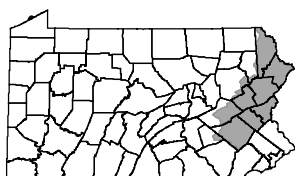
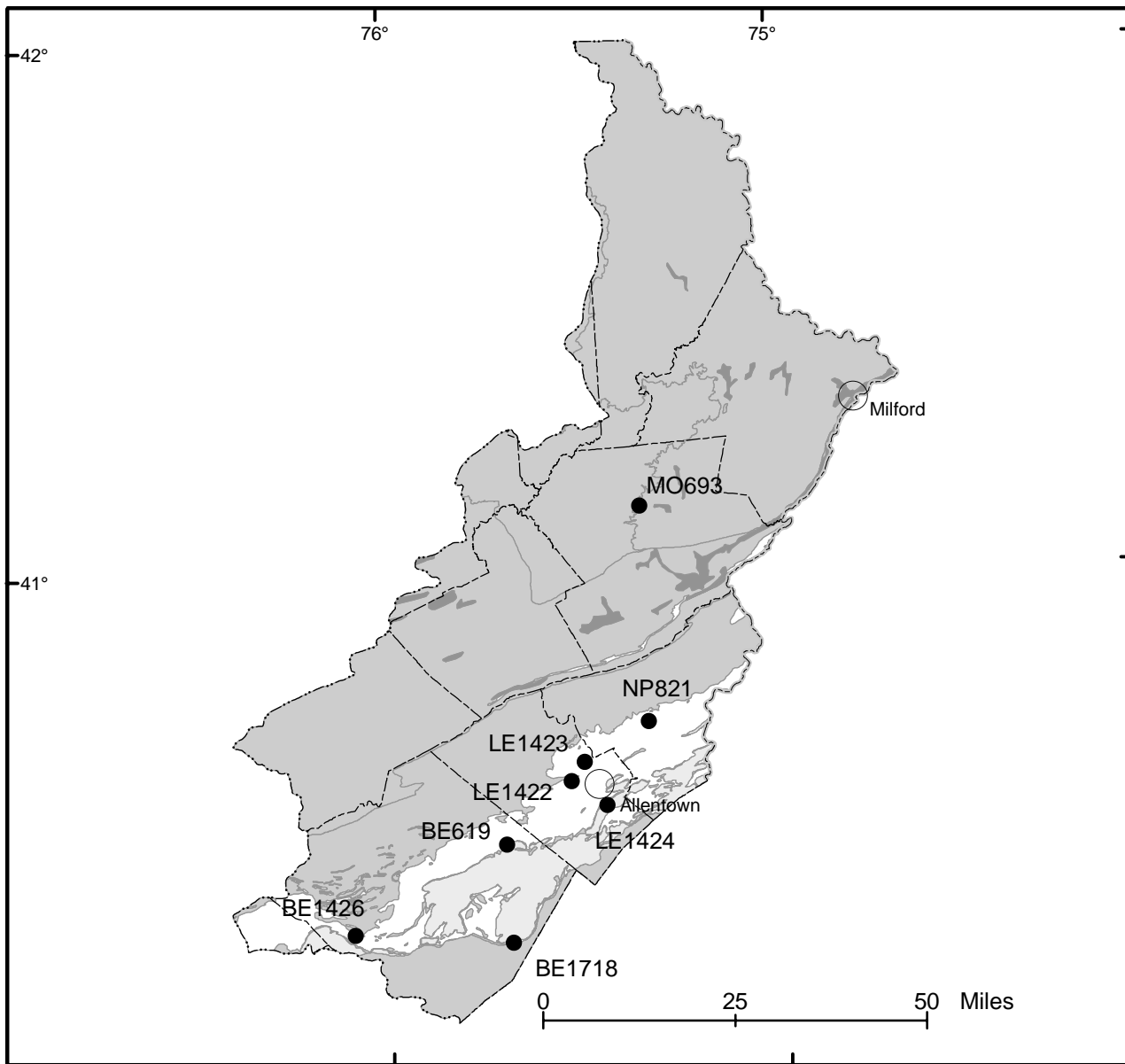


**GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
STATEWIDE ASSESSMENT OF METHYL-TERT-BUTYL-ETHER (MTBE) IN GROUND WATER**

