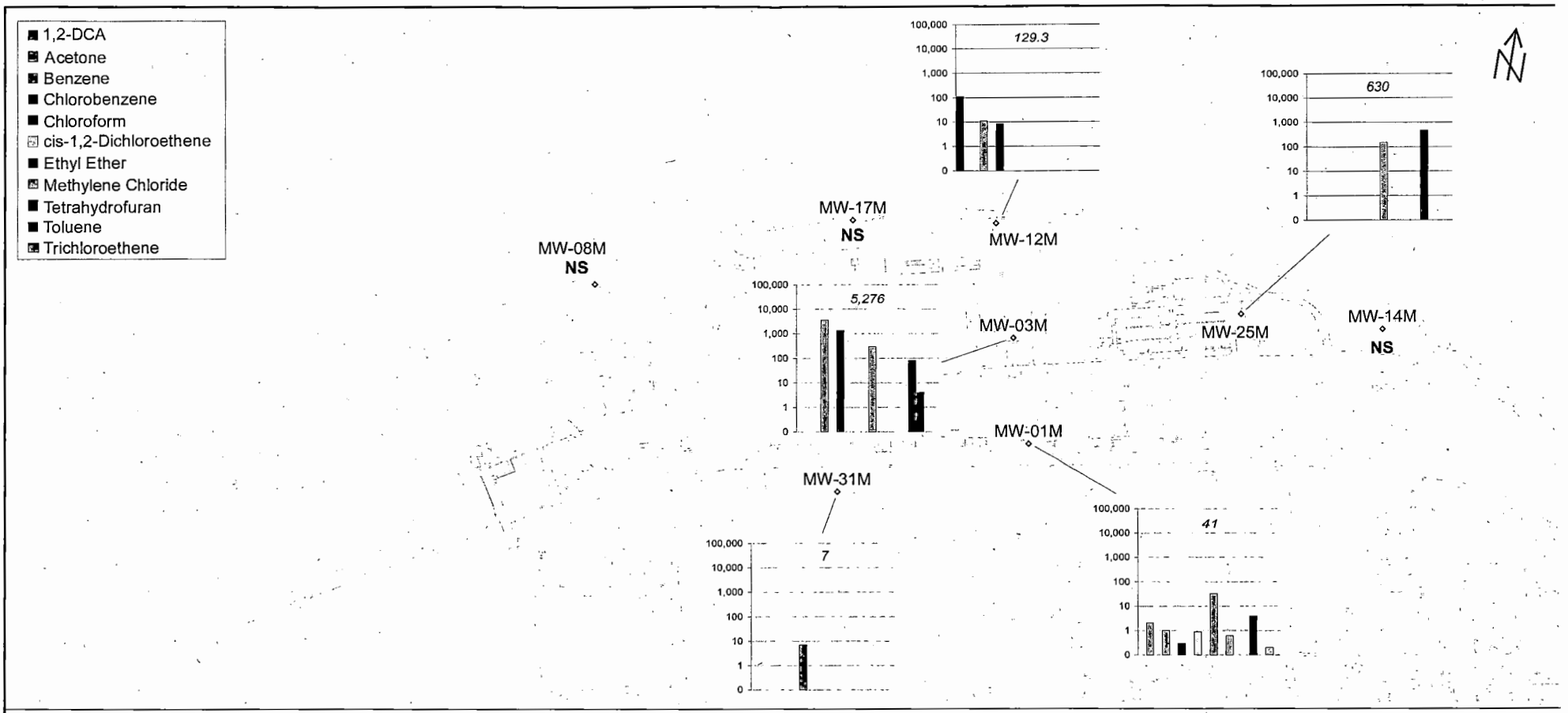
Municipal Garage and Firehouse samples are
not shown (see Table 5)

