

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

Miscellaneous water-quality data were collected for several projects in cooperation with the Schuylkill Conservation District, the Schuylkill Headwaters Association, Inc., and the Wildlands Conservancy. These projects involve assessing the characteristics and remediation of abandoned mine drainage in the Upper Schuylkill River and Lehigh River Basin.

**TABLE 6.**--Acid mine drainage projects station list.

Station number	Location	Latitude	Longitude	Drainage area (mi <sup>2</sup> )
404728075590901	Newkirk North Dip Tunnel Discharge near Tamaqua	40° 47' 28"	75° 59' 09"	n.a.
404728075590902	Newkirk Oxid Limestone Drain Well 1	40° 47' 27"	75° 59' 09"	n.a.
404728075590903	Newkirk Oxid Limestone Drain Well 2	40° 47' 27"	75° 59' 09"	n.a.
404728075590904	Newkirk Oxid Limestone Drain Well 3	40° 47' 27"	75° 59' 10"	n.a.
404728075590905	Newkirk Oxid Limestone Drain Well 4	40° 47' 27"	75° 59' 10"	n.a.
404728075590906	Newkirk Oxid Limestone Drain Outflow	40° 47' 27"	75° 59' 11"	n.a.
404728075590907	Newkirk Wetland Outflow	40° 47' 28"	75° 59' 09"	n.a.
404728075590908	Newkirk Discharge to Wabash Creek	40° 47' 28"	75° 59' 09"	n.a.
404728075590909	Newkirk Oxid Limestone Drain Flush Pipe Outflow	40° 47' 28"	75° 59' 09"	n.a.
0146742494	Schuylkill River above Bell Tunnel at Maryd, PA	40° 45' 16"	76° 02' 54"	3.29
0146742496	Bell Water Level Tunnel near Middleport, PA	40° 45' 12"	76° 02' 58"	0.02
0146742498	Bell Water Level Tunnel, 225 M DS, near Middleport, PA	40° 45' 14"	76° 02' 57"	0.02
0146742500	Schuylkill River below Bell Tunnel at Maryd, PA	40° 45' 12"	76° 03' 01"	3.35
01467448	Schuylkill River at Middleport, PA	40° 43' 43"	76° 05' 14"	14.5
403958076191401	Otto Air Shaft	40° 39' 58"	76° 19' 14"	n.a.
0146784338	Muddy Branch above Otto Mine Discharge near Branchdale	40° 40' 08"	76° 19' 07"	1.66
0146784348	Otto Air Shaft near Llewellyn, PA	40° 40' 03"	76° 19' 11"	0.08
0146784350	Otto Air Shaft, 400 M DS, near Llewellyn, PA	40° 40' 07"	76° 19' 07"	0.09
0146784354	Muddy Branch below Otto Mine Discharge above Steins, PA	40° 40' 03"	76° 18' 24"	2.25
0146784358	Muddy Branch below Otto Mine Discharge below Steins, PA	40° 39' 53"	76° 18' 10"	3.03
405853075484901	Buck Mountain Tunnel	40° 58' 53"	75° 48' 49"	n.a.
405224076001701	Silverbrook Mine Opening	40° 52' 24"	76° 00' 17"	n.a.
404705076003201	Reevesdale S Dip Tunnel	40° 47' 05"	76° 00' 32"	n.a.
404403076072401	Silver Creek Mine Tunnel	40° 43' 48"	76° 07' 26"	n.a.
01467455	Silver Creek Mine Tunnel at New Philadelphia, PA	40° 43' 42"	76° 07' 26"	0.02
01467456	Silver Creek Mine Tunnel at New Philadelphia, PA	40° 43' 42"	76° 07' 28"	0.02
404320076103201	Pine Forest Mine	40° 43' 20"	76° 10' 32"	n.a.
0146748720	Pine Forest Pit Lake near St. Clair, PA	40° 43' 05"	76° 10' 29"	
01469192	Little Schuylkill Dry Dam at Hometown, PA	40° 50' 27"	76° 00' 04"	
01469195	Neifert's Dam near Hometown, PA	40° 50' 06"	76° 00' 36"	





















































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ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404512076025501 -- Bell Water Level Tunnel**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency col- lecting sample, code (00027)	Agency ana- lyzing sample, code (00028)	Instan- taneous dis- charge, cfs (00061)	Oxi- dation re- duc- tion poten- tial, mV (00090)	Tur- bidity, water, unfltrd field, NTU (61028)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
MAR 11...	0900	1028	9813	.87	437	.0	1.6	14	4.5	--
APR 03...	1030	1028	9813	1.5	444	1.0	1.3	11	4.9	--
JUL 02...	1130	1028	1028	.95	310	9.0	6.9	60	3.6	4.1
SEP 10...	1330	1028	1028	.56	590	4.0	3.5	30	4.0	4.0
24...	1400	1028	1028	.55	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency col- lecting sample, code (00027)	Agency ana- lyzing sample, code (00028)	Instan- taneous dis- charge, cfs (00061)	Oxi- dation re- duc- tion poten- tial, mV (00090)	Tur- bidity, water, unfltrd field, NTU (61028)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 23...	1300	1028	1028	.88	570	4.0	2.9	25	4.2	4.2
DEC 17...	1245	1028	1028	2.7	550	12	3.2	28	4.2	4.2
MAR 05...	1015	1028	1028	1.1	540	8.0	2.3	20	3.7	3.7
APR 28...	1015	1028	1028	1.8	570	11	5.0	44	3.8	4.0
JUN 30...	1015	1028	1028	4.2	600	9.0	4.1	36	3.9	4.0
AUG 27...	0945	1028	1028	.61	640	--	5.2	45	3.7	3.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Specif. conduc- tance, wat unfltrd, uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover- able, mg/L (00916)	Magnes- ium, water, fltrd, mg/L (00925)	Magnes- ium, water, unfltrd recover- able, mg/L (00927)	Potas- sium, water, fltrd, mg/L (00935)	Potas- sium, water, unfltrd recover- able, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover- able, mg/L (00929)
MAR 11...	292	9.8	--	--	--	--	--	--	--	--
APR 03...	273	9.8	--	--	--	--	--	--	--	--
JUL 02...	290	9.7	12.2	12.6	10.1	10.2	.77	.8	1.75	1.7
SEP 10...	300	9.7	12.2	11.9	9.90	10.1	.74	.7	1.75	1.6
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Specif. conduc- tance, wat unfltrd, uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover- able, mg/L (00916)	Magnes- ium, water, fltrd, mg/L (00925)	Magnes- ium, water, unfltrd recover- able, mg/L (00927)	Potas- sium, water, fltrd, mg/L (00935)	Potas- sium, water, unfltrd recover- able, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover- able, mg/L (00929)
OCT 23...	300	9.7	12.2	12.7	9.90	10.2	.72	.8	1.70	1.7
DEC 17...	210	9.5	11.2	11.6	8.65	8.8	.90	.9	2.05	2.1
MAR 05...	330	9.7	17.8	16.7	14.1	13.3	1.02	1.0	2.40	2.4
APR 28...	300	9.5	16.7	16.1	13.3	12.9	1.02	1.0	2.35	2.3
JUN 30...	330	9.5	17.2	17.0	14.3	14.2	1.04	1.0	2.35	2.3
AUG 27...	340	9.5	18.6	18.5	14.4	14.4	1.04	1.0	2.40	2.4

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ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404512076025501 -- Bell Water Level Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
MAR 11...	.000	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.000	--	9.57	9.76	84.0	89.0	<.004	<.004	735	735
SEP 10...	.000	--	9.30	9.25	92.0	91.0	<.004	<.004	540	555
24...	.000	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
OCT 23...	.000	--	8.82	8.93	97.0	99.0	<.004	<.004	580	605
DEC 17...	.000	--	9.50	9.77	87.0	87.0	<.003	<.003	800	830
MAR 05...	.000	--	10.9	10.8	190	200	<.001	<.001	885	880
APR 28...	.000	--	10.8	10.5	180	180	<.001	<.001	1250	1200
JUN 30...	.000	--	11.2	11.4	190	190	<.001	<.001	1400	1400
AUG 27...	.000	--	10.8	11.2	200	200	<.001	<.001	1200	1200

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.100	.100	3.40	3.60	.100	.100	<1.00	<1.00	35.0	37.0
SEP 10...	.200	.070	3.00	3.00	.100	.100	<1.00	<1.00	35.0	34.5
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
OCT 23...	.100	.080	3.40	3.30	.100	.100	<1.00	<1.00	31.5	33.5
DEC 17...	.240	.150	2.60	2.60	.078	.081	<1.00	<1.00	27.5	26.0
MAR 05...	.120	.840	2.80	2.80	.078	.085	<1.00	<1.00	41.0	38.0
APR 28...	.290	.180	3.30	3.40	.078	.079	<1.00	<1.00	44.0	44.0
JUN 30...	.340	.260	4.30	4.20	.083	.088	<1.00	<1.00	48.5	51.5
AUG 27...	.250	.440	4.00	3.90	.086	.088	<1.00	<1.00	45.5	47.5

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ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404512076025501 -- Bell Water Level Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Copper, water, unfltrd ug/L (01040)	Copper, water, recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.00	2.00	.290	.320	.170	.170	.079	.096	.370	.390
SEP 10...	1.00	1.00	.270	.260	.140	.140	.076	.076	.340	.320
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd ug/L (01040)	Copper, water, recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
OCT 23...	2.00	2.00	.300	.280	.160	.170	.079	.062	.340	.360
DEC 17...	5.00	5.20	.250	.230	.130	.130	.064	.060	.270	.280
MAR 05...	1.70	2.00	.240	.240	.130	.140	.067	.066	.300	.300
APR 28...	6.20	6.40	.300	.320	.160	.160	.081	.082	.350	.360
JUN 30...	12.0	12.5	.390	.360	.220	.200	.110	.110	.440	.440
AUG 27...	5.90	6.00	.370	.350	.210	.210	.097	.100	.420	.410

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.020	<.020	<.020	<.020	<.010	<.010	.061	.062	<.010	<.010
SEP 10...	<.020	<.020	<.020	<.020	<.010	<.010	.052	.050	<.010	<.010
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
OCT 23...	<.020	<.020	<.020	.020	<.010	<.010	.058	.059	<.010	<.010
DEC 17...	<.020	<.020	<.020	<.020	<.010	<.010	.051	.046	<.010	<.010
MAR 05...	.034	.039	<.020	<.020	<.010	.012	.047	.049	<.010	<.010
APR 28...	.031	.044	<.020	<.020	<.010	<.010	.058	.066	<.010	<.010
JUN 30...	.032	.041	<.020	<.020	<.010	<.010	.074	.076	<.010	<.010
AUG 27...	.040	.043	<.020	<.020	.016	.012	.074	.070	<.010	<.010

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**404512076025501 -- Bell Water Level Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Iron, water, unfltrd recover -able, ug/L (01046)	Iron, water, unfltrd recover -able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover -able, ug/L (01051)	Lithium water, unfltrd recover -able, ug/L (01130)	Lithium water, unfltrd recover -able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2250	3250	1.60	1.70	1.00	1.10	16.5	16.5	1180	1200
SEP 10...	5400	5900	1.40	1.40	.690	.740	15.0	15.0	1180	1220
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, unfltrd recover -able, ug/L (01046)	Iron, water, unfltrd recover -able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover -able, ug/L (01051)	Lithium water, unfltrd recover -able, ug/L (01130)	Lithium water, unfltrd recover -able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)
OCT 23...	6300	6900	1.60	1.60	.850	.970	15.0	15.5	1230	1280
DEC 17...	2200	4000	1.30	1.20	1.10	1.40	15.0	15.5	945	965
MAR 05...	3700	2900	1.30	1.30	.880	1.00	20.5	20.5	1580	1540
APR 28...	1450	2250	1.50	1.60	1.00	1.20	21.0	20.0	1500	1440
JUN 30...	1300	1800	2.00	1.90	1.40	1.50	20.0	20.0	1580	1540
AUG 27...	2350	2850	1.80	1.80	1.10	1.10	20.5	20.0	1720	1700

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Molyb- denum, water, unfltrd recover -able, ug/L (01060)	Molyb- denum, water, unfltrd recover -able, ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover -able, ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium water, fltrd, ug/L (50583)	Rhenium water, unfltrd ug/L (01242)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.040	<.020	1.80	1.80	39.5	41.5	.430	.480	<.020	<.020
SEP 10...	<.020	<.020	1.50	1.50	38.5	40.0	.370	.380	<.020	<.020
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molyb- denum, water, unfltrd recover -able, ug/L (01060)	Molyb- denum, water, unfltrd recover -able, ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover -able, ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium water, fltrd, ug/L (50583)	Rhenium water, unfltrd ug/L (01242)
OCT 23...	.030	.020	1.70	1.70	39.5	39.5	.430	.410	<.020	<.020
DEC 17...	.030	<.020	1.20	1.30	32.5	33.0	.320	.320	<.020	<.020
MAR 05...	.034	.037	1.40	1.40	47.0	45.5	.350	.360	<.020	<.020
APR 28...	.055	.049	1.70	1.70	52.5	49.5	.410	.420	<.020	<.020
JUN 30...	.038	.032	2.20	2.10	57.5	59.0	.540	.530	<.020	<.020
AUG 27...	.082	.061	2.10	2.00	55.5	58.5	.510	.490	<.020	<.020