The following table contains water-quality data from wells sampled as part of a study of MTBE in ground water in Pennsylvania. The U.S. Geological Survey, in cooperation with the Pennsylvania Department of Environmental Protection, conducted the study. The wells were sampled for MTBE, a gasoline additive, BTEX compounds (benzene, toluene, ethyl benzene, and xylene), pH, specific conductance, and temperature. Samples were collected from 86 wells in four geologic settings, and in various land use settings, across the state. Other data for the project can be found in the annual Water Data Reports PA-02-2, and PA-02-3. For additional information, contact Steve McAuley at the U.S. Geological Survey, 1000 Church Hill Road, Pittsburgh, PA 15025; 412-490-3801 (email: smcauley@usgs.gov).



EXPLANATION

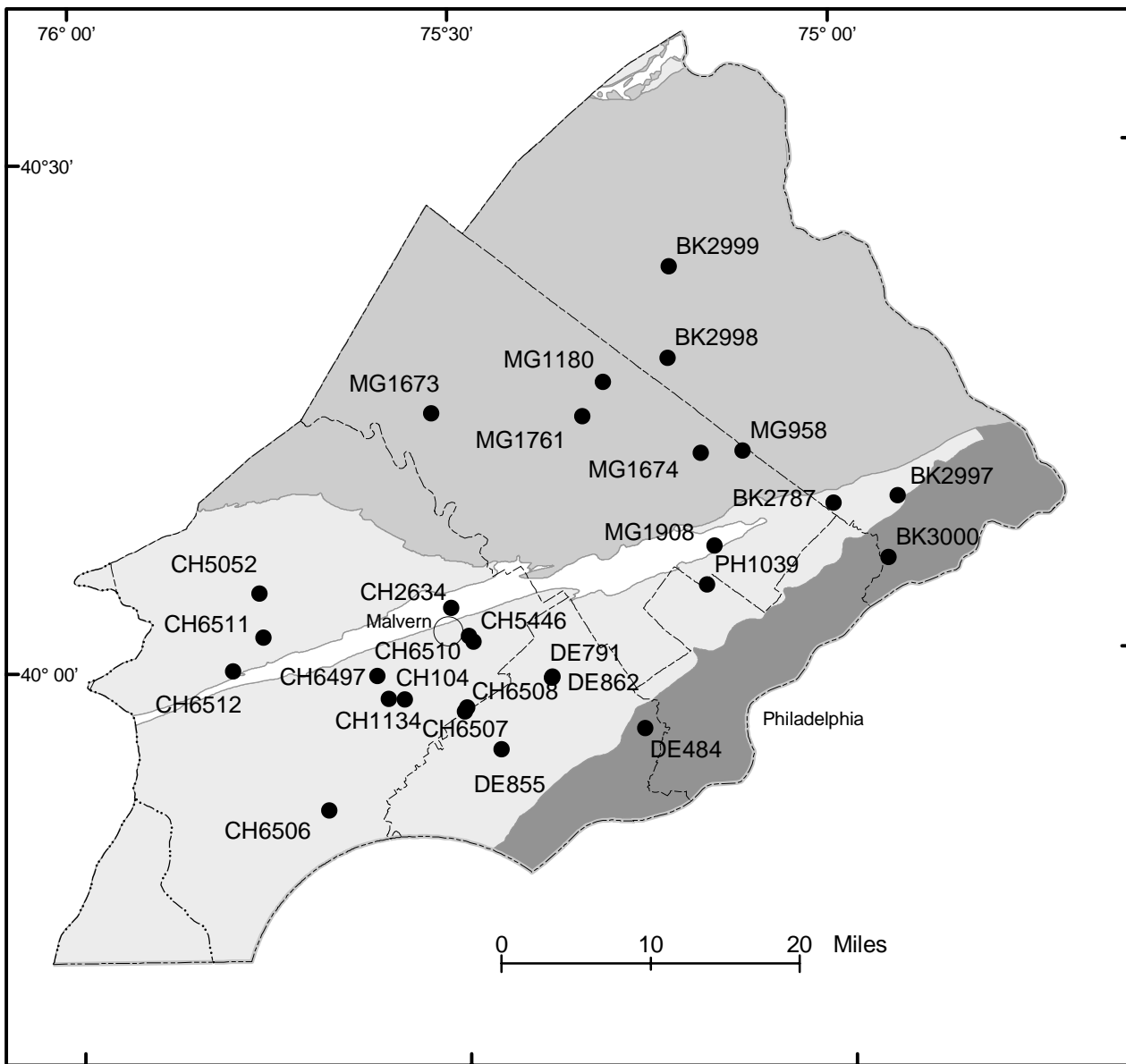
● Sampled Wells

Aquifer Type

- | | | | |
|---|-------------|---|----------------|
|  | Carbonate |  | Siliciclastic |
|  | Crystalline |  | Unconsolidated |

