

**GROUND-WATER DATA COLLECTED AT SPECIAL-STUDY SITES
GROUND WATER PESTICIDES NETWORK PROJECT**

The following tables contain water-quality data from wells sampled in Pennsylvania during the second year of the Ground Water Pesticides Network project. The 5-year study is being conducted by the U.S. Geological Survey in cooperation with the Pennsylvania Department of Agriculture. Sites were selected to meet project objectives in the Annual Baseline Network, the Baseline Trends Network, and Hot-Spot Trends Networks. Twenty Annual Baseline Network sites were selected in the Eastern Lake hydrogeologic setting in Erie County to fill an existing data gap in ground-water quality; sites in this network are only sampled one time as part of an occurrence survey. Sixteen Baseline Trend Network sites were selected in four hydrogeologic settings (4 sites per setting) of predominantly carbonate bedrock where wells had previous detections of pesticides. The wells in this network are sampled yearly to evaluate trends. The three Hot-Spot Trend Network sites have well water with recorded pesticide concentrations at or above the Pennsylvania Pesticides and Ground Water Strategy action levels. These wells are sampled four times per year at: 1) declining water levels; 2) stable water levels; 3) rising water levels due to spring/summer flush; and 4) rising water levels due to winter recharge. Samples are identified by network in the third column heading within the table: Baseline Trends = BT, Baseline Trends Quality Assurance = BT-QA, and Hot-Spot Trends = HST. Well locations are shown in figures 16 and 17. The following analytical methods were used to determine results for the samples listed: PA Department of Environmental Protection Laboratory (Analyzing Agency Code 9813), pesticides -SAC USGS2 (EPA 525.2) solid phase extraction gas chromatography/mass spectrometry, nitrate/nitrite - colorimetry (cadmium reduction), total coliform and E. coli bacteria - Colilert Quantitray. Pesticides analyzed for this study are identified in the table which follows quality-control data. Other data for this project can be found in the annual Water Data Report PA-04-2 (Susquehanna and Potomac River Basins) and PA-04-3 (Ohio and St. Lawrence River Basins). For additional information, contact Connie Loper at the U.S. Geological Survey, 215 Limekiln Road, New Cumberland, PA 17070; 717-730-6976 (email caloper@usgs.gov).

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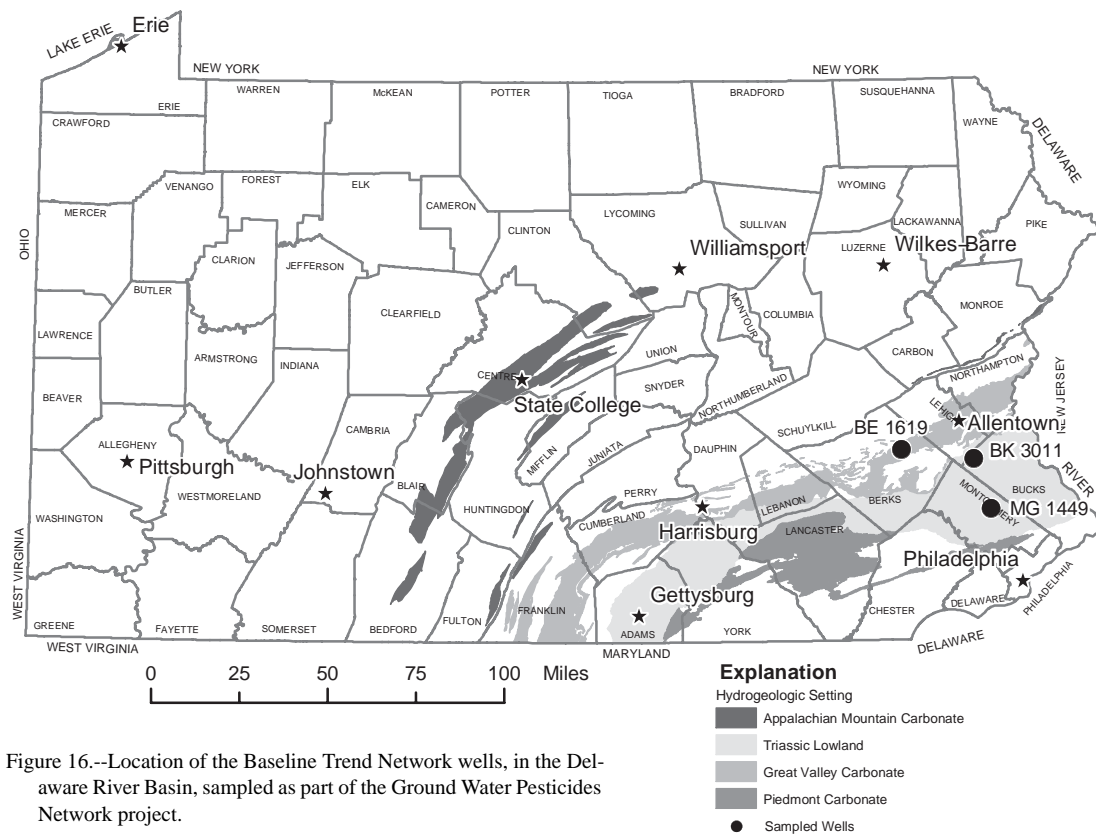