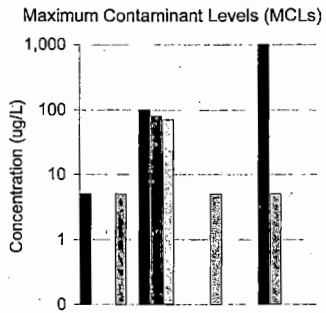
ND Not detected

NS Not sampled

FIGURE 6
Map Showing Concentration Bar Graphs for Volatile Organic Compounds
Detected in the Shallow Bedrock Aquifer, Fourth Quarter 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH





Scale (feet)

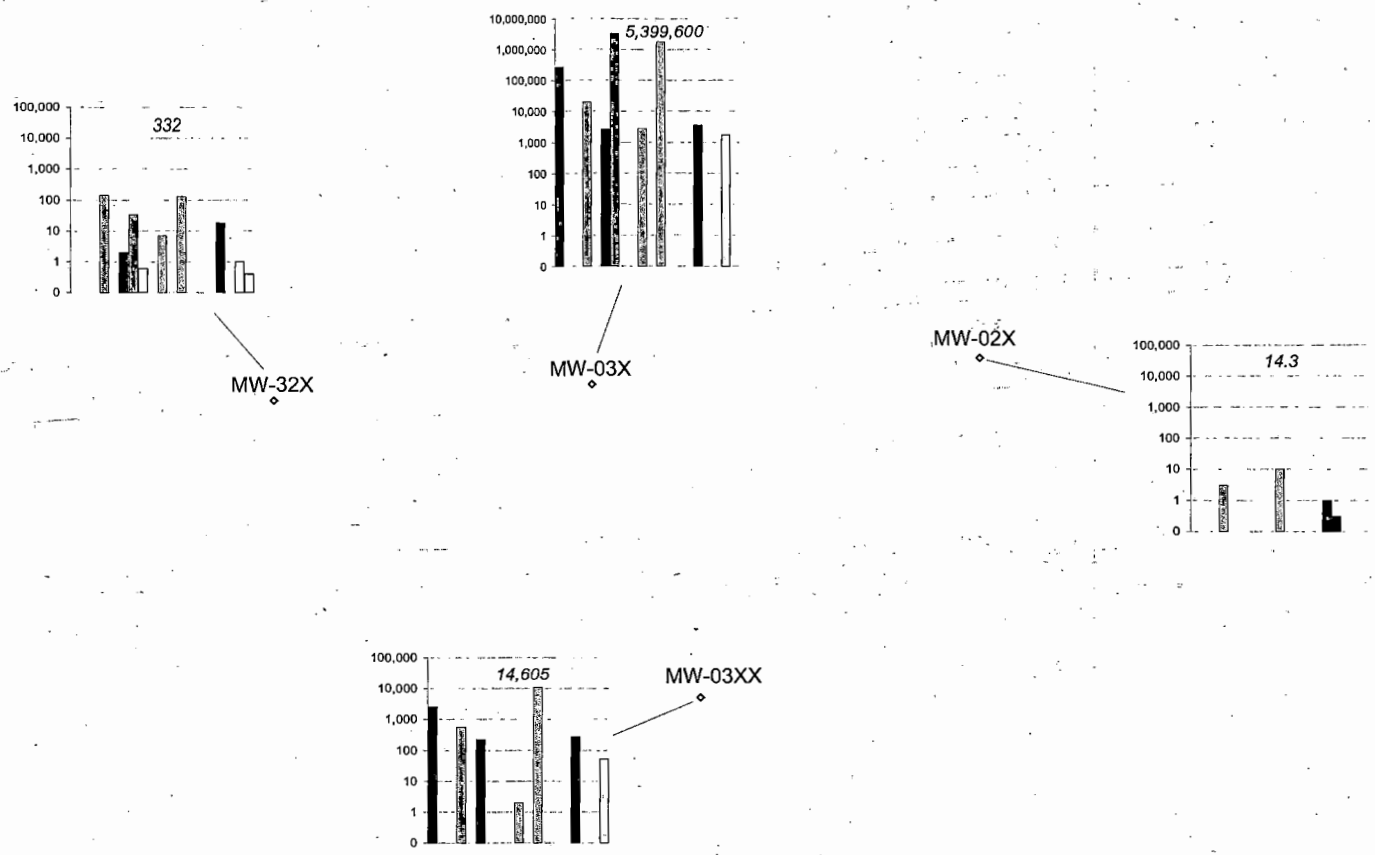
0 500 1000

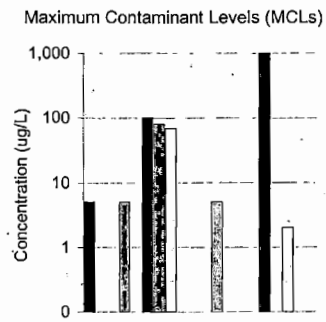