Figure 13.--Location of wells sampled as part of the MTBE in ground water project in the upper Delaware River Basin.

GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
STATEWIDE ASSESSMENT OF METHYL-TERT-BUTYL-ETHER (MTBE) IN GROUND WATER PROJECT--Continued



EXPLANATION

● Sampled Wells

Aquifer Type

- | | |
|---|--|
|  Carbonate |  Siliciclastic |
|  Crystalline |  Unconsolidated |

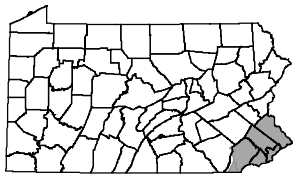


Figure 14.--Location of wells sampled as part of the MTBE in ground water project in the lower Delaware River Basin.

GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
STATEWIDE ASSESSMENT OF METHYL-TERT-BUTYL-ETHER (MTBE) IN GROUND WATER PROJECT--Continued

REMARKS.--Explanation of column headings--SITE IDENTIFIER: 15-digit unique identifier based on site latitude (first six digits), longitude (digits seven through thirteen), and a 2-digit sequence number suffix; ELEVATION OF LAND SURFACE: land-surface at well site in feet above sea level; Sampling method code 4040 = submersible pump; Sampling condition code 8 = pumping; µS/CM: microsiemens per centimeter at 25 degrees Celsius; DEG C: degrees Celsius; µG/L: micrograms per liter; "<" = less than; "E" = estimated. Quality-control data for a replicate sample are shown for Local Well Number BE1426 on November 18, 2001 at 1306.