Figure 16.--Location of the Baseline Trend Network wells, in the Delaware River Basin, sampled as part of the Ground Water Pesticides Network project.

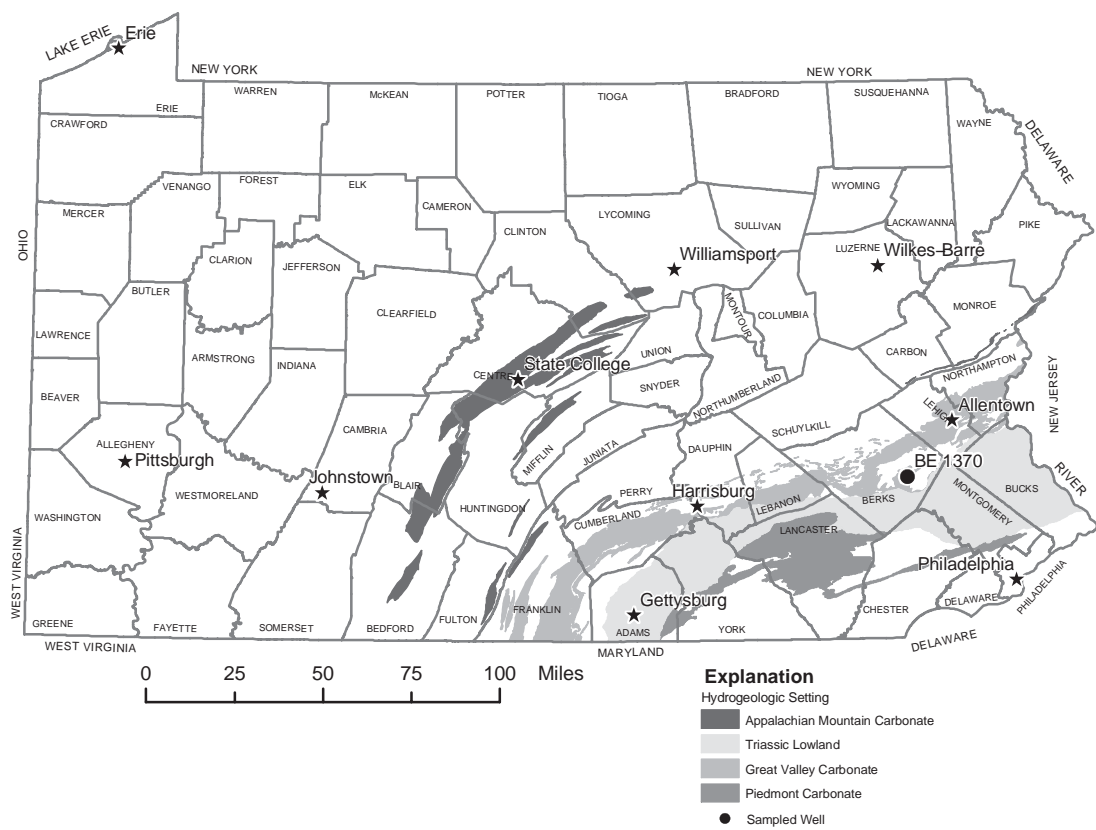


Figure 17.--Location of the Hot-Spot Trend Network well, in the Delaware River Basin, sampled as part of the Ground Water Pesticides Network project.