Values shown are total VOC concentrations in
(i.e., the sum of individual VOC concentrations)

NS Not sampled

FIGURE 7
Map Showing Concentration Bar Graphs for Volatile Organic Compounds
Detected in the Intermediate-Depth Bedrock Aquifer, Fourth Quarter 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.
Riverside, Pennsylvania

HATCH





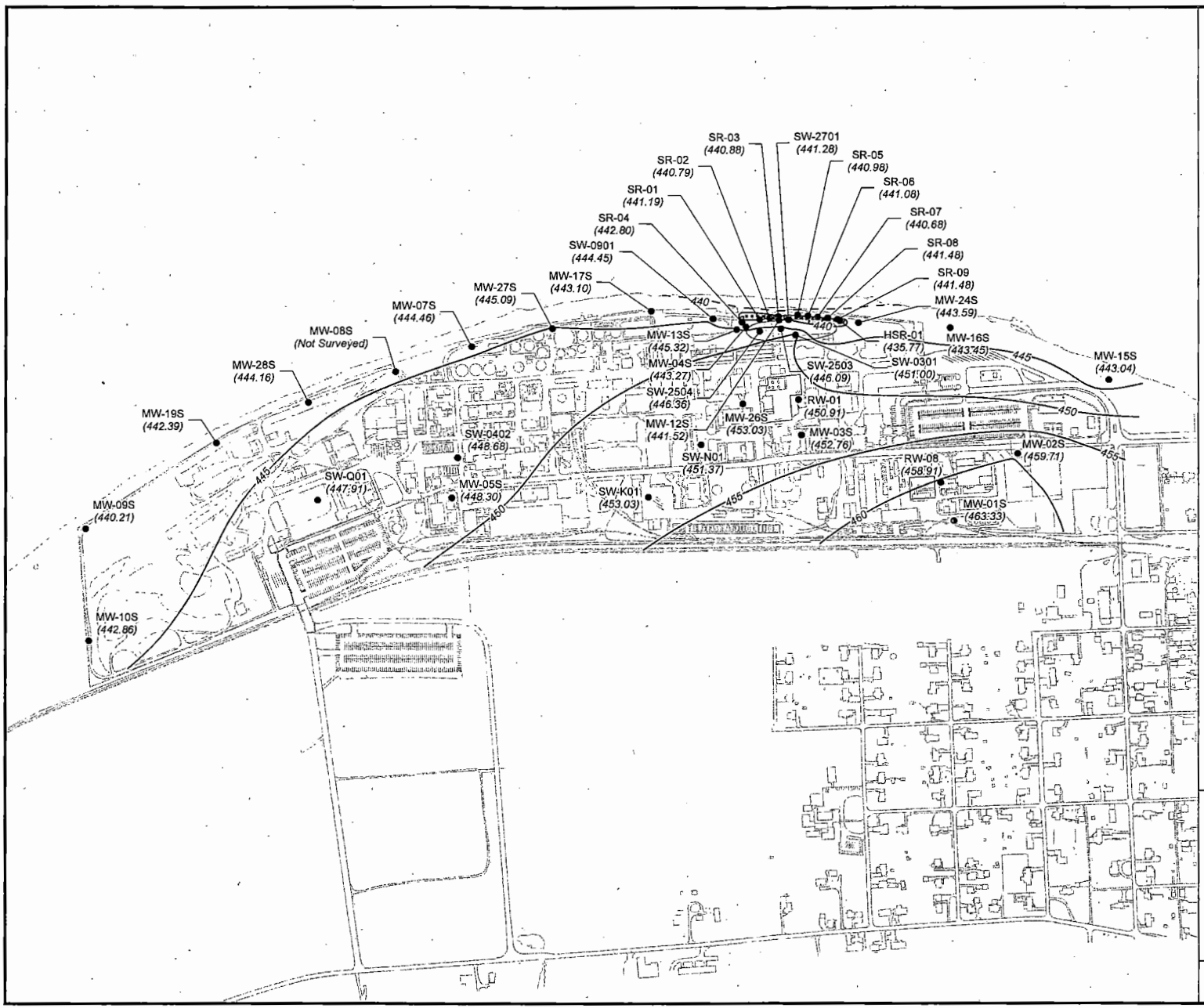
Scale (feet)

