

Table 4-1. Physical and chemical properties of groundwater samples from the Susquehanna River valley-fill aquifer system and from the Susquehanna River at Endicott, New York streamgage (01513706).

[Analyses by the U.S. Geological Survey (USGS) National Water-Quality Laboratory, Denver, Colorado, except as footnoted. Well locations are shown in figure 2. Bold values exceed one or more drinking-water standards (U.S. Environmental Protection Agency, 2011). BM 90, Endicott well #28; BM 50, Ranney well; BM 541, Supplemental Purge Well; BM2680, Tri-Cities Airport Test Well; (00080), National Water Information System (NWIS) parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter at 25 degrees Celsius ($^{\circ}\text{C}$); mg/L , milligrams per liter; CaCO_3 , calcium carbonate; pCi/L , picocuries per liter; N, nitrogen; P, phosphorus; $\mu\text{g}/\text{L}$, micrograms per liter; CIAT, ____; ---, no data; <, less than; e, estimated]

Well number ¹	Date	Water color, filtered, cobalt units (00080)	pH, field, standard units (00400)	Specific conductance, field, $\mu\text{S}/\text{cm}$ @ 25 $^{\circ}\text{C}$ (00095)	Water temperature, $^{\circ}\text{C}$ (00010)	Dissolved oxygen unfiltered, field, mg/L (00300)	Dissolved nitrogen gas unfiltered, mg/L (00597)	Carbon dioxide unfiltered, mg/L (00405)	Methane unfiltered, mg/L (85574)	Argon unfiltered, mg/L (82043)	Hydrogen sulfide (71875)	Hardness, filtered, mg/L as CaCO_3 (00900)	Calcium, filtered, mg/L (00915)
BM 90	2/23/2005	25	7.6	969	11.8	7.20	---	---	---	---	Absent	---	126.
BM 90	9/21/2009	5	7.3	1,220	14.9	0.30	22.8	31.0	0.04	0.698	Absent	400	128.
BM 90	7/10/2014	<1	7.4	1,540	12.0	0.30	24.9	30.0	0.03	0.736	Absent	554	175.
BM 50	10/24/2013	---	7.4	465	13.1	1.30	---	13.0	---	---	Absent	185	59.4
BM 541	10/24/2013	---	6.8	843	10.4	0.20	---	---	---	---	Absent	350	109.
BM2680	10/24/2013	---	7.9	476	9.5	4.00	---	---	---	---	Absent	---	59.2
BM2680	1/13/2014	<1	7.6	498	9.2	2.40	---	---	---	---	Absent	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	8.1	272	9.7	10.40	---	1.50	---	---	Absent	100	32.2

¹Number is local county (BM-Broome) well identification number assigned by the USGS.

²Fixed-endpoint titration at pH 4.5.

³Calculated from alkalinity.

⁴From Endicott Water Department, volatile organic compound (VOC) analysis for Ranney well water prior to treatment.

⁵From Endicott Wastewater Treatment Plant, VOC analysis of supplemental purge well effluent prior to treatment.

Well number ¹	Date	Magnesium, filtered, mg/L (00925)	Potassium, filtered, mg/L (00935)	Sodium, filtered, mg/L (00930)	Acid- neutralizing capacity, ² mg/L as CaCO ₃ (90410)	Alkalinity, ² filtered mg/L as CaCO ₃ (29801)	Bicarbonate, ³ filtered, mg/L as CaCO ₃ (29805)	Chloride, filtered, mg/L (00940)	Fluoride, filtered, mg/L (00950)	Silica, filtered, mg/L (00955)	Sulfate, filtered, mg/L (00945)	Residue at 180 °C, mg/L (70300)
BM 90	2/23/2005	19.9	2.00	53.7	258	258.	315	140.	°0.10	11.2	33.9	546
BM 90	9/21/2009	20.3	2.14	70.4	269	270.	329	201.	°0.07	10.7	36.0	736
BM 90	7/10/2014	28.3	2.54	103.	287	289.	---	312.	0.042	10.9	38.8	1,080
BM 50	10/24/2013	8.76	1.36	19.4	---	166.	---	40.7	0.06	7.56	10.5	252
BM 541	10/24/2013	19.0	4.52	24.3	---	353.	---	57.5	0.04	14.1	7.66	336
BM2680	10/24/2013	8.89	1.58	23.1	119	130.	---	57.4	0.05	7.44	20.5	253
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	4.73	1.43	12.7	---	94.8	---	22.0	0.05	1.54	7.66	150