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404512076025501 -- Bell Water Level Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover- able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd recover- able, ug/L (01082)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.00	2.00	.380	.380	<.200	<.200	.010	<.010	101	104
SEP 10...	2.10	2.00	.320	.340	<.200	<.200	<.010	<.010	102	98.5
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover- able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd recover- able, ug/L (01082)
OCT 23...	2.10	2.10	.330	.350	<.200	<.200	.020	.040	101	104
DEC 17...	1.50	1.50	.310	.280	<.200	<.200	.061	.042	88.0	91.0
MAR 05...	1.50	1.50	.290	.290	<.200	<.200	.037	.017	118	116
APR 28...	1.50	1.50	.360	.370	<.200	<.200	.689	.058	115	112
JUN 30...	1.60	1.60	.450	.450	<.200	<.200	.019	.016	128	122
AUG 27...	1.60	1.60	.440	.410	<.200	<.200	<.010	<.010	128	128

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd ug/L (01154)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.054	.058	<.050	<.050	<.020	<.020	.030	.020	<.020	<.020
SEP 10...	.040	.040	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd ug/L (01154)
OCT 23...	.052	.053	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
DEC 17...	.042	.040	<.050	<.050	<.030	<.030	.020	.022	.048	.069
MAR 05...	.041	.043	<.050	<.050	<.020	<.020	.020	.021	<.020	<.020
APR 28...	.051	.051	<.050	<.050	<.020	<.020	.026	.024	<.020	<.020
JUN 30...	.065	.066	<.050	<.050	<.020	<.020	.033	.030	<.020	<.020
AUG 27...	.059	.061	<.050	<.050	<.020	<.020	.030	.028	<.020	<.020

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404512076025501 -- Bell Water Level Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover-able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd, ug/L (28011)
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.200	<.200	.200	.200	1.20	1.30	122	120	.110	.130
SEP 10...	<.200	<.200	.100	.100	1.10	1.10	114	99.0	.090	.090
SEP 24...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover-able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd, ug/L (28011)
OCT 23...	<.200	<.200	.200	.100	1.20	1.20	102	96.0	.110	.110
DEC 17...	<.100	<.100	.120	.120	1.00	1.10	112	113	.096	.097
MAR 05...	<.100	<.100	.120	.120	1.10	1.10	144	157	.086	.084
APR 28...	<.100	<.100	.140	.150	1.30	1.40	206	204	.130	.140
JUN 30...	<.100	<.100	.210	.180	1.60	1.60	227	228	.200	.200
AUG 27...	<.100	<.100	.170	.160	1.60	1.50	195	199	.170	.160

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742498 -- Bell Water Level Tunnel, 225 M DS, nr Middleport**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency col- lecting sample, code (00027)	Agency ana- lyzing sample, code (00028)	Instan- taneous dis- charge, cfs (00061)	Oxi- dation re- duc- tion poten- tial, mV (00090)	Tur- bidity, water, unfltrd field, NTU (61028)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
APR 03...	1000	1028	9813	1.5	492	4.0	9.9	88	4.6	--
JUL 02...	1100	1028	1028	.95	300	12	10.1	91	3.6	4.0
SEP 10...	1300	1028	1028	.56	600	4.0	8.0	72	3.9	3.9
24...	1330	1028	1028	.55	590	5.0	10.0	90	3.9	3.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency col- lecting sample, code (00027)	Agency ana- lyzing sample, code (00028)	Instan- taneous dis- charge, cfs (00061)	Oxi- dation re- duc- tion poten- tial, mV (00090)	Tur- bidity, water, unfltrd field, NTU (61028)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 23...	1230	1028	1028	.88	570	7.0	10.7	94	4.0	4.0
DEC 17...	1230	1028	1028	2.7	550	23	10.5	91	4.2	4.2
MAR 05...	1000	1028	1028	1.1	540	12	10.8	94	3.7	3.7
APR 28...	1000	1028	1028	1.8	560	11	10.4	92	3.8	4.4
JUN 30...	1000	1028	1028	4.2	600	20	10.1	89	3.9	4.0
AUG 27...	0930	1028	1028	.61	640	--	10.7	95	3.7	3.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Specif. conduc- tance, wat unfl uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover- able, mg/L (00916)	Magnes- ium, water, fltrd, mg/L (00925)	Magnes- ium, water, unfltrd recover- able, mg/L (00927)	Potas- sium, water, fltrd, mg/L (00935)	Potas- sium, water, unfltrd recover- able, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover- able, mg/L (00929)
APR 03...	273	10.2	--	--	--	--	--	--	--	--
JUL 02...	300	10.7	11.8	11.5	9.80	9.6	.73	.7	1.70	1.6
SEP 10...	300	10.9	16.6	13.7	13.1	11.0	.97	.8	2.15	1.8
24...	280	10.7	12.8	14.3	10.3	11.4	.74	.8	1.75	1.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Specif. conduc- tance, wat unfl uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover- able, mg/L (00916)	Magnes- ium, water, fltrd, mg/L (00925)	Magnes- ium, water, unfltrd recover- able, mg/L (00927)	Potas- sium, water, fltrd, mg/L (00935)	Potas- sium, water, unfltrd recover- able, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover- able, mg/L (00929)
OCT 23...	300	9.7	17.9	17.6	14.2	14.1	1.04	1.1	2.35	2.4
DEC 17...	220	9.2	10.9	10.8	8.50	8.3	.89	.9	2.00	1.9
MAR 05...	330	9.0	17.0	17.6	13.6	13.6	.99	1.0	2.45	2.4
APR 28...	310	9.7	16.7	16.8	13.4	13.9	1.03	1.0	2.35	2.5
JUN 30...	330	9.7	18.1	17.7	14.7	14.3	1.05	1.0	2.40	2.4
AUG 27...	340	9.9	18.0	18.4	14.3	14.2	1.04	1.0	2.35	2.4

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**014674298 -- Bell Water Level Tunnel, 225 M DS, nr Middleport--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.000	--	9.14	9.30	84.0	85.0	<.004	<.004	720	700
SEP 10...	.000	--	11.2	10.0	110	92.0	<.003	<.004	690	620
SEP 24...	.000	--	9.40	10.4	95.0	90.0	<.004	<.004	585	645

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
OCT 23...	.000	--	11.6	11.6	120	120	<.003	<.003	895	900
DEC 17...	.000	--	9.39	9.33	88.0	88.0	<.003	<.003	840	860
MAR 05...	.000	--	11.3	11.3	200	200	<.001	<.001	1050	985
APR 28...	.000	--	10.6	11.5	180	190	<.001	<.001	1250	1300
JUN 30...	.000	--	11.4	11.5	190	190	<.001	<.001	1500	1500
AUG 27...	.000	--	11.1	11.5	200	200	<.001	<.001	1200	1250

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.050	<.050	<.600	<.600	17.5	17.5	1.00	1.00	<.040	<.040
SEP 10...	.050	<.050	.800	<.600	19.0	19.0	1.00	.800	<.030	<.040
SEP 24...	<.050	<.050	<.600	<.600	18.0	20.0	1.00	.700	<.040	<.040

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
OCT 23...	<.040	<.040	<.200	.400	19.5	19.5	1.10	1.10	<.030	.120
DEC 17...	<.030	<.030	<.900	<.900	24.5	23.5	.920	.800	<.040	<.040
MAR 05...	<.020	<.020	<.200	<.200	18.0	17.5	1.00	1.20	<.010	<.010
APR 28...	<.020	<.020	<.200	<.200	19.5	20.0	1.20	1.30	<.010	<.010
JUN 30...	<.020	<.020	<.200	<.200	21.0	21.0	1.40	1.50	<.010	<.010
AUG 27...	<.020	<.020	<.200	<.200	19.5	20.0	1.30	1.40	<.010	<.010



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742498 -- Bell Water Level Tunnel, 225 M DS, nr Middleport--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.200	.100	3.40	3.40	.100	.100	<1.00	<1.00	33.5	34.0
SEP 10...	.400	.100	2.60	3.00	.100	.100	<1.00	<1.00	43.0	37.0
24...	.080	.070	3.00	3.00	.100	.100	<1.00	<1.00	34.5	39.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
OCT 23...	.100	.200	3.20	3.00	.100	.100	<1.00	<1.00	46.0	44.5
DEC 17...	.200	.160	2.60	2.60	.078	.074	<1.00	<1.00	27.5	28.5
MAR 05...	.420	.110	3.00	3.00	.086	.086	<1.00	<1.00	38.5	41.0
APR 28...	.290	.210	3.50	3.60	.080	.082	<1.00	<1.00	44.5	45.0
JUN 30...	.490	.260	4.30	4.30	.087	.086	<1.00	<1.00	50.5	51.0
AUG 27...	.200	.170	3.80	3.90	.083	.085	<1.00	<1.00	49.5	49.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.00	2.00	.300	.260	.160	.160	.072	.082	.370	.390
SEP 10...	1.00	1.00	.200	.270	.130	.140	.060	.067	.300	.330
24...	1.00	1.00	.260	.270	.140	.150	.062	.076	.350	.320

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
OCT 23...	3.00	2.00	.270	.240	.160	.140	.069	.075	.330	.340
DEC 17...	5.00	5.30	.220	.260	.130	.130	.066	.061	.290	.290
MAR 05...	2.00	2.10	.270	.260	.140	.150	.076	.074	.320	.300
APR 28...	6.50	6.70	.310	.320	.180	.180	.087	.096	.370	.410
JUN 30...	13.0	12.5	.390	.380	.210	.210	.110	.110	.430	.470
AUG 27...	5.80	5.80	.360	.360	.200	.200	.095	.100	.400	.420

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742498 -- Bell Water Level Tunnel, 225 M DS, nr Middleport--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.020	<.020	<.020	<.020	<.010	<.010	.064	.060	<.010	<.010
SEP 10...	<.020	<.020	<.020	<.020	<.010	<.010	.040	.050	<.010	<.010
24...	.020	.020	<.020	<.020	<.010	<.010	.052	.053	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
OCT 23...	<.020	<.020	<.020	<.020	<.010	<.010	.054	.051	<.010	<.010
DEC 17...	<.020	<.020	<.020	<.020	<.010	<.010	.049	.049	<.010	<.010
MAR 05...	.048	.048	<.020	<.020	<.010	<.010	.054	.054	<.010	<.010
APR 28...	.028	.041	<.020	<.020	<.010	<.010	.062	.064	<.010	<.010
JUN 30...	.046	.043	<.020	<.020	<.010	<.010	.078	.077	<.010	<.010
AUG 27...	.038	.041	<.020	<.020	.040	.018	.070	.072	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	1950	2300	1.60	1.60	1.00	1.00	16.0	15.5	1130	1120
SEP 10...	5650	5950	1.30	1.50	.680	.780	18.5	17.0	1510	1320
24...	5350	6600	1.50	1.40	.680	.770	15.5	17.0	1220	1360

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
OCT 23...	6800	7450	1.50	1.50	.860	.980	20.0	20.0	1660	1670
DEC 17...	1950	4200	1.30	1.20	1.00	1.40	15.5	15.5	925	905
MAR 05...	2650	3550	1.40	1.40	.930	.930	20.0	20.5	1560	1610
APR 28...	1300	2050	1.60	1.70	1.10	1.20	20.5	21.0	1480	1480
JUN 30...	1200	2800	2.00	2.00	1.40	1.70	21.0	21.0	1580	1620
AUG 27...	2050	2650	1.80	1.80	1.00	1.10	20.5	21.5	1660	1680