WATER-QUALITY DATA, WATER YEARS OCTOBER 2000 TO SEPTEMBER 2002

SITE IDENTIFIER	LOCAL WELL NUMBER	DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	DEPTH OF WELL, TOTAL (FEET) (72008)	ELEV. OF LAND SURFACE DATUM ABOVE NGVD) (72000)	SAMPLING METHOD, CODES (82398)	PH WATER FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (µS/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
BERKS COUNTY												
401852075412201	BE 1718	12-18-01	1145	1028	80020	--	223	310	4040	7.5	465	13.4
401958076050201	BE 1426	11-08-01	1305	1028	80020	43.83	350	365	4040	7.0	666	13.2
401958076050201	BE 1426	11-08-01	1306	1028	80020	--	350	360	4040	--	--	--
402954075420701	BE 619	08-03-01	1137	1028	80020	--	248	520	4040	7.9	280	11.9
BUCKS COUNTY												
400547074570001	BK 3000	12-04-01	1615	1028	80020	--	90	80	4040	6.0	225	15.0
400902075010701	BK 2787	10-23-01	1105	1028	80020	17.00	37	255	4040	5.5	342	14.1
400920074561101	BK 2997	09-24-01	1325	1028	80020	37.52	180	115	4040	5.8	556	13.2
401740075133201	BK 2998	11-15-01	1210	1028	80020	15.11	110	335	4040	--	581	13.4
402257075131501	BK 2999	12-04-01	1230	1028	80020	79.93	100	475	4040	7.5	1010	13.9
CHESTER COUNTY												
394800075425801	CH 6509	12-14-01	1155	1028	80020	22.82	200	350	4040	6.3	311	12.4
395157075401802	CH 6506	08-23-01	1151	1028	80020	20.70	250	435	4040	6.6	336	13.6
395730075294401	CH 6508	12-11-01	1710	1028	80020	15.50	100	297	4040	6.6	140	13.3
395744075293301	CH 6507	12-10-01	1150	1028	80020	57.43	258	328	4040	9.5	223	12.4
395817075341901	CH 1134	12-19-01	1555	1028	80020	17.07	120	415	4040	6.1	391	12.9
395821075353201	CH 104	08-16-01	1120	1028	80020	12.85	55	445	4040	6.0	966	14.7
395940075362401	CH 6497	08-15-01	1230	1028	80020	--	100	470	4040	5.6	289	15.5
400007075472501	CH 6512	12-19-01	1110	1028	80020	27.51	100	610	4040	5.5	352	12.3
400133075285801	CH 5446	11-13-01	1310	1028	80020	42.88	285	450	4040	--	--	--
400152075291801	CH 6510	12-19-01	1215	1028	80020	36.82	260	445	4040	5.8	192	12.3
400202075450301	CH 6511	12-19-01	1510	1028	80020	41.12	85	560	4040	4.8	193	12.1
400330075303601	CH 2634	12-12-01	1240	1028	80020	--	110	270	4040	7.2	558	12.0
400436075451701	CH 5052	12-18-01	1500	1028	80020	4.86	120	360	4040	5.2	184	16.4
DELAWARE COUNTY												
395516075270101	DE 855	12-12-01	1540	1028	80020	29.05	100	350	4040	7.1	363	12.5
395618075160001	DE 484	12-11-01	1425	1028	80020	--	100	120	4040	6.9	460	12.3
395920075230301	DE 862	09-20-01	1615	1028	80020	29.14	--	330	4040	6.2	256	12.7
395925075225801	DE 791	09-20-01	1300	1028	80020	--	--	315	4040	8.3	361	12.4
LEHIGH COUNTY												
403408075265801	LE 1424	12-13-01	1210	1028	80020	9.86	100	590	4040	6.1	245	11.8
403654075321201	LE 1422	08-02-01	1137	1028	80020	37.65	152	430	4040	7.2	705	12.8
403902075301301	LE 1423	08-14-01	1125	1028	80020	--	150	365	4040	7.0	492	11.3
MONROE COUNTY												
410740075210101	MO 693	11-19-01	1120	1028	80020	135.19	300	1700	4040	7.0	264	10.8
MONTGOMERY COUNTY												
400645075102001	MG 1908	12-11-01	1440	1028	80020	14.30	400	240	4040	7.3	880	13.0
401206075111001	MG 1674	11-16-01	1225	1028	80020	--	285	244	4040	7.3	464	12.5
401211075075701	MG 958	08-16-01	1505	1028	80020	--	271	342	8010	7.1	391	12.9
401425075201201	MG 1761	11-29-01	1525	1028	80020	8.53	220	270	4040	7.7	492	13.7
401448075314901	MG 1673	10-22-01	1310	1028	80020	17.36	120	343	4040	7.2	461	13.2
401622075183401	MG 1180	11-14-01	1255	1028	80020	--	190	378	4040	7.6	692	13.3
NORTHAMPTON COUNTY												
404324075202601	NP 821	12-13-01	1535	1028	80020	59.05	110	400	4040	7.4	641	11.0
PHILADELPHIA COUNTY												
400429075105801	PH 1039	12-12-01	1015	1028	80020	23.60	26.6	380	4040	5.5	107	14.5

GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
STATEWIDE ASSESSMENT OF METHYL-TERT-BUTYL-ETHER (MTBE) IN GROUND WATER PROJECT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	XYLENE WATER UNFLTRD REC (µG/L) (81551)	BENZENE 14BRFL- SURROG VOC UNFLTRD REC PERCENT (99834)	BENZENE TOTAL (µG/L) (34030)	ETHANE 12DICL SURROG VOC UNFLTRD REC PERCENT (99832)	ETHYL- BENZENE TOTAL (µG/L) (34371)	METHYL TERT- BUTYL ETHER WAT UNF REC (µG/L) (78032)	META/ PARA- XYLENE WATER UNFLTRD REC (µG/L) (85795)	O- XYLENE WATER WHOLE TOTAL (µG/L) (77135)	TOLUENE D8 SURROG VOC UNFLTRD REC PERCENT (99833)	TOLUENE TOTAL (µG/L) (34010)	SAM- PLING CONDI- TION (72006)	SET NUMBER VOC AN- ALYSIS (NO.) (99931)
BERKS COUNTY												
12-18-01	<.2	79.2	<.2	124	<.2	<.2	<.2	<.2	101	<.2	8.00	6.01
11-08-01	<.2	85.2	<.2	122	<.2	<.2	<.2	<.2	104	<.2	8.00	6.01
11-08-01	<.2	86.3	<.2	124	<.2	<.2	<.2	<.2	104	<.2	8.00	6.01
08-03-01	<.2	83.0	<.2	112	<.2	<.2	<.2	<.2	98.6	<.2	8.00	7.01
BUCKS COUNTY												
12-04-01	<.2	85.4	<.2	122	<.2	.6	<.2	<.2	103	<.2	8.00	6.01
10-23-01	<.2	94.7	<.2	112	<.2	5.6	<.2	<.2	103	<.2	8.00	6.01
09-24-01	<.2	93.6	<.2	92.2	<.2	.3	<.2	<.2	96.2	<.2	8.00	2.01
11-15-01	<.2	97.9	<.2	105	<.2	<.2	<.2	<.2	99.1	<.2	8.00	7.01
12-04-01	<.2	85.1	<.2	120	<.2	.4	<.2	<.2	103	<.2	8.00	6.01
CHESTER COUNTY												
12-14-01	<.2	75.3	<.2	131	<.2	<.2	<.2	<.2	100	<.2	8.00	6.01
08-23-01	<.2	103	<.2	103	<.2	.2	<.2	<.2	96.2	<.2	8.00	2.01
12-11-01	<.2	74.6	<.2	130	<.2	<.2	<.2	<.2	99.4	<.2	8.00	6.01
12-10-01	<.2	85.0	<.2	123	<.2	<.2	<.2	<.2	103	<.2	8.00	6.01
12-19-01	<.2	83.6	<.2	124	<.2	.3	<.2	<.2	105	<.2	8.00	6.01
08-16-01	<.2	103	<.2	97.0	<.2	<.2	<.2	<.2	91.3	<.2	8.00	2.01
08-15-01	<.2	106	<.2	98.6	<.2	.5	<.2	<.2	96.7	<.2	8.00	2.01
12-19-01	<.2	82.9	<.2	122	<.2	.3	<.2	<.2	99.6	<.2	8.00	6.01
11-13-01	<.2	84.8	<.2	125	<.2	<.2	<.2	<.2	102	<.2	8.00	6.01
12-19-01	<.2	88.6	<.2	126	<.2	<.2	<.2	<.2	99.6	<.2	8.00	6.01
12-19-01	<.2	79.5	<.2	121	<.2	.4	<.2	<.2	100	<.2	8.00	6.01
12-12-01	<.2	76.2	<.2	127	<.2	<.2	<.2	<.2	101	<.2	8.00	6.01
12-18-01	<.2	79.4	<.2	120	<.2	.6	<.2	<.2	96.6	<.2	8.00	6.01
DELAWARE COUNTY												
12-12-01	<.2	77.4	<.2	129	<.2	1.0	<.2	<.2	100	<.2	8.00	6.01
12-11-01	<.2	74.9	<.2	126	<.2	<.2	<.2	<.2	99.1	<.2	8.00	6.01
09-20-01	<.2	76.5	<.2	97.2	<.2	<.2	<.2	<.2	91.2	<.2	8.00	5.01
09-20-01	<.2	78.5	<.2	103	<.2	<.2	<.2	<.2	92.4	<.2	8.00	5.01
LEHIGH COUNTY												
12-13-01	<.2	73.7	<.2	127	<.2	.7	<.2	<.2	99.8	<.2	8.00	6.01
08-02-01	<.2	80.9	<.2	112	<.2	<.2	<.2	<.2	98.3	<.2	8.00	7.01
08-14-01	<.2	107	<.2	98.9	<.2	<.2	<.2	<.2	94.3	<.2	8.00	2.01
MONROE COUNTY												
11-19-01	<.2	98.9	<.2	102	<.2	E.1	<.2	<.2	98.3	<.2	8.00	7.01
MONTGOMERY COUNTY												
12-11-01	<.2	72.8	<.2	124	<.2	13.4	<.2	<.2	97.7	<.2	8.00	6.01
11-16-01	<.2	99.4	<.2	103	<.2	<.2	<.2	<.2	97.5	<.2	8.00	7.01
08-16-01	<.2	106	<.2	101	<.2	E.1	<.2	<.2	100	<.2	8.00	2.01
11-29-01	<.2	85.9	<.2	119	<.2	<.2	<.2	<.2	102	<.2	8.00	6.01
10-22-01	<.2	93.1	<.2	114	<.2	<.2	<.2	<.2	103	<.2	8.00	6.01
11-14-01	<.2	86.2	<.2	125	<.2	<.2	<.2	<.2	107	<.2	8.00	6.01
NORTHAMPTON COUNTY												
12-13-01	<.2	76.2	<.2	129	<.2	<.2	<.2	<.2	101	<.2	8.00	6.01
PHILADELPHIA COUNTY												
12-12-01	<.2	76.4	<.2	128	<.2	.2	<.2	<.2	99.3	<.2	8.00	6.01

GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
STATEWIDE ASSESSMENT OF METHYL-TERT-BUTYL-ETHER (MTBE) IN GROUND WATER PROJECT--Continued

REMARKS.--The following are quality control samples (blanks) processed during the 2001 water year and are defined in the explanation of records section entitled, "Water Quality-Control Data"; "<" = less than.

QUALITY-CONTROL DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2002

SITE IDENTIFIER	LOCAL WELL NUMBER	DATE	TIME	AGENCY COL-LECTING SAMPLE (CODE NUMBER)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER)	XYLENE WATER UNFLTRD REC (µG/L) (81551)	BENZENE 14BRFL-SURROG UNFLTRD REC PERCENT (99834)	BENZENE TOTAL REC (µG/L) (34030)	ETHANE 12DICL SURROG UNFLTRD REC PERCENT (99832)	ETHYL-BENZENE TOTAL REC (µG/L) (34371)	METHYL-TERT-BUTYL-ETHER WAT UNF REC (µG/L) (78032)
				(00027)	(00028)	(81551)	(99834)	(34030)	(99832)	(34371)	(78032)
402954075420701	BE 619	08-03-01	1138	1028	80020	<.2	99.2	<.2	117	<.2	<.2
403902075301301	LE 1423	08-14-01	1050	1028	80020	<.2	107	<.2	101	<.2	<.2

DATE	META/PARA-XYLENE WATER UNFLTRD REC (µG/L) (85795)	O-XYLENE WHOLE TOTAL REC (µG/L) (77135)	TOLUENE D8 SURROG UNFLTRD REC PERCENT (99833)	TOLUENE TOTAL REC (µG/L) (34010)	BLANK, SOURCE OF SOLU-TION (CODE) (99101)	BLANK, TYPE OF SAMPLE (CODE) (99102)	BLANK, TYPE OF SOLU-TION (CODE) (99100)	REF-ERENCE MA-TERIAL SPIKE LOT NUMBER (99104)	SET VOC AN-ALYSIS (NO.) (99931)
08-03-01	<.2	<.2	102	<.2	10.00	30.00	50.00	--	5.01
08-14-01	<.2	<.2	99.5	<.2	10.00	100.00	50.00	90217	2.01

REMARKS.--Concentrations of volatile organic (fuel) compounds in environmental sample and spiked replicate from site ID 400920074561101 (Local identifier BK 2997) and calculated recoveries, in percent; "<" = less than. Less-than values were set equal to zero for calculations; E = estimated value.

QUALITY-CONTROL DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2002--Continued

Parameter code	Constituent	Concentration, in micrograms per liter				Recovery in percent [(B-A)/C] x 100
		Laboratory results				
		Environmental sample (not spiked) (09/24/01 @ 1325)	Replicate (spiked) (09/24/01 @ 1327)	a Calculated concentration in replicate		
		A	B	C		
78032	Methyl-t-butyl ether, (MTBE)	0.3180 b	0.9571	.746		86%
34030	Benzene	<0.2	0.3850	.465		83%
34010	Toluene	<0.2	0.3522	.469		75%
34371	Ethyl benzene	<0.2	0.3503	.469		75%
77135	o-Xylene	<0.2	0.2414	.280		86%
85795	m & p-Xylene	<0.2	0.4533	.559		81%
81551	Xylenes (total)	<0.2	0.6947	.839		83%
Mean recovery						81%
Standard deviation						4.64
Median recovery						83%

a Calculated concentration of spike in sample equals the concentration of the spike solution, in micrograms per milliliter x amount of spike added, in milliliters, divided by the spiked sample volume, in liters.

b Unrounded value was used in recovery calculations.