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REMARKS.--Explanation of column headings--Station number: 15-digit unique identifier based on site latitude (first six digits), longitude (digits seven through thirteen), and a 2-digit sequence number suffix; Altitude of land surface: land-surface at well site in feet above sea level; Agency analyzing sample code 9813 = PA Department of Environmental Protection Lab in Harrisburg, PA; µS/cm: microsiemens per centimeter at 25 degrees Celsius; deg C: degrees Celsius; µg/L: micrograms per liter (parts per billion); mg/L = milligrams per liter (parts per million); "<" = less than; ">" = more than; MPN = Most Probable Number; GF = Glass fiber filter; Network Identifier HST = Hot-Spot Trends, BT = Baseline Trends, or BT-QA = Baseline Trends Quality Assurance. Quality-control data for replicate samples are shown for Local Well BE 1619 ([nitrate + nitrite] and nitrite) on April 14, 2004 at 1116 and 1117.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Station number	Local Well ID	Network Identifier	Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Depth of well, feet below LSD (72008)	Depth to water level, feet below LSD (72019)	Altitude of land surface feet (72000)	Pump or flow period to sampling, minutes (72004)	Sampling method, code (82398)	Turbidity, water, unfltrd field, NTU (61028)	
BERKS COUNTY													
402238075443401	BE 1370	HST	10-08-03	1005	1028	9813	110	--	330	45	4040	.1	
	BE 1370	HST	12-03-03	1020	1028	9813	110	--	330	45	4040	--	
	BE 1370	HST	04-19-04	1055	1028	9813	110	--	330	40	4040	.7	
402934075481801	BE 1370	HST	07-21-04	1000	1028	9813	110	--	330	40	4040	--	
	BE 1619	BT	04-14-04	1115	1028	9813	150	30.35	400	45	4040	.4	
	BE 1619	BT-QA	04-14-04	1116	1028	9813	150	--	400	45	4040	--	
	BE 1619	BT-QA	04-14-04	1117	1028	9813	150	--	400	45	4040	--	
BUCKS COUNTY													
402704075245701	BK 3011	BT	04-07-04	1055	1028	9813	100	--	550	40	4040	.0	
MONTGOMERY COUNTY													
401446075193701	MG 1449	BT	04-05-04	1140	1028	9813	114.5	10.50	265	55	4040	1.8	
Date	Baro-metric pres-sure, mm Hg (00025)	Dis-solved oxygen, mg/L (00300)	Dis-solved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unfltrd µS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)	Nitrate water, fltrd, mg/L (71851)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + Nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L (71856)	Nitrite water, fltrd, mg/L as N (00613)	E coli, Defined Substr. Tech., water, MPN/ 100 mL (50468)
BERKS COUNTY													
10-08-03	758	5.6	53	7.2	710	13.6	12.6	--	--	16.2	--	<.010	95
12-03-03	766	7.5	72	7.1	721	13.9	13.8	--	--	21.5	--	<.010	<1
04-19-04	759	9.2	87	7.3	719	20.7	12.4	--	--	21.4	--	<.010	<1
07-21-04	757	7.4	71	7.0	708	25.7	13.0	84.6	19.1	19.1	.066	.020	<1
04-14-04	748	7.3	68	7.3	544	12.2	11.2	--	--	9.61	--	<.010	<1
04-14-04	--	--	--	--	--	--	--	--	--	9.52	--	<.010	--
04-14-04	--	--	--	--	--	--	--	--	--	9.48	--	<.010	--
BUCKS COUNTY													
04-07-04	743	.0	.0	8.0	271	20.0	11.1	--	--	<.040	--	<.010	<1
MONTGOMERY COUNTY													
04-05-04	751	1.4	14	8.2	414	.7	13.5	--	--	2.78	--	<.010	<1

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Date	Total coli-form, Defined Tech., MPN/100 mL (50569)	Aceto-chlor, water, fltrd, µg/L (49260)	Ala-chlor, water, fltrd, µg/L (46342)	Atra-zine, water, fltrd, µg/L (39632)	Chloro-thaloni, water, fltrd, 0.7µ GF µg/L (49306)	Chlor-pyrifos, water, fltrd, µg/L (38933)	Dichlo-benil, water, fltrd, µg/L (63009)	Fenpro-pathrin, water, fltrd, µg/L (64044)	Hexa-cyclo-penta-diene, wat unf µg/L (34386)	Metola-chlor, water, fltrd, µg/L (39415)	Metri-buzin, water, fltrd, µg/L (82630)	Pendi-meth-alin, water, fltrd, 0.7µ GF µg/L (82683)	Phosmet water, fltrd, µg/L (61601)
BERKS COUNTY													
10-08-03	>200	<.100	<.10	<.10	<.10	<.10	--	--	<.10	.86	<.10	<.100	--
12-03-03	1	<.110	<.11	<.11	<.11	<.11	--	--	<.11	.73	<.11	<.110	--
04-19-04	1	<.100	<.10	<.10	<.10	<.10	--	--	<.10	.22	<.10	<.100	--
07-21-04	48	<.100	.98	.26	<.10	<.10	<.10	<.10	<.10	2.02	<.10	<.100	<.100
04-14-04	6	<.100	<.10	<.10	<.10	<.10	--	--	<.10	<.10	<.10	<.100	--
04-14-04	--	--	--	--	--	--	--	--	--	--	--	--	--
04-14-04	--	--	--	--	--	--	--	--	--	--	--	--	--
BUCKS COUNTY													
04-07-04	<1	<.100	<.10	<.10	<.10	<.10	--	--	<.10	<.10	<.10	<.100	--
MONTGOMERY COUNTY													
04-05-04	<1	<.250	<.25	<.25	<.25	<.25	--	--	<.25	<.25	<.25	<.250	--