0 200 400

Values shown are total VOC concentrations in
(i.e., the sum of individual VOC concentrations)

FIGURE 8
Map Showing Concentration Bar Graphs for Volatile Organic Compounds
Detected in the Deep Bedrock Aquifer, Fourth Quarter 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH



N
W E
S

LEGEND

- Well location and Water Level Elevation
- Piezometric Surface Elevation (ft amsl)
- Closed Piezometric Surface
- Inferred Piezometric Surface
- HSR-1 Screened Interval
- Solid Waste Management Units (SWMU)

Notes:

1. Map displayed in Universal Transverse Mercator Projection, Zone 18 North, North American Datum o 1983 (NAD83).
2. Water levels measured on September 27, 2018.
3. RW-08 water level elevation not used for contouring as the screened interval is open to both the alluvial and shallow bedrock aquifers.

0 250 500 1,000
Feet

FIGURE 9

Piezometric Elevation Contours in the Alluvial Aquifer, September 27, 2018

Cherokee Pharmaceuticals LLC,
A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH

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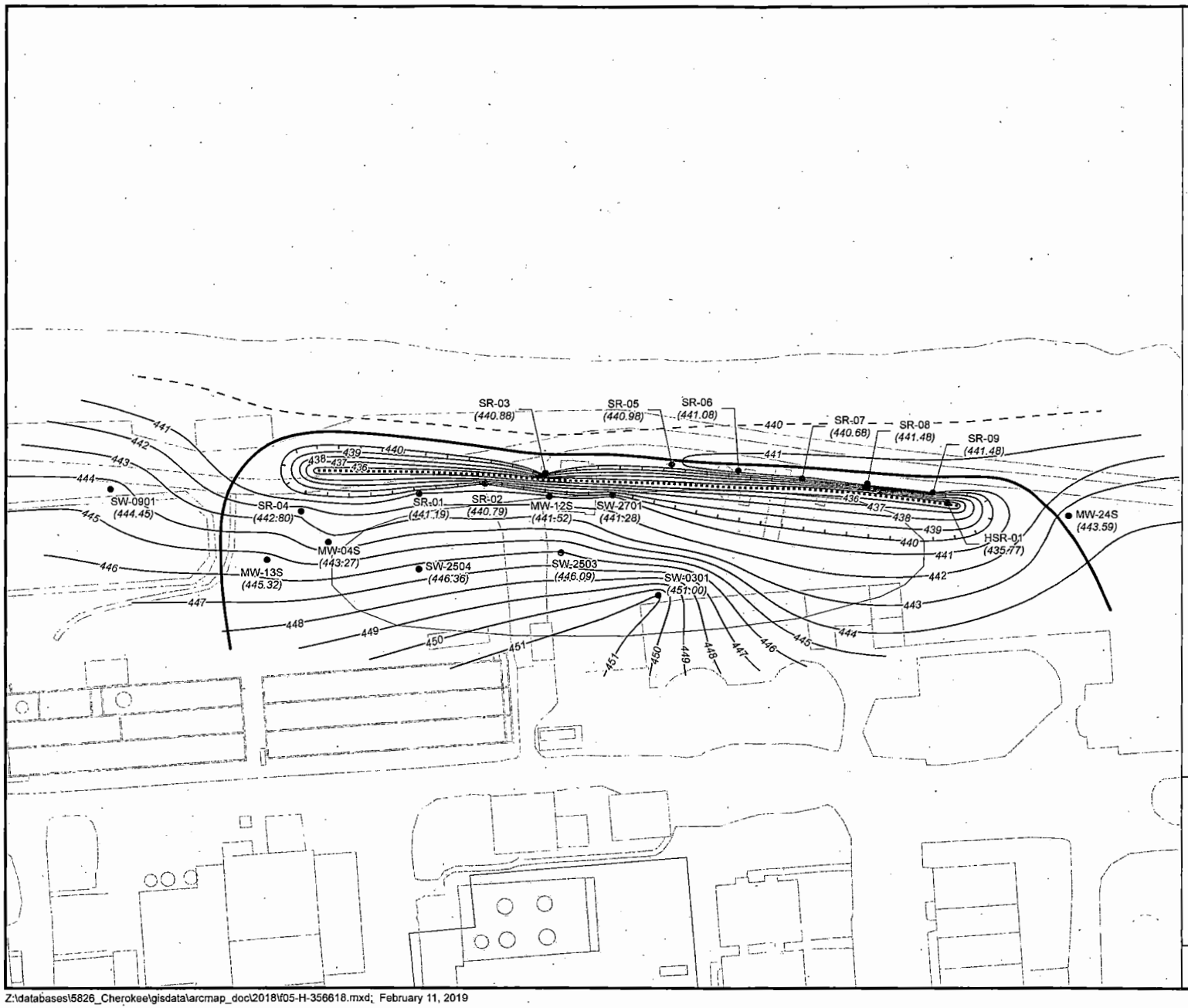