Well number ¹	Date	Gross alpha radioactivity, pCi/L (01519)	Gross beta radioactivity, pCi/L (85817)	Total nitrogen, water, unfiltered, mg/L (00600)	Total nitrogen, water, filtered, mg/L (00602)	Organic nitrogen, water, unfiltered, mg/L (00605)	Organic nitrogen, water, filtered, mg/L (00607)	Ammonia plus organic nitrogen, filtered, mg/L as N (00623)	Ammonia plus organic nitrogen, unfiltered, mg/L as N (00625)	Ammonia, filtered, mg/L as N (00608)	Nitrate plus nitrite, filtered, mg/L as N (00631)
BM 90	2/23/2005	---	---	---	---	---	---	0.26	---	0.250	<.060
BM 90	9/21/2009	2.6	2.20	---	---	---	---	0.33	---	0.269	<.040
BM 90	7/10/2014	---	0.02	---	---	---	---	0.33	---	0.291	<.040
BM 50	10/24/2013	---	---	0.45	0.42	0.08	0.05	0.14	0.17	0.092	0.281
BM 541	10/24/2013	---	---	<5.10	<4.90	0.31	0.09	4.90	5.10	4.760	<.040
BM2680	10/24/2013	---	---	---	<0.15	---	<0.07	<0.07	---	<0.010	0.080
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	---	0.73	1.00	0.26	0.57	0.66	0.35	0.087	0.378

Well number ¹	Date	Nitrite, filtered, mg/L as N (00613)	Nitrate, filtered, mg/L as N (00618)	Phos- phorus water, unfiltered, mg/L as P (00665)	Phos- phorus water, filtered, mg/L as P (00666)	Ortho- phosphate, filtered, mg/L (00660)	Ortho- phosphate, filtered, mg/L as P (00671)	Total organic carbon, unfiltered, mg/L (00680)	Aluminum, filtered, µg/L (01106)	Aluminum, unfiltered, µg/L (01105)	Antimony, filtered, µg/L (01095)
BM 90	2/23/2005	<0.008	---	---	---	---	---	1.46	---	E 1.0	---
BM 90	9/21/2009	<0.002	---	---	---	---	0.311	1.70	---	<6.0	---
BM 90	7/10/2014	<0.002	---	---	---	---	0.127	0.74	---	<3.8	---
BM 50	10/24/2013	0.002	0.279	0.408	0.406	0.421	0.137	---	<2.20	---	<0.027
BM 541	10/24/2013	0.002	<0.038	0.018	0.010	0.018	0.006	---	<2.20	---	<0.027
BM2680	10/24/2013	0.003	0.077	---	---	<0.012	<0.004	---	---	634	---
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	0.007	0.371	0.024	0.008	<0.012	<0.004	---	4.6	---	0.037

Well number ¹	Date	Antimony, unfiltered, µg/L (01097)	Arsenic, filtered, µg/L (01000)	Arsenic, unfiltered, µg/L (01002)	Barium, filtered, µg/L (01005)	Barium, unfiltered, µg/L (01007)	Boron, filtered, µg/L (01020)	Cadmium, filtered, µg/L (01025)	Cadmium, unfiltered, µg/L (01027)	Chromium, filtered, µg/L (01030)	Chromium, unfiltered, µg/L (01034)	Cobalt, filtered, µg/L (01035)
BM 90	2/23/2005	<.20	---	7.00	---	508.	47.0	---	<.040	---	<.80	---
BM 90	9/21/2009	<.40	---	9.70	---	640.	37.0	---	<.060	---	<.40	---
BM 90	7/10/2014	<0.18	---	10.4	---	823.	36.8	---	<.030	---	<.30	---
BM 50	10/24/2013	---	1.00	---	68.8	---	17.0	0.055	---	<0.30	---	0.103
BM 541	10/24/2013	---	14.8	---	362.	---	83.0	<0.030	---	0.34	---	0.475
BM2680	10/24/2013	<0.18	---	1.09	---	41.5	18.5	---	0.089	---	2.09	---
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	0.471	---	26.3	---	12.6	<0.030	---	<0.30	---	0.068