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742498 -- Bell Water Level Tunnel, 225 M DS, nr Middleport--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.030	<.020	1.70	1.60	39.0	39.0	.440	.440	<.020	<.020
SEP 10...	.770	.020	1.30	1.50	44.0	42.0	.320	.380	<.020	<.020
24...	<.020	.100	1.40	1.50	40.5	43.5	.370	.360	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
OCT 23...	.300	.400	1.50	1.40	49.5	46.5	.400	.380	<.020	<.020
DEC 17...	.027	<.020	1.30	1.30	33.0	32.0	.320	.340	<.020	<.020
MAR 05...	.030	.028	1.50	1.50	46.5	47.0	.370	.370	<.020	<.020
APR 28...	.048	.046	1.70	1.80	51.5	55.0	.430	.460	<.020	<.020
JUN 30...	.031	.027	2.10	2.10	59.0	58.5	.540	.550	<.020	<.020
AUG 27...	.340	.130	2.00	2.00	53.5	58.0	.480	.490	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	1.90	1.90	.330	.340	<.200	<.200	.050	<.010	97.5	96.0
SEP 10...	1.90	2.00	.260	.300	<.200	<.200	.200	<.010	113	112
24...	2.10	2.00	.320	.330	<.200	<.200	.020	.030	105	116

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
OCT 23...	1.90	1.90	.320	.320	<.200	<.200	.200	1.20	123	122
DEC 17...	1.50	1.50	.290	.270	.200	<.200	.037	<.010	87.0	86.0
MAR 05...	1.60	1.60	.320	.320	<.200	<.200	.016	.024	118	118
APR 28...	1.60	1.60	.370	.410	<.200	<.200	.012	.075	113	122
JUN 30...	1.60	1.60	.470	.460	<.200	<.200	.013	<.010	131	128
AUG 27...	1.60	1.60	.410	.430	<.200	<.200	<.010	<.010	128	130

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742498 -- Bell Water Level Tunnel, 225 M DS, nr Middleport--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.050	.050	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
SEP 10...	.040	.050	<.050	<.050	<.040	<.020	.020	.020	.100	<.020
24...	.040	.040	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
OCT 23...	.040	.040	<.050	<.050	<.040	<.040	.020	.020	.100	.100
DEC 17...	.037	.040	<.050	<.050	<.030	<.030	.021	.017	.056	.028
MAR 05...	.044	.043	<.050	<.050	<.020	<.020	.022	.021	<.020	<.020
APR 28...	.056	.056	<.050	<.050	<.020	<.020	.024	.027	<.020	<.020
JUN 30...	.068	.066	<.050	<.050	<.020	<.020	.034	.031	<.020	<.020
AUG 27...	.060	.062	<.050	<.050	<.020	<.020	.028	.028	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.200	<.200	.200	.200	1.30	1.20	114	116	.120	.110
SEP 10...	<.100	<.200	.100	.100	1.10	1.10	183	106	.090	.100
24...	<.200	<.200	.100	.100	1.10	1.10	98.5	109	.090	.090

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
OCT 23...	<.100	<.100	.100	.100	1.30	1.20	139	136	.100	.100
DEC 17...	<.100	<.100	.120	.140	1.10	1.10	110	109	.092	.097
MAR 05...	<.100	<.100	.130	.130	1.20	1.20	153	149	.094	.091
APR 28...	<.100	<.100	.140	.160	1.40	1.40	206	212	.130	.140
JUN 30...	<.100	<.100	.180	.200	1.60	1.60	235	231	.210	.200
AUG 27...	<.100	<.100	.190	.170	1.60	1.50	197	203	.180	.170

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
APR 03...	0930	1028	9813	4.8	434	3.0	10.8	95	6.0	--
JUL 02...	0945	1028	1028	.36	480	12	9.3	98	4.9	5.3
SEP 10...	1400	1028	1028	.15	500	2.0	7.1	76	5.8	5.7
SEP 24...	1445	1028	1028	.20	460	4.0	8.6	86	5.8	5.6

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 23...	1330	1028	1028	2.1	430	2.0	10.5	93	6.1	6.1
DEC 17...	1315	1028	1028	6.2	470	2.0	12.9	99	5.8	5.8
MAR 05...	1030	1028	1028	2.9	440	4.0	13.9	98	5.7	5.7
APR 28...	1030	1028	1028	2.9	460	2.0	10.6	96	5.4	5.7
JUN 30...	1015	1028	1028	4.1	440	4.0	9.5	95	5.6	5.6
AUG 27...	1000	1028	1028	.81	440	--	9.4	97	5.5	5.4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover, mg/L (00929)
APR 03...	190	9.6	--	--	--	--	--	--	--	--
JUL 02...	270	17.8	16.7	16.2	10.9	10.8	1.45	1.4	5.60	5.5
SEP 10...	310	18.0	22.3	21.9	14.4	14.2	2.10	2.1	8.25	8.2
SEP 24...	270	15.7	17.7	17.6	10.7	10.7	2.10	2.1	8.65	8.7

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover, mg/L (00929)
OCT 23...	220	10.0	13.7	13.0	8.45	8.1	1.50	1.4	5.15	5.0
DEC 17...	200	4.4	11.2	11.6	6.75	6.8	1.25	1.2	5.20	5.1
MAR 05...	280	1.0	15.4	15.7	8.90	8.8	1.40	1.4	12.6	12.8
APR 28...	260	10.7	15.7	15.9	10.1	10.0	1.50	1.5	8.40	8.5
JUN 30...	240	15.5	14.6	14.2	9.45	9.4	1.40	1.4	5.45	5.3
AUG 27...	240	17.1	16.4	16.1	10.6	10.7	1.45	1.4	5.50	5.5

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	4.00	--	9.29	9.75	79.0	98.0	<.004	.026	620	1750
SEP 10...	1.90	--	9.47	9.98	110	110	<.003	.066	110	2300
24...	5.00	--	10.2	9.97	100	78.0	.018	.011	155	1250

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
OCT 23...	7.00	--	8.21	7.99	56.0	58.0	<.004	.011	65.5	755
DEC 17...	3.00	--	7.57	7.67	64.0	65.0	<.003	.010	195	785
MAR 05...	7.00	--	6.94	6.99	110	110	<.001	.025	285	995
APR 28...	7.00	--	7.99	8.19	130	130	<.001	.008	415	1350
JUN 30...	3.80	--	9.03	9.13	120	120	<.001	.009	155	1140
AUG 27...	3.00	--	9.65	9.70	130	130	<.001	.005	140	1250

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.080	<.050	<.600	<.600	19.0	19.0	.400	.700	<.040	<.040
SEP 10...	<.040	.060	<.200	.400	16.0	17.0	.100	.400	<.030	<.030
24...	<.050	<.050	<.600	<.600	20.5	21.0	.300	.300	<.040	<.040

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
OCT 23...	<.050	<.050	<.600	<.600	20.5	22.0	.070	.100	<.040	<.040
DEC 17...	<.030	<.030	<.900	<.900	20.5	21.5	.220	.200	<.040	<.040
MAR 05...	.040	.031	<.200	<.200	20.5	20.5	.180	.260	<.010	<.010
APR 28...	<.020	<.020	<.200	<.200	19.5	19.0	.230	.270	<.010	<.010
JUN 30...	<.020	<.020	<.200	<.200	20.5	20.5	.220	.270	<.010	<.010
AUG 27...	<.020	<.020	<.200	<.200	16.5	16.5	.140	.330	<.010	<.010

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.400	.400	4.00	4.60	.090	.100	<1.00	2.00	25.0	25.0
SEP 10...	.500	.400	2.40	4.20	.100	.100	<1.00	<1.00	27.0	28.0
24...	.500	.400	3.50	4.10	.100	.200	2.00	<1.00	21.5	24.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
OCT 23...	.200	.200	1.80	2.10	.080	.090	<1.00	<1.00	13.5	10.5
DEC 17...	.290	.250	1.30	1.50	.046	.044	<1.00	<1.00	8.60	8.70
MAR 05...	.320	.250	1.50	1.60	.044	.044	<1.00	<1.00	13.0	12.5
APR 28...	.300	.260	2.00	2.20	.062	.062	<1.00	<1.00	18.0	18.0
JUN 30...	.290	.210	1.60	1.80	.060	.063	<1.00	<1.00	11.5	16.5
AUG 27...	.240	.230	2.20	2.50	.063	.069	<1.00	<1.00	16.5	16.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	3.00	4.00	.500	.680	.280	.300	.140	.150	.730	.860
SEP 10...	3.00	5.00	.260	.670	.150	.340	.062	.160	.400	.880
24...	6.00	6.00	.380	.550	.200	.290	.100	.120	.500	.710

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	0146742494 -- Sc Copper, water, fltrd, ug/L (01040)	0146742494 -- Sc Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Copper, Erbium, water, fltrd, ug/L (50573)	Copper, Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
OCT 23...	3.00	3.00	.170	.260	.092	.130	.040	.058	.220	.320
DEC 17...	2.90	3.50	.130	.180	.077	.100	.035	.044	.190	.230
MAR 05...	2.20	2.70	.190	.220	.100	.120	.044	.052	.240	.280
APR 28...	2.90	3.20	.300	.320	.150	.170	.065	.076	.360	.390
JUN 30...	2.40	2.80	.200	.260	.110	.140	.047	.056	.270	.320
AUG 27...	2.50	2.90	.270	.370	.130	.190	.066	.085	.330	.450

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.020	<.020	<.020	.020	<.010	<.010	.110	.120	<.010	<.010
SEP 10...	.020	.020	<.020	<.020	<.010	<.010	.057	.130	<.010	<.010
24...	<.020	<.020	.050	<.020	<.010	<.010	.088	.098	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
OCT 23...	<.020	<.020	<.020	<.020	<.010	<.010	.030	.052	<.010	<.010
DEC 17...	<.020	<.020	<.020	<.020	<.010	<.010	.025	.036	<.010	<.010
MAR 05...	.024	.027	<.020	<.020	<.010	<.010	.040	.048	<.010	<.010
APR 28...	<.020	<.020	<.020	<.020	<.010	<.010	.061	.065	<.010	<.010
JUN 30...	.020	.020	<.020	<.020	<.010	<.010	.043	.050	<.010	<.010
AUG 27...	<.020	<.020	<.020	<.020	<.010	<.010	.053	.074	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	265	535	2.00	2.10	.400	.750	17.5	17.5	1400	1380
SEP 10...	280	1750	1.30	1.90	.200	1.60	16.5	17.5	1880	1880
24...	315	520	1.80	2.00	.300	.590	18.0	18.0	1350	1400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
OCT 23...	275	350	.930	1.00	.100	.300	10.8	10.3	817	784
DEC 17...	340	405	.700	.760	.270	.390	9.05	9.20	611	618
MAR 05...	405	460	.720	.770	.170	.260	11.0	10.5	898	898
APR 28...	270	355	1.00	1.00	.240	.300	17.5	17.5	1100	1100
JUN 30...	205	345	.800	.850	.190	.360	17.5	17.5	915	915
AUG 27...	225	380	1.10	1.20	.220	.390	17.0	16.5	1200	1180



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.550	.090	2.50	2.70	36.0	37.0	.560	.650	<.020	<.020
SEP 10...	.200	.200	1.40	2.80	37.5	37.0	.340	.630	<.020	<.020
24...	.070	.040	2.00	2.40	33.5	32.0	.470	.580	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
OCT 23...	.100	.040	.950	1.20	19.5	20.5	.240	.290	<.020	<.020
DEC 17...	.026	.025	.730	.870	17.5	15.5	.180	.200	<.020	<.020
MAR 05...	.230	.170	.840	.980	20.5	17.5	.200	.220	<.020	<.020
APR 28...	.360	.140	1.30	1.40	26.5	28.0	.300	.320	<.020	<.020
JUN 30...	.032	.034	.960	1.10	26.5	27.0	.230	.260	<.020	<.020
AUG 27...	.048	.040	1.30	1.60	28.5	25.5	.300	.360	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.80	2.70	.500	.540	<.200	.900	.200	.530	101	100
SEP 10...	3.50	3.50	.260	.630	<.200	<.200	<.010	<.010	108	111
24...	3.80	3.90	.330	.520	1.00	<.200	.100	.200	105	110

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
OCT 23...	2.40	2.30	.200	.270	<.200	<.200	.300	.300	80.0	77.5
DEC 17...	1.40	1.40	.160	.190	<.200	<.200	<.010	.646	62.0	64.0
MAR 05...	1.40	1.40	.180	.220	<.200	<.200	.180	.200	74.0	73.5
APR 28...	1.60	1.70	.270	.290	<.200	<.200	.078	.041	77.0	76.5
JUN 30...	1.60	1.50	.190	.260	<.200	<.200	.140	.140	75.5	75.0
AUG 27...	1.80	1.90	.250	.350	<.200	<.200	.100	.084	83.5	83.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742494 -- Schuylkill R ab Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.097	.130	<.050	<.050	<.020	<.020	.040	.040	<.020	<.020
SEP 10...	.050	.120	<.050	<.050	<.040	<.040	.020	.040	.080	.080
24...	.065	.094	<.050	<.050	<.020	<.020	.030	.040	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
OCT 23...	.030	.050	<.050	<.050	<.020	<.020	.010	.020	<.020	<.020
DEC 17...	.024	.032	<.050	<.050	<.030	<.030	.010	.014	.099	.094
MAR 05...	.035	.042	<.050	<.050	<.020	<.020	.015	.017	<.020	<.020
APR 28...	.052	.060	<.050	<.050	<.020	<.020	.022	.023	<.020	<.020
JUN 30...	.034	.045	<.050	<.050	<.020	<.020	.014	.018	<.020	<.020
AUG 27...	.047	.066	<.050	<.050	<.020	<.020	.018	.026	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.200	.400	.200	.200	2.90	3.20	64.5	70.5	.040	.050
SEP 10...	<.100	<.100	.100	.290	1.90	3.50	71.5	73.0	.010	.060
24...	.500	<.200	.200	.230	2.00	2.50	75.0	66.5	.020	.040