N
W
E
S

LEGEND

- Well location and Water Level Elevation
- Piezometric Surface Elevation (ft amsl)
- Closed Piezometric Surface
- Inferred Piezometric Surface
- HSR-1 Screened Interval
- Estimated Capture Zone
- Solid Waste Management Units (SWMU)

Notes:

1. Map displayed in Universal Transverse Mercator Projection, Zone 18 North, North American Datum o 1983 (NAD83).
2. Water levels measured on September 27, 2018.

0 37.5 75 150
Feet

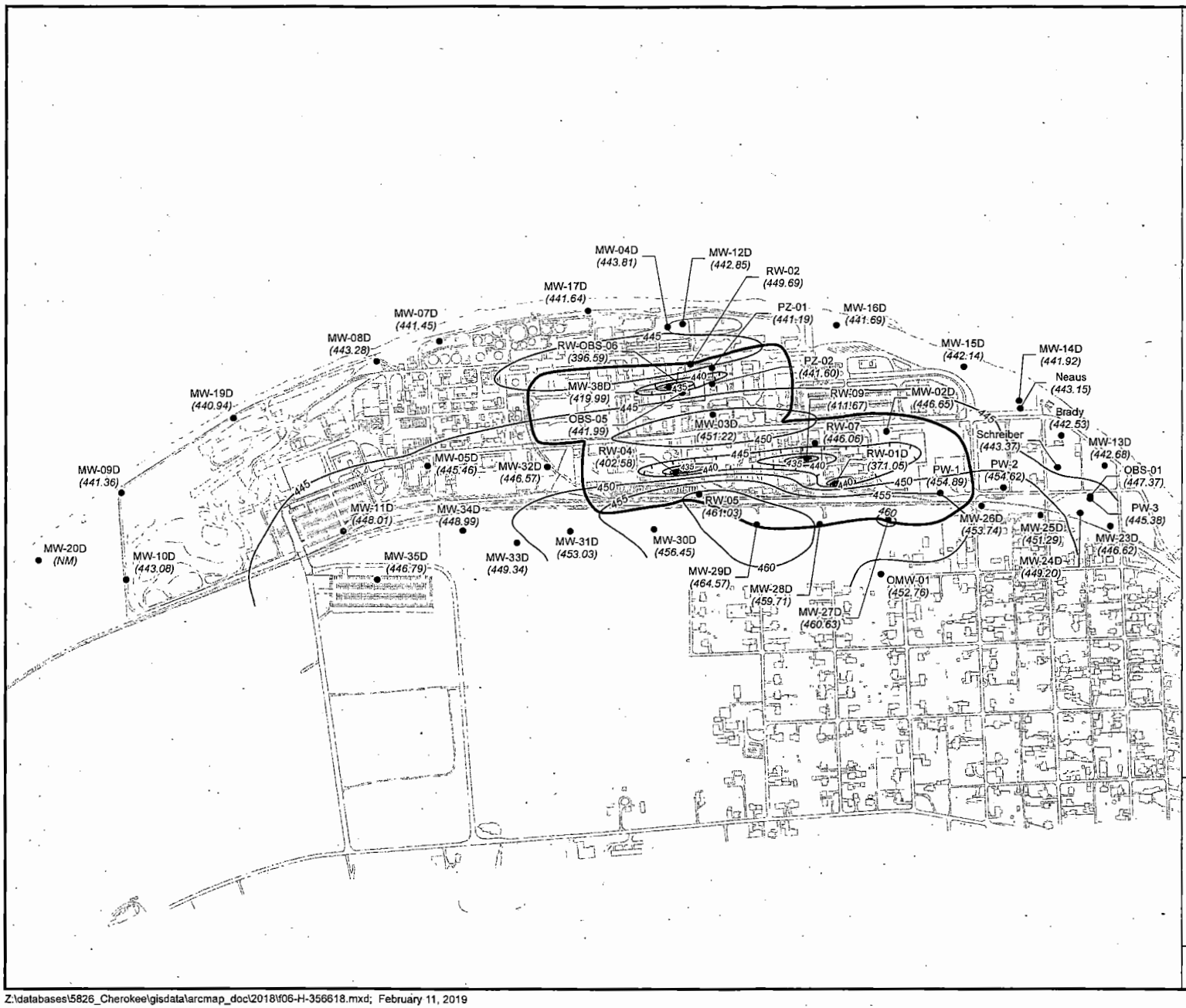
FIGURE 10

Piezometric Elevation Contours in the Vicinity of the Solvent Recover Area of the Alluvial Aquifer, September 27, 2018

Cherokee Pharmaceuticals LLC,
A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH

Z:\databases\5826_Cherokee\gisdata\arcmap_doc\2018\f05-H-356618.mxd; February 11, 2019



LEGEND

- Well location and Water Level Elevation
- Piezometric Surface Elevation (ft amsl)
- Closed Piezometric Surface
- Solid Waste Management Units (SWMU)
- Estimated Capture Zone

Notes:

1. Map displayed in Universal Transverse Mercator Projection, Zone 18 North, North American Datum of 1983 (NAD83).
2. Water levels measured on September 27, 2018.
3. Contours proximal to RW-01D estimated by calculating the average RW-01D water level elevatio using datalogger data.
4. NM – Not Measured.

0 300 600 1,200
Feet

FIGURE 11

Piezometric Elevation Contours in the Shallow Bedrock Aquifer, September 27, 2018

Cherokee Pharmaceuticals LLC,
A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH

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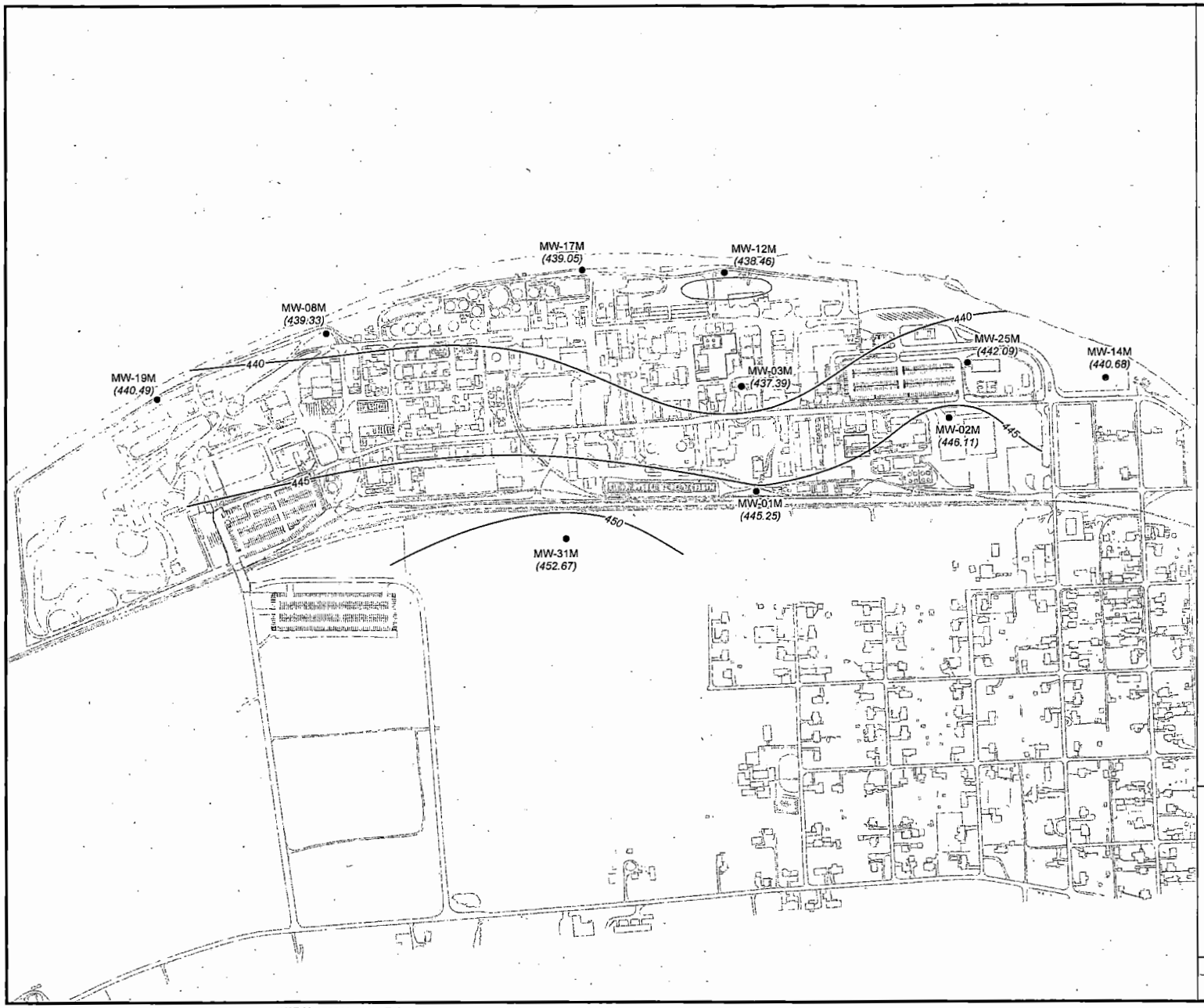

LEGEND

- Well location and Water Level Elevation
- Piezometric Surface Elevation (ft amsl)
- Solid Waste Management Units (SWMU)

Notes:

1. Map displayed in Universal Transverse Mercator Projection, Zone 18 North, North American Datum of 1983 (NAD83).
2. Water levels measured on September 27, 2018.