Date	Sima-zine, water, fltr, µg/L (04035)	Purpose of site visit, code (50280)	Sample purpose code (71999)	Sam-pling condi-tion, code (72006)	Type of sample related QA data, code (99111)	Type of repli-cate, code (99105)	County	Data base number	Medium code
BERKS COUNTY									
10-08-03	<.10	2001	50.00	8.00	1	--	011	01	6
12-03-03	<.11	2001	50.00	8.00	1	--	011	01	6
04-19-04	<.10	2001	50.00	8.00	1	--	011	01	6
07-21-04	<.10	2001	50.00	8.00	40	--	011	01	6
04-14-04	<.10	2001	50.00	8.00	100	--	011	01	6
04-14-04	--	2098	50.00	8.00	--	30.00	011	02	S
04-14-04	--	2098	50.00	8.00	--	30.00	011	02	S
BUCKS COUNTY									
04-07-04	<.10	2001	50.00	8.00	40	--	017	01	6
MONTGOMERY COUNTY									
04-05-04	<.25	2001	50.00	8.00	1	--	091	01	6

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401435076540910 - QUALITY-ASSURANCE RESULTS

REMARKS.--A U.S. Geological Survey Standard Reference Water Sample (SRWS) N78 was submitted to the Pennsylvania Department of Environmental Protection, Bureau of Laboratories, on April 14, 2004 for estimation of accuracy. Blank water concentration is assumed to be less than the reporting limits for purpose of calculation. The concentrations of nitrate-N (in mg/L) and the calculated recovery (in percent) are shown in the table below for estimation of accuracy. Less-than values were set equal to zero for calculation; "<" = less than; "mg/L" = milligrams per liter.

QUALITY-CONTROL DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Concentration, in milligrams per liter				
Constituent	Assumed concentration of blank Nitrate A	Laboratory results		
		Reported value of Nitrate in SRWS B	Prepared sample value of Nitrate in SRWS C	Recovery in percent [(B-A)/C] x 100
Nitrate-N	<0.04	1.59	1.60	99

402934075481801 - BE 1619

REMARKS.--Triplicate samples were submitted April 14, 2004 to the Pennsylvania Department of Environmental Protection Laboratory for analysis of nitrate and nitrite to determine an estimate of precision in results.

QUALITY-CONTROL DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004--Continued

Concentration, in milligrams per liter			
Sample time	Laboratory results		
	Nitrate-N	Nitrite-N	
1115	9.61	<.01	
1116	9.52	<.01	
1117	9.48	<.01	

Using the results from triplicate sample, the Relative Standard Deviation (RSD), otherwise known as the coefficient of variation, was calculated using the following formula:

RSD = standard deviation of triplicate results divided by the mean concentration of the triplicate results

RSD Nitrate-N = 0.007 mg/L

RSD Nitrite-N = 0.0 mg/L

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Compounds analyzed at the Pennsylvania Department of Environmental Protection Laboratory

Pesticide Schedule Used for Baseline Trends and Hot-Spot Trends Networks (SAC USGS2)	
Analyte	NWIS Parameter Code
EPA 525.2	
Acetochlor	49260
Alachlor	46342
Atrazine	39632
Chlorothalonil	49306
Chlorpyrifos (Dursban)	38933
Dichlobenil (added after April 2004)	63009
Fenpropathrin (added after April 2004)	64044
Hexachlorocyclopentadiene	34386
Metolachlor	39415
Metribuzin	82630
Pendimethalin	82683
Phosmet (added after April 2004)	61601
Simazine	04035