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
OCT 23...	<.200	<.200	.070	.100	.970	1.20	43.0	42.0	.010	.020
DEC 17...	<.100	<.100	.066	.081	.850	1.00	49.0	49.0	.012	.022
MAR 05...	<.100	<.100	.074	.100	1.10	1.20	68.5	55.0	.011	.018
APR 28...	<.100	<.100	.110	.130	1.60	1.70	60.5	59.5	.014	.020
JUN 30...	<.100	<.100	.080	.110	1.10	1.20	57.0	57.0	.014	.022
AUG 27...	<.100	<.100	.100	.140	1.50	1.80	54.5	54.0	.016	.027

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
APR 03...	0945	1028	9813	6.3	456	3.0	10.6	93	5.4	--
JUL 02...	1230	1028	1028	1.8	570	17	9.4	93	4.5	4.5
SEP 10...	1245	1028	1028	1.1	590	2.0	7.2	69	4.1	3.8
SEP 24...	1300	1028	1028	.75	550	4.0	9.4	90	4.4	4.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 23...	1245	1028	1028	3.0	460	3.0	10.7	94	5.5	5.5
DEC 17...	1215	1028	1028	8.8	490	8.0	12.4	98	5.3	5.3
MAR 05...	0945	1028	1028	4.0	470	5.0	13.5	98	5.0	5.2
APR 28...	0945	1028	1028	4.7	520	7.0	10.9	95	4.2	4.4
JUN 30...	0945	1028	1028	8.3	560	6.0	10.0	94	4.3	4.5
AUG 27...	0915	1028	1028	1.4	600	--	9.8	95	4.1	4.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
APR 03...	215	9.9	--	--	--	--	--	--	--	--
JUL 02...	290	15.1	12.6	13.3	9.00	9.7	.98	1.1	3.25	3.4
SEP 10...	320	13.3	18.9	18.9	14.1	14.0	1.40	1.4	4.75	4.7
SEP 24...	270	13.2	16.4	16.2	11.0	11.1	1.45	1.5	5.80	5.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
OCT 23...	230	9.8	14.0	13.8	9.50	9.4	1.35	1.4	4.25	4.3
DEC 17...	200	5.6	10.8	11.6	7.15	7.7	1.10	1.2	4.05	4.4
MAR 05...	280	2.0	15.7	15.6	9.90	9.8	1.30	1.3	9.95	9.8
APR 28...	280	9.5	16.2	16.3	11.6	11.7	1.30	1.2	5.55	5.7
JUN 30...	280	12.5	15.9	16.1	11.4	11.7	1.15	1.2	3.65	3.6
AUG 27...	270	13.8	17.4	17.2	12.6	12.4	1.20	1.3	4.15	4.1

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.000	--	8.83	9.09	83.0	84.0	<.004	<.004	720	995
SEP 10...	.000	--	11.1	10.6	120	110	<.003	<.003	630	700
SEP 24...	.000	--	10.5	10.5	86.0	85.0	<.004	<.004	460	990

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
OCT 23...	2.80	--	9.35	9.29	67.0	67.0	<.004	.004	245	800
DEC 17...	3.00	--	8.19	8.83	73.0	73.0	<.003	.006	430	905
MAR 05...	3.00	--	7.97	8.29	130	130	<.001	.017	445	1150
APR 28...	3.00	--	9.31	9.36	160	160	<.001	.001	885	1400
JUN 30...	.000	--	9.67	10.1	160	160	<.001	.001	840	1250
AUG 27...	.000	--	10.7	10.9	160	160	<.001	<.001	690	1250

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.050	<.050	<.600	<.600	17.0	17.5	.600	.600	<.040	<.040
SEP 10...	<.040	<.040	<.200	.200	19.0	19.0	.700	.800	<.030	<.030
SEP 24...	<.050	.050	<.600	<.600	20.5	20.5	.400	.500	<.040	<.040

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
OCT 23...	<.050	<.050	<.600	<.600	21.0	22.0	.300	.400	<.040	<.040
DEC 17...	<.030	<.030	<.900	<.900	21.0	22.5	.310	.270	<.040	<.040
MAR 05...	.170	.059	<.200	<.200	23.5	19.5	.350	.370	.140	.012
APR 28...	<.020	<.020	<.200	<.200	20.0	19.5	.650	.690	<.010	<.010
JUN 30...	.020	<.020	<.200	<.200	20.0	20.0	.730	.960	<.010	<.010
AUG 27...	<.020	<.020	<.200	<.200	17.0	18.0	.740	.860	<.010	<.010

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.300	.200	2.80	2.90	.100	.100	20.0	<1.00	28.0	28.5
SEP 10...	.400	.400	2.60	2.60	.100	.100	<1.00	<1.00	35.0	34.5
24...	.400	.300	3.40	3.70	.100	.100	<1.00	<1.00	28.0	26.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
OCT 23...	.200	.200	2.30	2.40	.090	.090	<1.00	<1.00	20.0	20.5
DEC 17...	.270	.200	2.00	1.90	.052	.058	<1.00	<1.00	15.5	16.5
MAR 05...	.480	.250	1.70	1.80	.048	.050	<1.00	<1.00	19.0	19.5
APR 28...	.340	.250	2.70	2.70	.060	.058	<1.00	<1.00	28.0	26.5
JUN 30...	.540	.230	2.70	2.80	.065	.065	<1.00	<1.00	32.0	30.5
AUG 27...	.200	.190	2.80	2.90	.062	.065	<1.00	<1.00	35.5	31.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	3.00	3.00	.300	.350	.170	.190	.070	.067	.410	.410
SEP 10...	2.00	2.00	.270	.280	.160	.150	.072	.063	.350	.380
24...	3.00	3.00	.380	.400	.200	.230	.088	.100	.460	.550

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
OCT 23...	2.00	3.00	.180	.260	.099	.140	.054	.054	.260	.300
DEC 17...	3.90	3.80	.210	.200	.100	.110	.045	.049	.240	.240
MAR 05...	2.30	2.70	.190	.240	.100	.120	.048	.056	.230	.270
APR 28...	4.60	4.70	.310	.320	.160	.170	.075	.080	.370	.380
JUN 30...	7.10	7.20	.270	.280	.140	.150	.072	.071	.320	.340
AUG 27...	3.70	4.00	.290	.320	.160	.180	.075	.083	.350	.400

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
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**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.020	<.020	<.020	<.020	<.010	<.010	.064	.066	<.010	<.010
SEP 10...	<.020	.020	.020	<.020	<.010	<.010	.055	.056	<.010	<.010
24...	<.020	.020	<.020	<.020	<.010	<.010	.073	.080	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
OCT 23...	<.020	<.020	<.020	<.020	<.010	<.010	.040	.050	<.010	<.010
DEC 17...	<.020	<.020	<.020	<.020	<.010	<.010	.036	.040	<.010	<.010
MAR 05...	.020	.028	<.020	<.020	<.010	<.010	.040	.044	<.010	<.010
APR 28...	.045	.026	<.020	<.020	<.010	<.010	.061	.062	<.010	<.010
JUN 30...	.024	.030	<.020	<.020	<.010	<.010	.052	.054	<.010	<.010
AUG 27...	.024	.023	<.020	<.020	<.010	<.010	.055	.063	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	26.0	44.5	1.60	1.60	.200	.100	14.5	15.5	1120	1200
SEP 10...	3300	3650	1.30	1.40	.550	.590	18.0	18.5	1680	1680
24...	2350	2700	1.80	1.80	.500	.650	19.0	19.0	1400	1400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
OCT 23...	2050	2200	1.20	1.20	.300	.540	14.0	13.5	1010	1000
DEC 17...	800	1650	1.00	.950	.410	.660	11.0	12.0	709	756
MAR 05...	965	1250	.820	.880	.360	.430	14.0	13.5	1060	1050
APR 28...	745	1090	1.30	1.30	.600	.670	18.5	18.0	1260	1250
JUN 30...	700	1000	1.30	1.30	.760	.850	18.0	18.5	1170	1240
AUG 27...	1100	1500	1.30	1.40	.510	.630	20.0	19.5	1420	1490

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
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**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.020	<.020	1.50	1.50	36.0	37.5	.360	.380	<.020	<.020
SEP 10...	.090	.100	1.40	1.40	43.0	43.0	.340	.360	<.020	<.020
24...	.200	.300	1.90	2.00	36.0	37.5	.440	.500	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
OCT 23...	.030	.090	1.20	1.30	27.0	27.0	.280	.310	<.020	<.020
DEC 17...	.021	<.020	1.00	1.00	21.5	23.0	.260	.240	<.020	<.020
MAR 05...	1.10	.380	.920	1.00	26.0	26.0	.220	.240	<.020	<.020
APR 28...	.083	.070	1.50	1.50	36.0	37.0	.350	.360	<.020	<.020
JUN 30...	.120	.100	1.40	1.50	38.5	40.0	.360	.360	<.020	<.020
AUG 27...	.095	.092	1.50	1.60	45.5	43.0	.370	.380	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.40	2.50	.320	.340	<.200	<.200	<.010	<.010	88.0	95.0
SEP 10...	2.50	2.50	.300	.270	<.200	<.200	<.010	<.010	114	113
24...	2.90	2.90	.350	.410	<.200	<.200	<.010	.090	108	110

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
OCT 23...	2.30	2.30	.220	.260	<.200	<.200	<.010	.200	92.0	90.5
DEC 17...	1.40	1.40	.200	.200	<.200	<.200	.110	.091	68.5	74.0
MAR 05...	1.30	1.30	.180	.220	<.200	<.200	1.60	.380	82.0	81.0
APR 28...	1.50	1.50	.320	.320	<.200	<.200	.180	.016	94.0	94.5
JUN 30...	1.50	1.50	.300	.330	<.200	<.200	.078	.067	95.5	98.0
AUG 27...	1.60	1.60	.320	.340	<.200	<.200	.566	.037	98.5	104

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recoverable, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recoverable, ug/L (01082)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	2.40	2.50	.320	.340	<.200	<.200	<.010	<.010	88.0	95.0
SEP 10...	2.50	2.50	.300	.270	<.200	<.200	<.010	<.010	114	113
24...	2.90	2.90	.350	.410	<.200	<.200	<.010	.090	108	110

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recoverable, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recoverable, ug/L (01082)
OCT 23...	2.30	2.30	.220	.260	<.200	<.200	<.010	.200	92.0	90.5
DEC 17...	1.40	1.40	.200	.200	<.200	<.200	.110	.091	68.5	74.0
MAR 05...	1.30	1.30	.180	.220	<.200	<.200	1.60	.380	82.0	81.0
APR 28...	1.50	1.50	.320	.320	<.200	<.200	.180	.016	94.0	94.5
JUN 30...	1.50	1.50	.300	.330	<.200	<.200	.078	.067	95.5	98.0
AUG 27...	1.60	1.60	.320	.340	<.200	<.200	.566	.037	98.5	104

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd, ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd, ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd, ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd, ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd, ug/L (01154)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	.054	.057	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
SEP 10...	.052	.050	<.050	<.050	<.040	<.040	.020	.020	.060	.060
24...	.065	.074	<.050	<.050	<.020	<.020	.030	.030	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd, ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd, ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd, ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd, ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd, ug/L (01154)
OCT 23...	.030	.050	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
DEC 17...	.037	.031	<.050	<.050	<.030	<.030	.015	.016	.085	.062
MAR 05...	.032	.040	.074	<.050	<.020	<.020	.014	.016	<.020	<.020
APR 28...	.052	.054	<.050	<.050	<.020	<.020	.023	.023	<.020	<.020
JUN 30...	.044	.051	<.050	<.050	<.020	<.020	.022	.023	<.020	<.020
AUG 27...	.050	.055	<.050	<.050	<.020	<.020	.021	.024	<.020	.024