Well number ¹	Date	Cobalt, unfiltered, µg/L (01037)	Copper, filtered, µg/L (01040)	Copper, unfiltered, µg/L (01042)	Iron, filtered, µg/L (01046)	Iron, unfiltered, µg/L (01045)	Lead, filtered, µg/L (01049)	Lead, unfiltered, µg/L (01051)	Lithium, filtered, µg/L (01130)	Lithium, unfiltered, µg/L (01132)	Manganese, filtered, µg/L (01056)	Manganese, unfiltered, µg/L (01055)
BM 90	2/23/2005	0.507	---	7.50	1,230.	1,150	---	E 0.040	---	10.8	969	975
BM 90	9/21/2009	E0.090	---	E3.20	1,400.	1,420	---	0.140	---	13.4	937	1,060
BM 90	7/10/2014	0.093	---	<0.80	1,560.	1,590	---	0.093	---	16.4	1,150	937
BM 50	10/24/2013	---	<0.80	---	17.5	---	0.399	---	8.12	---	179	---
BM 541	10/24/2013	---	<0.80	---	7,800.	---	<0.040	---	17.3	---	1,270	---
BM2680	10/24/2013	0.553	---	8.17	77.4	---	---	1.41	---	8.76	149	---
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	<0.80	---	48.1	---	0.066	---	1.52	---	12.4	---

Well number ¹	Date	Mercury, unfiltered, µg/L (71900)	Molybdenum, filtered, µg/L (01060)	Molybdenum, unfiltered, µg/L (01062)	Nickel, filtered, µg/L (01065)	Nickel, unfiltered, µg/L (01067)	Selenium, filtered, µg/L (01145)	Selenium, unfiltered, µg/L (01147)	Silver, filtered, µg/L (01075)	Silver, unfiltered, µg/L (01077)	Strontium, filtered, µg/L (01080)
BM 90	2/23/2005	<0.010	---	0.40	---	2.45	---	0.60	---	---	---
BM 90	9/21/2009	<0.010	---	0.40	---	0.78	---	<0.12	---	<.06	---
BM 90	7/10/2014	<0.005	---		---	0.297	---	<0.10	---	<.02	---
BM 50	10/24/2013	---	0.404	---	0.51	---	<0.05	---	<0.02	---	137
BM 541	10/24/2013	---	0.358	---	2.80	---	0.05	0.05	<0.02	---	242
BM2680	10/24/2013	<0.005	---	1.47	---	1.97	---	<0.10	---	0.26	---
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	0.217	---	0.45	---	0.09	---	<0.02	---	73.6

Well number ¹	Date	Strontium, unfiltered, µg/L (01082)	Radon-222, unfiltered, pCi/L (82303)	Uranium, filtered, µg/L (22703)	Uranium, unfiltered, µg/L (28011)	Zinc, filtered, µg/L (01090)	Zinc, unfiltered, µg/L (01092)	CIAT, filtered, µg/L (04040)	Alachlor, filtered, µg/L (46342)	Atrazine, filtered, µg/L (39632)	Metolochlor, filtered, µg/L (39415)	Prometon, filtered, µg/L (04037)
BM 90	2/23/2005	340	290	---	0.869	---	19.0	<0.006	<0.004	<0.007	<0.013	---
BM 90	9/21/2009	394	276	---	1.120	---	7.5	<0.014	<0.008	<0.007	<0.014	<0.010
BM 90	7/10/2014	484	240	---	1.220	---	<2.0	<0.010	<0.008	<0.008	<0.012	<0.012
BM 50	10/24/2013	---	---	0.216	---	32.8	---	---	---	---	---	---
BM 541	10/24/2013	---	---	0.211	---	13.2	---	---	---	---	---	---
BM2680	10/24/2013	89.5	---	---	0.357	---	6.9	---	---	---	---	---
BM2680	1/13/2014	---	---	---	---	---	---	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	---	0.115	---	<2.0	---	---	---	---	---	---

Well number ¹	Date	Methyl <i>tert</i> - butyl, ether (MBTE), unfiltered, µg/L (78032)	Tetra- chloro- ethene, unfiltered, µg/L (34475)	Vinyl chloride, unfiltered, µg/L 39175)	Trichloro- ethene, unfiltered, µg/L (39180)	Tetra- chloro- methane, unfiltered, µg/L (32102)
BM 90	2/23/2005	<.2000	<0.100	0.40	<0.100	<0.20
BM 90	9/21/2009	---	---	---	---	---
BM 90	7/10/2014	0.0259	<0.026	0.19	0.040	<0.06
BM 50	10/24/2013	---	<0.500		<0.500	---
BM 541	10/24/2013	---	---	26.4	---	---
BM2680	10/24/2013	---	<0.100	<0.20	---	---
BM2680	1/13/2014	---	---	---	---	---
Susquehanna River at Endicott (01513706)	10/24/2013	---	---	---	---	---