0 250 500 1,000
Feet

FIGURE 12

Piezometric Elevation Contours in the Intermediate-depth Bedrock Aquifer, September 27, 2018

Cherokee Pharmaceuticals LLC,
A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania

HATCH

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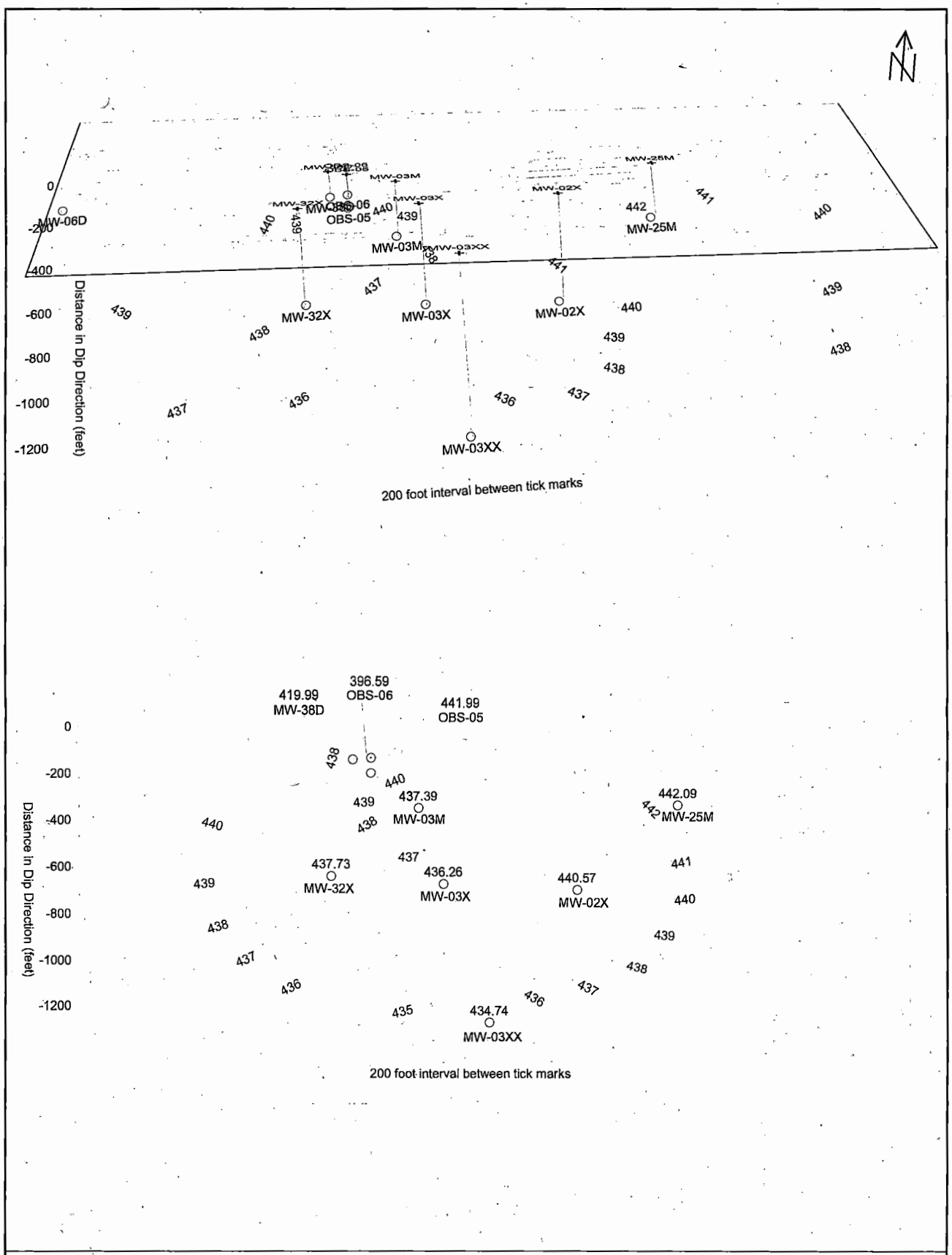

FIGURE 13
Perspective View of the Piezometric Surface within the Inclined
Stratigraphic Interval Intersected by the 888 foot-deep MW-03XX Well, September 27, 2018,
Cherokee Pharmaceuticals, LLC, A Subsidiary of Merck Sharp & Dohme Corp.,
Riverside, Pennsylvania.