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146742500 -- Schuylkill River bl Bell Tunnel at Maryd, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover-able, ug/L (01092)	Uranium, natural water, fltrd, ug/L (22703)	Uranium, natural water, unfltrd, ug/L (28011)
APR 03...	--	--	--	--	--	--	--	--	--	--
JUL 02...	<.200	<.200	.100	.200	1.70	1.80	86.5	89.0	.030	.030
SEP 10...	<.100	<.100	.100	.100	1.60	1.60	124	163	.060	.060
SEP 24...	<.200	<.200	.200	.200	1.80	2.10	86.5	87.0	.050	.060

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover-able, ug/L (01092)	Uranium, natural water, fltrd, ug/L (22703)	Uranium, natural water, unfltrd, ug/L (28011)
OCT 23...	<.200	<.200	.090	.100	.990	1.20	98.0	64.0	.030	.040
DEC 17...	<.100	<.100	.084	.089	1.10	1.00	71.5	69.5	.042	.044
MAR 05...	<.100	<.100	.077	.110	1.10	1.20	162	77.5	.028	.032
APR 28...	<.100	<.100	.130	.120	1.60	1.60	120	124	.065	.066
JUN 30...	<.100	<.100	.120	.130	1.30	1.40	148	139	.099	.100
AUG 27...	<.100	<.100	.130	.140	1.40	1.60	117	116	.070	.076

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**01467448 -- Schuylkill River at Middleport, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
SEP 24...	1015	1028	1028	5.9	440	2.0	10.1	94	5.8	5.7
Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water, unfltrd recover, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recover, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recover, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover, mg/L (00929)
SEP 24...	280	12.2	19.9	20.2	11.9	12.1	1.07	1.1	5.25	5.3
Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Aluminum, water, fltrd, ug/L (01106)	Aluminum, water, unfltrd recover, ug/L (01105)
SEP 24...	6.00	--	7.99	8.15	90.0	91.0	<.004	<.004	160	400
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd, ug/L (01097)	Arsenic, water, fltrd, ug/L (01000)	Arsenic, water, unfltrd, ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recover, ug/L (00998)	Bismuth, water, fltrd, ug/L (01015)	Bismuth, water, unfltrd, ug/L (01017)
SEP 24...	<.050	<.050	<.600	<.600	27.5	27.0	.300	.400	<.040	<.040
Date	Cadmium, water, fltrd, ug/L (01025)	Cadmium, water, unfltrd, ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd, ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd, ug/L (01117)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recover, ug/L (01034)	Cobalt, water, fltrd, ug/L (01035)	Cobalt, water, unfltrd recover, ug/L (01037)
SEP 24...	.300	.300	1.90	2.10	.060	.060	<1.00	<1.00	28.0	27.5
Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover, ug/L (01042)	Dysprosium, water, fltrd, ug/L (82331)	Dysprosium, water, unfltrd, ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd, ug/L (01246)	Europium, water, fltrd, ug/L (50574)	Europium, water, unfltrd, ug/L (01236)	Gadolinium, water, fltrd, ug/L (50575)	Gadolinium, water, unfltrd, ug/L (01219)
SEP 24...	4.00	4.00	.220	.240	.120	.140	.050	.058	.290	.330

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**01467448 -- Schuylkill River at Middleport, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
SEP 24...	<.020	<.020	<.020	<.020	<.010	<.010	.040	.050	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, recover -able, ug/L (01045)	Iron, water, fltrd, ug/L (01180)	Iron, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, recover -able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, recover -able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)
SEP 24...	500	620	1.00	1.10	.200	.200	12.0	12.5	1620	1610
Date	Molyb- denum, water, fltrd, ug/L (01060)	Molyb- denum, water, recover -able, ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, recover -able, ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium water, fltrd, ug/L (50583)	Rhenium water, unfltrd ug/L (01242)
SEP 24...	.200	.200	1.00	1.10	35.5	36.0	.240	.270	<.020	<.020
Date	Rubid- ium, water, fltrd, ug/L (01135)	Rubid- ium, water, unfltrd ug/L (01137)	Samar- ium, water, fltrd, ug/L (82323)	Samar- ium, water, unfltrd ug/L (82322)	Selen- ium, water, fltrd, ug/L (01145)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, recover -able, ug/L (01077)	Stront- ium, water, fltrd, ug/L (01080)	Stront- ium, water, unfltrd recover -able, ug/L (01082)
SEP 24...	2.00	2.00	.200	.210	<.200	<.200	.060	.080	179	182
Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
SEP 24...	.040	.040	<.050	<.050	<.020	<.020	.020	.020	<.020	<.020
Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, recover -able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
SEP 24...	<.200	<.200	.100	.100	1.20	1.30	93.5	89.0	.040	.050

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
DEC 03...	0930	1028	930	2.8	342	.0	.2	2	5.9	5.8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
MAR 04...	1330	1028	1028	3.3	327	4.0	.5	4	6.0	6.0
APR 28...	1400	1028	1028	3.3	360	9.0	.7	6	5.9	6.0
JUN 04...	1245	1028	1028	--	280	11	1.9	17	5.8	6.7
JUN 30...	1215	1028	1028	8.6	400	23	1.1	11	5.8	6.2
AUG 27...	1230	1028	1028	4.3	320	--	.1	2	5.8	6.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recoverable, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recoverable, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recoverable, mg/L (00929)
DEC 03...	547	12.3	42.0	40.0	37.0	35.0	1.20	1.2	11.0	10.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recoverable, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recoverable, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recoverable, mg/L (00929)
MAR 04...	526	11.9	--	--	--	--	--	--	--	--
APR 28...	530	12.0	33.6	35.7	32.6	34.4	1.04	1.1	6.65	7.0
JUN 04...	540	11.9	35.4	--	32.4	--	1.10	--	7.00	--
JUN 30...	560	12.0	34.8	35.3	33.5	34.2	1.10	1.1	6.90	7.0
AUG 27...	540	12.0	32.6	33.4	32.8	33.6	1.03	1.1	6.10	6.2

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
DEC 03...	70	--	--	--	230	220	--	--	80	400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Alum- inum, water, fltrd, ug/L (01106)	Alum- inum, water, unfltrd recover- able, ug/L (01105)
MAR 04...	40.0	--	--	--	--	--	--	--	--	--
APR 28...	42.0	--	10.1	10.1	370	370	<.001	<.001	185	1750
JUN 04...	42.0	80.0	11.0	--	232	--	<.001	--	270	--
JUN 30...	37.0	--	9.89	10.3	360	360	<.001	<.001	70.0	1700
AUG 27...	37.0	--	9.68	10.4	340	360	<.001	<.001	170	1800

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
DEC 03...	<40	<40	<40.0	<40	26.0	26.000	<1.000	1.000	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Anti- mony, water, fltrd, ug/L (01095)	Anti- mony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover- able, ug/L (01007)	Beryll- ium, water, fltrd, ug/L (01010)	Beryll- ium, water, unfltrd recover- able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.020	<.020	1.40	1.90	23.5	23.5	1.10	1.70	<.010	<.010
JUN 04...	.091	--	<1.00	--	23.0	--	.900	--	.020	--
JUN 30...	<.020	<.020	.390	.500	21.5	23.0	.960	1.50	<.010	<.010
AUG 27...	.020	<.020	1.70	1.80	21.0	20.5	1.20	1.80	<.010	<.010

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd ug/L (01034)	Cobalt water, recover fltrd, ug/L (01035)	Cobalt water, unfltrd recover fltrd, ug/L (01037)
DEC 03...	<3.000	<3.000	--	--	--	--	<3.000	<3	60	50

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd ug/L (01034)	Cobalt water, recover fltrd, ug/L (01035)	Cobalt water, unfltrd recover fltrd, ug/L (01037)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.190	.150	9.00	10.0	.130	.120	<1.00	<1.00	53.5	53.5
JUN 04...	.065	--	10.0	--	.140	--	<1.00	--	60.0	--
JUN 30...	.480	.500	6.10	8.80	.110	.120	<1.00	<1.00	45.0	51.0
AUG 27...	.130	.150	7.80	8.90	.100	.100	<1.00	<1.00	47.5	53.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
DEC 03...	<3.000	<3.000	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.540	4.70	.800	1.00	.470	.580	.170	.230	.830	1.00
JUN 04...	.800	--	.860	--	.500	--	.200	--	1.00	--
JUN 30...	1.10	8.40	.530	.920	.300	.530	.100	.200	.500	.880
AUG 27...	<.500	3.00	.700	.920	.400	.500	.160	.210	.680	.880

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
DEC 03...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.020	<.020	.035	<.020	<.010	<.010	.160	.210	<.010	<.010
JUN 04...	.035	--	<.020	--	.022	--	.190	--	<.010	--
30...	.021	<.020	<.020	<.020	<.010	<.010	.100	.190	<.010	<.010
AUG 27...	<.020	<.020	<.020	<.020	<.010	<.010	.140	.180	<.010	<.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
DEC 03...	16000	16000	--	--	<40.000	<40.000	--	--	2500	2400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	7500	7950	4.40	4.70	.066	.750	21.5	21.5	2080	2060
JUN 04...	9250	--	4.90	--	.066	--	21.0	--	2050	--
30...	3650	5200	3.20	4.10	.063	1.40	21.5	22.0	1820	1870
AUG 27...	6000	6650	3.70	4.00	<.050	.580	21.5	22.5	1900	1940

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
DEC 03...	--	--	--	--	78.000	75.000	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.094	.110	4.20	5.10	79.5	77.5	1.10	1.30	<.020	<.020
JUN 04...	.140	--	4.60	--	82.5	--	1.20	--	<.020	--
JUN 30...	.110	.160	2.70	4.50	72.5	75.5	.710	1.10	<.020	<.020
AUG 27...	.230	.190	3.60	4.50	74.0	78.0	.940	1.10	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
DEC 03...	--	--	--	--	<100	<100	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	2.10	2.00	.790	1.00	<.200	<.200	<.010	<.010	360	374
JUN 04...	2.30	--	.850	--	<.200	--	.160	--	366	--
JUN 30...	1.80	1.90	.470	.960	<.200	<.200	.034	.034	358	378
AUG 27...	1.70	1.70	.680	.940	<.200	<.200	.530	.280	322	326



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**403958076191401 -- Otto Air Shaft--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Terbium water, fltrd, ug/L (50586)	Terbium water unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
DEC 03...	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.130	.160	<.050	<.050	<.030	<.030	.063	.084	<.020	<.020
JUN 04...	.150	--	<.050	--	<.010	--	.067	--	<.020	--
30...	.082	.140	<.050	<.050	<.030	<.030	.042	.073	<.020	<.020
AUG 27...	.110	.160	<.050	<.050	<.030	<.030	.056	.079	<.020	<.020

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, recover -able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water unfltrd ug/L (28011)
DEC 03...	--	--	--	--	--	--	30	30	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover -able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water unfltrd ug/L (28011)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.100	<.100	.350	.480	3.80	4.40	182	179	.071	.380
JUN 04...	<.100	--	.380	--	4.30	--	158	--	.068	--
30...	<.100	<.100	.220	.440	2.90	4.00	226	240	.046	.350
AUG 27...	<.100	<.100	.300	.440	3.40	4.00	183	192	.062	.320

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784350 -- Otto Air Shaft, 400 M DS, near Llewellyn, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
MAR 04...	1300	1028	1028	3.3	325	7.0	10.9	100	6.7	6.8
APR 28...	1345	1028	1028	3.3	330	11	9.8	95	6.4	6.5
JUN 30...	1145	1028	1028	8.6	350	38	9.6	90	6.1	--
AUG 27...	1200	1028	1028	4.3	350	--	10.0	94	6.2	--

  

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
MAR 04...	529	11.7	--	--	--	--	--	--	--	--
APR 28...	520	12.3	41.9	42.5	18.9	19.1	1.90	1.9	8.40	8.3
JUN 30...	560	12.1	35.5	36.2	34.4	34.6	1.10	1.1	7.10	7.3
AUG 27...	520	12.1	32.4	33.7	32.0	32.6	1.04	1.1	5.90	6.2

  

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus water, fltrd, mg/L (00666)	Phosphorus water, unfltrd mg/L (00665)	Aluminum water, fltrd, ug/L (01106)	Aluminum water, unfltrd recover-able, ug/L (01105)
MAR 04...	48.0	.000	--	--	--	--	--	--	--	--
APR 28...	36.0	--	13.0	15.9	310	320	<.001	.030	17.5	755
JUN 30...	40.0	--	10.1	10.4	360	360	<.001	<.001	57.0	1700
AUG 27...	40.0	--	9.93	10.2	350	350	<.001	<.001	96.5	1800

  

Date	Antimony water, fltrd, ug/L (01095)	Antimony water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium water, fltrd, ug/L (01005)	Barium water, unfltrd recover-able, ug/L (01007)	Beryllium water, fltrd, ug/L (01010)	Beryllium water, unfltrd recover-able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.036	.043	<.200	<.200	23.5	22.0	.280	.690	<.010	<.010
JUN 30...	<.020	<.020	<.200	<.200	22.5	23.0	.970	1.50	<.010	<.010
AUG 27...	<.020	<.020	1.70	2.00	21.0	21.0	.870	2.00	<.010	<.010

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784350 -- Otto Air Shaft, 400 M DS, near Llewellyn, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.360	.340	.750	1.50	.083	.089	<1.00	<1.00	25.5	32.5
JUN 30...	.490	.530	6.00	9.00	.120	.110	<1.00	<1.00	50.0	51.0
AUG 27...	.130	.140	8.10	9.20	.120	.110	<1.00	<1.00	53.5	53.5
Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.660	3.90	.076	.230	.045	.130	.014	.047	.081	.230
JUN 30...	.980	8.80	.460	.970	.290	.550	.096	.220	.500	.960
AUG 27...	<.500	3.30	.670	.900	.390	.510	.160	.210	.670	.890
Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.029	.022	.023	.022	<.010	<.010	.018	.047	<.010	<.010
JUN 30...	.039	.040	<.020	<.020	<.010	<.010	.100	.180	<.010	<.010
AUG 27...	<.020	<.020	.027	<.020	<.010	<.010	.140	.190	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	620	1350	.540	.850	<.050	.380	37.5	37.0	1570	1540
JUN 30...	3700	5400	3.20	4.20	<.050	1.50	21.5	23.0	1880	1880
AUG 27...	6300	6750	4.00	4.20	<.050	.580	21.5	21.5	2010	1980

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784350 -- Otto Air Shaft, 400 M DS, near Llewellyn, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, fltrd, ug/L (01060)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.049	.050	.370	.850	50.0	60.5	.093	.200	<.020	<.020
JUN 30...	.100	.150	2.60	4.60	76.0	77.5	.700	1.20	<.020	<.020
AUG 27...	.060	.075	3.70	4.60	78.0	76.5	.960	1.20	<.020	<.020
Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd recover-able, ug/L (01082)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	2.40	2.30	.070	.200	.380	.470	<.010	<.010	226	221
JUN 30...	1.90	1.90	.430	.970	<.200	<.200	.047	.063	372	390
AUG 27...	1.90	1.80	.670	.960	<.200	<.200	<.010	<.010	326	326
Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd, ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd, ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd, ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd, ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd, ug/L (01154)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.014	.038	<.050	<.050	<.030	<.030	.006	.018	<.020	<.020
JUN 30...	.076	.160	<.050	<.050	<.030	<.030	.038	.076	<.020	<.020
AUG 27...	.110	.160	<.050	<.050	<.030	<.030	.050	.075	<.020	<.020
Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover-able, ug/L (01092)	Uranium, natural water, fltrd, ug/L (22703)	Uranium, natural water, unfltrd, ug/L (28011)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.100	<.100	.032	.110	.600	1.30	99.5	124	.021	.043
JUN 30...	<.100	<.100	.200	.460	2.70	4.10	242	246	.029	.360
AUG 27...	<.100	<.100	.290	.450	3.50	4.20	182	182	.036	.340

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784338 -- Muddy Br ab Otto Mine Discharge nr Branchdale, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
MAR 04...	1245	1028	1028	1.1	389	18	11.5	93	6.6	6.7
APR 28...	1330	1028	1028	2.1	330	11	8.6	87	6.6	6.6
JUN 30...	1200	1028	1028	3.0	330	13	9.7	95	6.4	6.5
AUG 27...	1215	1028	1028	1.2	300	--	9.0	90	6.3	6.5

  

Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
MAR 04...	531	6.3	--	--	--	--	--	--	--	--
APR 28...	460	16.1	35.9	35.4	34.1	32.8	1.15	1.1	7.00	6.8
JUN 30...	490	14.2	42.9	43.5	19.4	19.8	1.75	1.9	5.10	5.2
AUG 27...	450	15.5	50.5	49.0	21.6	21.2	2.30	2.3	6.45	6.3

  

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus water, fltrd, mg/L (00666)	Phosphorus water, unfltrd mg/L (00665)	Aluminum water, fltrd, ug/L (01106)	Aluminum water, unfltrd recover-able, ug/L (01105)
MAR 04...	19.0	--	--	--	--	--	--	--	--	--
APR 28...	13.0	--	10.2	10.1	380	370	<.001	<.001	120	1700
JUN 30...	19.0	--	15.2	16.8	320	290	<.001	.021	26.5	1040
AUG 27...	19.0	--	17.5	17.6	330	330	<.001	.023	28.0	485

  

Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium water, fltrd, ug/L (01005)	Barium water, unfltrd recover-able, ug/L (01007)	Beryllium water, fltrd, ug/L (01010)	Beryllium water, unfltrd recover-able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.026	.025	1.50	1.50	23.5	24.5	.680	1.40	<.010	<.010
JUN 30...	.064	.084	<.200	<.200	25.5	25.5	.490	1.00	.010	.040
AUG 27...	<.020	<.020	<.200	<.200	21.5	21.0	.360	.480	<.010	<.010

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784338 -- Muddy Branch Otto Mine Discharge near Branchdale, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium	Cadmium	Cerium	Cerium	Cesium	Cesium	Chrom-	Chrom-	Cobalt	Cobalt
	water, fltrd, ug/L (01025)	water, unfltrd ug/L (01027)	water, fltrd, ug/L (01110)	water, unfltrd ug/L (01112)	water, fltrd, ug/L (01115)	water, unfltrd ug/L (01117)	ium, water, fltrd, ug/L (01030)	ium, water, unfltrd ug/L (01034)	water, fltrd, ug/L (01035)	water, unfltrd ug/L (01037)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.180	.170	8.50	11.0	.130	.150	<1.00	<1.00	58.5	53.5
JUN 30...	.480	.430	1.70	2.70	.110	.110	<1.00	<1.00	35.0	37.0
AUG 27...	.320	.340	1.30	1.60	.098	.100	<1.00	<1.00	33.0	36.0
Date	Copper	Copper	Dyspros	Dyspros	Erbium	Erbium	Euro-	Euro-	Gado-	Gado-
	water, fltrd, ug/L (01040)	water, unfltrd recover ug/L (01042)	ium, water, fltrd, ug/L (82331)	ium, water, unfltrd ug/L (82330)	water, fltrd, ug/L (50573)	water, unfltrd ug/L (01246)	pium, water, fltrd, ug/L (50574)	pium, water, unfltrd ug/L (01236)	linium, water, fltrd, ug/L (50575)	linium, water, unfltrd ug/L (01219)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.550	5.20	.700	1.20	.370	.640	.150	.260	.740	1.20
JUN 30...	.900	4.40	.180	.420	.097	.220	.031	.081	.170	.410
AUG 27...	.500	2.40	.120	.230	.077	.120	.024	.043	.160	.230
Date	Gallium	Gallium	German-	German-	Gold	Gold	Holmium	Holmium	Indium	Indium
	water, fltrd, ug/L (01120)	water, unfltrd ug/L (01122)	ium, water, fltrd, ug/L (01125)	ium, water, unfltrd ug/L (01127)	water, fltrd, ug/L (82334)	water, unfltrd ug/L (71910)	water, fltrd, ug/L (50577)	water, unfltrd ug/L (01247)	water, fltrd, ug/L (62843)	water, unfltrd ug/L (01168)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.027	.023	.024	.022	<.010	<.010	.140	.240	<.010	<.010
JUN 30...	.052	.053	.030	.036	<.010	<.010	.037	.079	<.010	<.010
AUG 27...	.060	.051	<.020	<.020	<.010	<.010	.029	.044	<.010	<.010
Date	Iron	Iron	Lantha-	Lantha-	Lead	Lead	Lithium	Lithium	Mangan-	Mangan-
	water, fltrd, ug/L (01046)	water, unfltrd recover ug/L (01045)	num, water, fltrd, ug/L (01180)	num, water, unfltrd ug/L (01182)	water, fltrd, ug/L (01049)	water, unfltrd recover ug/L (01051)	water, fltrd, ug/L (01130)	water, unfltrd recover ug/L (01132)	ese, water, fltrd, ug/L (01056)	ese, water, unfltrd recover ug/L (01055)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	7500	8150	4.40	5.20	.058	.850	21.5	21.5	2170	2170
JUN 30...	1350	2200	1.10	1.50	.092	.760	39.0	40.5	1990	2020
AUG 27...	745	1150	.890	1.00	<.050	.230	47.5	48.0	2040	2040

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784338 -- Muddy Branch Otto Mine Discharge nr Branchdale, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, unfltrd, recover-able, ug/L (01060)	Molybdenum, water, unfltrd, recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd, recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.270	.250	3.80	5.50	82.5	81.0	1.00	1.40	<.020	<.020
JUN 30...	.120	.120	.800	1.50	63.0	69.0	.200	.350	<.020	<.020
AUG 27...	.071	.065	.610	.850	65.5	67.0	.150	.200	<.020	<.020
Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd, recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd, recover-able, ug/L (01082)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	2.20	2.40	.660	1.20	<.200	<.200	.480	.300	384	388
JUN 30...	2.80	2.80	.140	.310	.450	.440	.230	.240	251	250
AUG 27...	2.70	2.60	.110	.160	<.200	<.200	<.010	<.010	241	231
Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd, ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd, ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd, ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd, ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd, ug/L (01154)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.110	.190	<.050	<.050	<.030	.140	.053	.093	.085	.072
JUN 30...	.028	.065	<.050	<.050	<.030	<.030	.013	.033	.057	.054
AUG 27...	.023	.035	<.050	<.050	<.020	<.020	.009	.018	<.020	<.020
Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover-able, ug/L (01092)	Uranium, natural, fltrd, ug/L (22703)	Uranium, natural, unfltrd, ug/L (28011)
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.100	<.100	.280	.560	3.70	5.00	186	183	.043	.430
JUN 30...	<.100	<.100	.073	.190	1.20	2.00	123	136	.032	.080
AUG 27...	<.100	<.100	.055	.094	.930	1.30	132	134	.021	.034

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784354 -- Muddy Branch bl Otto Mine Discharge ab Steins, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT	02...	1028	1028	2.9	210	12	10.1	100	6.9	--
MAR	04...	1028	1028	6.5	333	12	11.8	102	6.8	6.9
	04...	1028	1028	6.5	333	12	11.8	102	6.8	6.9
APR	28...	1028	1028	9.4	300	14	10.2	99	6.7	6.8
JUN	30...	1028	1028	12	350	20	9.7	92	6.1	--
AUG	27...	1028	1028	5.4	310	--	9.9	94	6.2	--

  

Date	Specif. conductance, wat unfltrd, uS/cm, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
OCT	530	14.7	42.2	43.0	31.0	31.6	1.40	1.4	9.55	9.8
MAR	501	9.0	--	--	--	--	--	--	--	--
	501	9.0	--	--	--	--	--	--	--	--
APR	490	13.6	36.1	36.5	29.4	29.9	1.15	1.2	7.20	7.2
JUN	540	12.5	36.2	37.4	31.1	31.4	1.25	1.3	6.70	6.8
AUG	530	12.7	34.8	35.0	30.4	30.7	1.20	1.2	6.00	6.0

  

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd, mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd, mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd, mg/L (00946)	Phosphorus water, fltrd, mg/L (00666)	Phosphorus water, unfltrd, mg/L (00665)	Aluminum water, fltrd, mg/L (01106)	Aluminum water, unfltrd recover-able, ug/L (01105)
OCT	39.0	.000	9.98	10.2	210	210	<.003	.014	16.0	620
MAR	43.0	.000	--	--	--	--	--	--	--	--
	43.0	--	--	--	--	--	--	--	--	--
APR	32.0	--	10.2	11.1	340	350	<.001	<.001	20.5	1350
JUN	35.0	--	10.6	11.4	340	350	<.001	<.001	29.0	1550
AUG	35.0	--	11.5	11.5	360	360	<.001	<.001	97.5	1850

  

Date	Antimony water, fltrd, ug/L (01095)	Antimony water, unfltrd, ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd, ug/L (01002)	Barium water, fltrd, ug/L (01005)	Barium water, unfltrd recover-able, ug/L (01007)	Beryllium water, fltrd, ug/L (01010)	Beryllium water, unfltrd recover-able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd, ug/L (01017)
OCT	<.040	<.040	<.200	<.200	23.5	23.5	.200	.600	<.030	<.030
MAR	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
APR	.020	<.020	<.200	.840	24.0	24.0	.410	1.20	<.010	<.010
JUN	.023	<.020	<.200	<.200	22.0	22.0	.600	1.40	<.010	<.010
AUG	<.020	<.020	1.20	1.70	22.0	22.5	.920	1.60	<.010	<.010



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784354 -- Muddy Branch bl Otto Mine Discharge ab Steins, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chrom- ium, water, fltrd, ug/L (01030)	Chrom- ium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover- able, ug/L (01037)
OCT 02...	.200	.200	.400	4.20	.100	.100	<1.00	<1.00	42.5	42.0
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.360	.230	3.90	7.40	.120	.130	<1.00	<1.00	48.0	47.0
JUN 30...	.440	.480	4.60	7.20	.100	.120	<1.00	<1.00	42.0	45.5
AUG 27...	.200	.190	7.80	10.0	.130	.120	<1.00	<1.00	52.5	51.0
Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Dyspros- ium, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Euro- pium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Gado- linium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)
OCT 02...	.900	3.00	.040	.450	.030	.260	.006	.099	.050	.530
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.540	4.70	.230	.810	.130	.450	.048	.190	.260	.810
JUN 30...	.800	7.50	.360	.760	.220	.450	.074	.180	.360	.760
AUG 27...	<.500	4.20	.660	1.10	.360	.620	.140	.250	.690	1.10
Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
OCT 02...	.030	<.020	<.020	<.020	<.010	<.010	.009	.095	<.010	<.010
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.038	.023	.032	.023	<.010	<.010	.050	.170	<.010	<.010
JUN 30...	.027	<.020	.021	.020	<.010	<.010	.080	.160	<.010	<.010
AUG 27...	.030	<.020	<.020	.023	<.010	<.010	.140	.230	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
OCT 02...	4450	5750	.300	2.00	.060	.300	20.5	20.5	1850	1900
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	4300	5350	2.40	3.60	<.050	.730	22.5	23.0	1980	1990
JUN 30...	3100	4600	2.50	3.40	<.050	1.20	26.0	25.0	1820	1860
AUG 27...	5400	7300	3.90	4.70	.050	1.20	25.0	25.0	2050	2040

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784354 -- Muddy Branch bl Otto Mine Discharge ab Steins, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molybdenum, water, fltrd, ug/L (01060)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
OCT 02...	.060	.050	.200	2.10	63.5	63.5	.040	.520	<.020	<.020
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.190	.140	1.60	3.80	71.0	74.0	.420	.940	<.020	<.020
JUN 30...	.150	.160	1.90	3.80	68.0	73.5	.510	.940	<.020	<.020
AUG 27...	.067	.077	3.60	5.50	79.0	78.0	.920	1.40	<.020	<.020

Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd recover-able, ug/L (01082)
OCT 02...	2.30	2.40	.030	.430	.200	<.200	<.010	<.010	342	349
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	2.30	2.30	.220	.790	.310	<.200	<.010	<.010	347	345
JUN 30...	1.80	2.00	.310	.800	.200	<.200	.670	.160	335	346
AUG 27...	2.20	2.20	.660	1.20	<.200	<.200	<.010	<.010	322	320

Date	Terbium, water, fltrd, ug/L (50586)	Terbium, water, unfltrd, ug/L (01218)	Thallium, water, fltrd, ug/L (01057)	Thallium, water, unfltrd, ug/L (01059)	Thorium, water, fltrd, ug/L (82365)	Thorium, water, unfltrd, ug/L (82364)	Thulium, water, fltrd, ug/L (50587)	Thulium, water, unfltrd, ug/L (01245)	Tungsten, water, fltrd, ug/L (01155)	Tungsten, water, unfltrd, ug/L (01154)
OCT 02...	.007	.080	<.050	<.050	<.040	<.040	<.005	.030	.030	.040
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.036	.130	<.050	<.050	<.030	<.030	.018	.071	.039	.038
JUN 30...	.060	.130	<.050	<.050	<.030	<.030	.027	.061	<.020	<.020
AUG 27...	.110	.180	<.050	<.050	<.030	<.030	.053	.092	<.020	<.020

Date	Vanadium, water, fltrd, ug/L (01085)	Vanadium, water, unfltrd, ug/L (01087)	Ytterbium, water, fltrd, ug/L (01194)	Ytterbium, water, unfltrd, ug/L (01196)	Yttrium, water, fltrd, ug/L (01201)	Yttrium, water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover-able, ug/L (01092)	Uranium natural, water, fltrd, ug/L (22703)	Uranium natural, water, unfltrd, ug/L (28011)
OCT 02...	<.100	<.100	.020	.200	.400	2.20	46.5	54.5	.020	.080
MAR 04...	--	--	--	--	--	--	--	--	--	--
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.100	<.100	.094	.400	1.70	3.60	149	165	.030	.310
JUN 30...	<.100	<.100	.150	.370	2.20	3.40	202	222	.026	.280
AUG 27...	<.100	<.100	.270	.540	3.30	4.80	183	181	.042	.360

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784358 -- Muddy Branch bl Otto Mine Discharge bl Steins, PA**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 02...	1000	1028	1028	3.5	250	11	9.8	95	6.9	--
MAR 04...	1145	1028	1028	7.4	426	11	12.0	100	6.4	6.6
APR 28...	1230	1028	1028	12	320	13	10.0	97	6.6	6.8
Date	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recoverable, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recoverable, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recoverable, mg/L (00929)
OCT 02...	480	13.9	39.5	38.5	28.1	27.3	1.40	1.4	8.70	8.3
MAR 04...	434	7.2	--	--	--	--	--	--	--	--
APR 28...	450	13.9	34.5	34.8	26.9	27.1	1.20	1.2	6.85	6.8
Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Aluminum, water, fltrd, ug/L (01106)	Aluminum, water, unfltrd recoverable, ug/L (01105)
OCT 02...	33.0	.000	9.51	9.46	190	180	<.003	.007	17.0	335
MAR 04...	33.0	--	--	--	--	--	--	--	--	--
APR 28...	32.0	--	9.53	9.58	290	290	<.001	.005	20.5	1150
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd, ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd, ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recoverable, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recoverable, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd, ug/L (01017)
OCT 02...	<.040	<.040	<.200	<.200	22.5	22.5	.090	.200	<.030	<.030
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.020	<.020	.240	.420	20.0	20.5	.260	.660	<.010	<.010
Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd, ug/L (01027)	Cerium water, fltrd, ug/L (01110)	Cerium water, unfltrd, ug/L (01112)	Cesium water, fltrd, ug/L (01115)	Cesium water, unfltrd, ug/L (01117)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recoverable, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recoverable, ug/L (01037)
OCT 02...	.200	.200	.100	2.20	.090	.090	<1.00	<1.00	32.5	34.0
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.190	.190	2.00	5.20	.092	.094	<1.00	<1.00	35.0	35.5

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784358 -- Muddy Branch bl Otto Mine Discharge bl Steins, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover-able, ug/L (01042)	Copper, water, fltrd, ug/L (82331)	Dysprosium, water, unfltrd, ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd, ug/L (01246)	Euro-pium, water, fltrd, ug/L (50574)	Euro-pium, water, unfltrd, ug/L (01236)	Gado-linium, water, fltrd, ug/L (50575)	Gado-linium, water, unfltrd, ug/L (01219)
OCT 02...	<.500	2.00	.020	.230	.010	.140	<.005	.056	.020	.280
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.500	3.50	.120	.590	.074	.330	.024	.130	.140	.630
Date	Gallium, water, fltrd, ug/L (01120)	Gallium, water, unfltrd recover-able, ug/L (01122)	German-ium, water, fltrd, ug/L (01125)	German-ium, water, unfltrd, ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd, ug/L (71910)	Holmium, water, fltrd, ug/L (50577)	Holmium, water, unfltrd, ug/L (01247)	Indium, water, fltrd, ug/L (62843)	Indium, water, unfltrd, ug/L (01168)
OCT 02...	.040	.040	<.020	<.020	<.010	<.010	<.005	.050	<.010	<.010
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.046	.040	<.020	<.020	<.010	<.010	.027	.120	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover-able, ug/L (01045)	Lantha-num, water, fltrd, ug/L (01180)	Lantha-num, water, unfltrd, ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover-able, ug/L (01051)	Lithium, water, fltrd, ug/L (01130)	Lithium, water, unfltrd recover-able, ug/L (01132)	Mangan-ese, water, fltrd, ug/L (01056)	Mangan-ese, water, unfltrd recover-able, ug/L (01055)
OCT 02...	2350	3250	.100	1.10	<.050	.200	18.0	18.0	1620	1580
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	2900	4100	1.40	2.50	<.050	.510	20.0	20.5	1560	1580
Date	Molybdenum, water, fltrd, ug/L (01060)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Neodym-ium, water, fltrd, ug/L (50579)	Neodym-ium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover-able, ug/L (01067)	Praseo-dymium, water, fltrd, ug/L (50582)	Praseo-dymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
OCT 02...	.050	.060	.050	1.10	52.0	50.0	.010	.290	<.020	<.020
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.071	.083	.730	2.70	61.0	57.0	.210	.650	<.020	<.020
Date	Rubid-ium, water, fltrd, ug/L (01135)	Rubid-ium, water, unfltrd, ug/L (01137)	Samar-ium, water, fltrd, ug/L (82323)	Samar-ium, water, unfltrd, ug/L (82322)	Selen-ium, water, fltrd, ug/L (01145)	Selen-ium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover-able, ug/L (01077)	Stront-ium, water, fltrd, ug/L (01080)	Stront-ium, water, unfltrd recover-able, ug/L (01082)
OCT 02...	2.20	2.20	<.010	.220	<.200	<.200	.010	.010	312	304
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	1.60	1.70	.100	.580	<.200	<.200	.545	<.010	278	282

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**0146784358 -- Muddy Branch bl Otto Mine Discharge bl Steins, PA--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd, ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd, ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd, ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd, ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd, ug/L (01154)
OCT 02...	<.005	.040	<.050	<.050	<.040	<.040	<.005	.020	.030	.040
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	.018	.100	<.050	<.050	<.020	<.020	.009	.047	<.020	<.020

  

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd, ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd, ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd, ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd, recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd, ug/L (28011)
OCT 02...	<.100	<.100	.010	.100	.200	1.20	41.0	42.5	.020	.050
MAR 04...	--	--	--	--	--	--	--	--	--	--
APR 28...	<.100	<.100	.050	.280	.850	2.40	124	128	.019	.200









**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**405224076001701 -- Silverbrook Mine Opening**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 26...	1130	1028	1028	.73	510	.0	1.7	15	4.2	--
Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water, unfltrd recover, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover, mg/L (00929)
NOV 26...	490	9.8	33.8	32.9	9.90	9.7	2.90	2.8	21.6	21.4
Date	ANC, wat unfltrd fixed end pt, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus water, fltrd, mg/L (00666)	Phosphorus water, unfltrd mg/L (00665)	Aluminum water, unfltrd recover, ug/L (01106)	Aluminum water, unfltrd recover, ug/L (01105)
NOV 26...	.000	--	12.9	12.8	200	200	<.003	<.003	5700	5650
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd, ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd, ug/L (01002)	Barium water, fltrd, ug/L (01005)	Barium water, unfltrd recover, ug/L (01007)	Beryllium water, fltrd, ug/L (01010)	Beryllium water, unfltrd recover, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd, ug/L (01017)
NOV 26...	<.040	<.040	52.9	<.200	26.0	25.5	4.10	3.10	<.030	<.030
Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd, ug/L (01027)	Cerium water, fltrd, ug/L (01110)	Cerium water, unfltrd, ug/L (01112)	Cesium water, fltrd, ug/L (01115)	Cesium water, unfltrd, ug/L (01117)	Chromium water, fltrd, ug/L (01030)	Chromium water, unfltrd recover, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover, ug/L (01037)
NOV 26...	1.10	1.10	26.0	26.0	.200	.200	1.00	<1.00	79.0	74.5
Date	Copper water, fltrd, ug/L (01040)	Copper water, unfltrd recover, ug/L (01042)	Dysprosium water, fltrd, ug/L (82331)	Dysprosium water, unfltrd, ug/L (82330)	Erbium water, fltrd, ug/L (50573)	Erbium water, unfltrd, ug/L (01246)	Europium water, fltrd, ug/L (50574)	Europium water, unfltrd, ug/L (01236)	Gadolinium water, fltrd, ug/L (50575)	Gadolinium water, unfltrd, ug/L (01219)
NOV 26...	6.00	9.00	1.80	1.80	1.10	1.10	.600	.580	2.60	2.60

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**405224076001701 -- Silverbrook Mine Opening--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gallium water, fltrd, ug/L (01120)	Gallium water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium water, fltrd, ug/L (50577)	Holmium water, unfltrd ug/L (01247)	Indium water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)
NOV 26...	<.020	<.020	<.020	<.020	<.010	<.010	.370	.370	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium water, fltrd, ug/L (01130)	Lithium water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)
NOV 26...	16400	16000	13.0	13.0	9.00	11.0	106	102	1780	1730
Date	Molyb- denum, water, fltrd, ug/L (01060)	Molyb- denum, water, unfltrd recover- able, ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover- able, ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium water, fltrd, ug/L (50583)	Rhenium water, unfltrd ug/L (01242)
NOV 26...	.030	.020	13.0	13.0	71.0	69.0	3.30	3.30	<.020	<.020
Date	Rubid- ium, water, fltrd, ug/L (01135)	Rubid- ium, water, unfltrd ug/L (01137)	Samar- ium, water, fltrd, ug/L (82323)	Samar- ium, water, unfltrd ug/L (82322)	Selen- ium, water, fltrd, ug/L (01145)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover- able, ug/L (01077)	Stront- ium, water, fltrd, ug/L (01080)	Stront- ium, water, unfltrd recover- able, ug/L (01082)
NOV 26...	4.50	4.40	2.70	2.60	<.200	<.200	.030	.040	139	138
Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
NOV 26...	.330	.320	<.050	<.050	<.040	<.040	.160	.160	.030	.040
Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
NOV 26...	<.100	<.100	.960	.940	9.80	9.50	262	246	.580	.580

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404705076003201 -- Reevesdale S Dip Tunnel**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 18...	1400	1028	1028	1.7	490	9.0	10.9	99	5.2	--
NOV 26...	1300	1028	1028	1.2	540	15	1.2	11	4.7	--
JAN 13...	1145	1028	1028	.89	520	8.0	1.1	10	4.6	--
Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, fltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 18...	180	10.6	--	8.6	--	6.8	--	.9	--	.8
NOV 26...	200	10.6	9.90	9.6	8.30	8.2	.88	.8	1.02	.8
JAN 13...	190	10.4	9.25	9.4	8.20	8.4	.90	.9	.80	.8
Date	ANC, wat unfltrd end pt, mg/L as CaCO3 (00417)	Acidity, water, unfltrd, mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd, mg/L (00956)	Sulfate, water, fltrd, mg/L (00945)	Sulfate, water, unfltrd, mg/L (00946)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Aluminum, water, fltrd, mg/L (01106)	Aluminum, water, unfltrd recoverable, mg/L (01105)
NOV 18...	2.60	--	--	8.26	--	47.0	--	<.004	--	1070
NOV 26...	2.00	--	9.96	9.81	59.0	58.0	<.004	<.004	1700	1700
JAN 13...	1.00	--	9.74	9.86	84.0	85.0	<.003	<.003	1600	1650
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd, ug/L (01097)	Arsenic, water, fltrd, ug/L (01000)	Arsenic, water, unfltrd, ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recoverable, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recoverable, ug/L (00998)	Bismuth, water, fltrd, ug/L (01015)	Bismuth, water, unfltrd recoverable, ug/L (01017)
NOV 18...	--	<.050	--	<.600	--	24.5	--	.500	--	<.040
NOV 26...	<.050	.050	<.600	<.600	25.0	25.0	.800	.600	<.040	<.040
JAN 13...	<.030	<.030	<.900	<.900	20.5	21.0	.800	.760	<.040	<.040
Date	Cadmium, water, fltrd, ug/L (01025)	Cadmium, water, unfltrd, ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd, ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd, ug/L (01117)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recoverable, ug/L (01034)	Cobalt, water, fltrd, ug/L (01035)	Cobalt, water, unfltrd recoverable, ug/L (01037)
NOV 18...	--	.200	--	2.60	--	.080	--	<1.00	--	20.5
NOV 26...	.300	.300	4.50	4.10	.100	.090	<1.00	<1.00	31.0	31.0
JAN 13...	.260	.240	3.60	3.60	.073	.069	1.10	<1.00	26.0	27.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404705076003201 -- Reevesdale S Dip Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover-able, ug/L (01042)	Copper, water, fltrd, ug/L (82331)	Dysprosium, water, unfltrd, ug/L (82330)	Erbium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd, ug/L (01246)	Europium, water, fltrd, ug/L (50574)	Europium, water, unfltrd, ug/L (01236)	Gadolinium, water, fltrd, ug/L (50575)	Gadolinium, water, unfltrd, ug/L (01219)
NOV 18...	--	5.00	--	.240	--	.130	--	.062	--	.340
NOV 26...	8.50	9.50	.390	.370	.230	.220	.110	.097	.490	.470
JAN 13...	7.40	9.60	.320	.340	.180	.180	.092	.079	.400	.400
Date	Gallium, water, fltrd, ug/L (01120)	Gallium, water, unfltrd, ug/L (01122)	Germanium, water, fltrd, ug/L (01125)	Germanium, water, unfltrd, ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd, ug/L (71910)	Holmium, water, fltrd, ug/L (50577)	Holmium, water, unfltrd, ug/L (01247)	Indium, water, fltrd, ug/L (62843)	Indium, water, unfltrd, ug/L (01168)
NOV 18...	--	<.020	--	<.020	--	<.010	--	.053	--	<.010
NOV 26...	<.020	<.020	<.020	<.020	<.010	<.010	.082	.079	<.010	<.010
JAN 13...	<.020	<.020	<.020	<.020	<.010	<.010	.065	.062	<.010	<.010
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover-able, ug/L (01045)	Iron, water, fltrd, ug/L (01180)	Iron, water, unfltrd, ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover-able, ug/L (01051)	Lithium, water, fltrd, ug/L (01130)	Lithium, water, unfltrd recover-able, ug/L (01132)	Manganese, water, fltrd, ug/L (01056)	Manganese, water, unfltrd recover-able, ug/L (01055)
NOV 18...	--	2350	--	1.20	--	.940	--	12.5	--	736
NOV 26...	2100	2950	2.10	1.90	1.00	1.40	17.5	16.0	960	940
JAN 13...	1800	2450	1.70	1.70	1.30	1.70	15.5	16.0	854	874
Date	Molybdenum, water, fltrd, ug/L (01060)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Neodymium, water, fltrd, ug/L (50579)	Neodymium, water, unfltrd, ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover-able, ug/L (01067)	Praseodymium, water, fltrd, ug/L (50582)	Praseodymium, water, unfltrd, ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd, ug/L (01242)
NOV 18...	--	.400	--	1.30	--	33.0	--	.320	--	<.020
NOV 26...	.300	.400	2.20	2.10	44.0	43.5	.570	.520	<.020	<.020
JAN 13...	.066	.060	1.90	1.80	42.0	42.5	.450	.460	<.020	<.020
Date	Rubidium, water, fltrd, ug/L (01135)	Rubidium, water, unfltrd, ug/L (01137)	Samarium, water, fltrd, ug/L (82323)	Samarium, water, unfltrd, ug/L (82322)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover-able, ug/L (01077)	Strontium, water, fltrd, ug/L (01080)	Strontium, water, unfltrd recover-able, ug/L (01082)
NOV 18...	--	1.40	--	.270	--	<.200	--	.200	--	50.5
NOV 26...	1.50	1.40	.470	.420	<.200	<.200	.050	.200	59.0	58.0
JAN 13...	1.20	1.20	.390	.400	<.200	<.200	.740	.140	52.5	54.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404705076003201 -- Reevesdale S Dip Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
NOV 18...	--	.040	--	<.050	--	<.020	--	.020	--	<.020
26...	.071	.069	<.050	<.050	<.020	<.020	.030	.030	<.020	<.020
JAN 13...	.057	.056	<.050	<.050	<.030	<.030	.027	.030	.210	.200

  

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water unfltrd ug/L (28011)
NOV 18...	--	<.200	--	.100	--	.990	--	99.5	--	.080
26...	<.200	<.200	.200	.200	1.60	1.50	148	140	.120	.120
JAN 13...	<.100	<.100	.170	.150	1.50	1.50	138	140	.110	.110

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404403076072401 -- Silver Creek Mine Tunnel**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 26...	1345	1028	1028	3.8	300	10	--	--	5.9	--
JAN 13...	1300	1028	1028	4.2	400	11	.4	4	5.9	--
JUN 04...	1430	1028	1028	--	310	9.9	.9	9	5.8	6.2
Date	Specif. conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
NOV 26...	580	11.8	51.3	50.6	30.9	30.1	1.10	1.1	2.45	2.4
JAN 13...	570	11.7	50.7	52.7	29.9	31.4	1.15	1.1	2.65	2.6
JUN 04...	640	11.8	57.9	--	31.3	--	1.15	--	2.75	--
Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity water, unfltrd mg/L as CaCO3 (00435)	Silica water, fltrd, mg/L (00955)	Silica water, unfltrd mg/L (00956)	Sulfate water, fltrd, mg/L (00945)	Sulfate water, unfltrd mg/L (00946)	Phosphorus water, fltrd, mg/L (00666)	Phosphorus water, unfltrd mg/L (00665)	Aluminum water, fltrd, ug/L (01106)	Aluminum water, unfltrd recover-able, ug/L (01105)
NOV 26...	47.0	--	12.9	13.4	250	250	<.003	.004	445	1450
JAN 13...	39.0	--	13.9	14.6	320	340	<.003	<.003	500	1550
JUN 04...	45.0	100	14.6	--	292	--	<.001	--	460	--
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd ug/L (01097)	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recover-able, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recover-able, ug/L (00998)	Bismuth water, fltrd, ug/L (01015)	Bismuth water, unfltrd ug/L (01017)
NOV 26...	<.040	<.040	51.6	2.80	18.5	18.5	2.10	2.10	<.030	<.030
JAN 13...	<.030	<.030	<.900	<.900	18.5	19.5	1.50	2.10	<.040	<.040
JUN 04...	.030	--	2.00	--	18.0	--	1.50	--	<.020	--
Date	Cadmium water, fltrd, ug/L (01025)	Cadmium water, unfltrd ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd ug/L (01117)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recover-able, ug/L (01034)	Cobalt water, fltrd, ug/L (01035)	Cobalt water, unfltrd recover-able, ug/L (01037)
NOV 26...	.100	.100	9.50	10.0	.200	.200	2.00	<1.00	87.0	85.0
JAN 13...	3.10	2.63	10.0	11.0	.200	.210	<1.00	<1.00	77.5	80.0
JUN 04...	.250	--	11.0	--	.220	--	<1.00	--	91.0	--

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404403076072401 -- Silver Creek Mine Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Dyspros- ium, water, fltrd, ug/L (50573)	Erbium, water, unfltrd ug/L (01246)	Erbium, water, fltrd, ug/L (50574)	Euro- pium, water, unfltrd ug/L (01236)	Euro- pium, water, fltrd, ug/L (50575)	Gado- linium, water, unfltrd ug/L (01219)	Gado- linium, water, fltrd, ug/L (01219)
NOV 26...	.600	2.00	.780	.970	.450	.520	.220	.260	1.10	1.30	
JAN 13...	1.00	2.50	.910	1.10	.460	.550	.220	.280	1.20	1.50	
JUN 04...	.630	--	.980	--	.520	--	.260	--	1.20	--	
Date	Gallium, water, fltrd, ug/L (01120)	Gallium, water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium, water, fltrd, ug/L (50577)	Holmium, water, unfltrd ug/L (01247)	Indium, water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)	
NOV 26...	<.020	<.020	<.020	<.020	<.010	<.010	.170	.180	<.010	<.010	
JAN 13...	<.020	<.020	<.020	.020	<.010	<.010	.160	.210	<.010	<.010	
JUN 04...	.038	--	<.020	--	<.010	--	.200	--	<.010	--	
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover- able, ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover- able, ug/L (01051)	Lithium, water, fltrd, ug/L (01130)	Lithium, water, unfltrd recover- able, ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover- able, ug/L (01055)	
NOV 26...	22200	22400	4.60	4.80	.300	.500	37.5	37.5	3360	3340	
JAN 13...	20000	21000	5.00	5.40	.430	.600	41.5	43.0	3110	3210	
JUN 04...	21000	--	5.50	--	.200	--	36.5	--	3210	--	
Date	Molyb- denum, water, fltrd, ug/L (01060)	Molyb- denum, water, unfltrd recover- able, ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover- able, ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd ug/L (01242)	
NOV 26...	.200	.200	4.60	5.10	97.5	97.0	1.20	1.30	<.020	<.020	
JAN 13...	.160	.200	4.80	5.80	99.0	102	1.20	1.40	<.020	<.020	
JUN 04...	.190	--	5.40	--	102	--	1.40	--	<.020	--	
Date	Rubid- ium, water, fltrd, ug/L (01135)	Rubid- ium, water, unfltrd ug/L (01137)	Samar- ium, water, fltrd, ug/L (82323)	Samar- ium, water, unfltrd ug/L (82322)	Selen- ium, water, fltrd, ug/L (01145)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover- able, ug/L (01077)	Stront- ium, water, fltrd, ug/L (01080)	Stront- ium, water, unfltrd recover- able, ug/L (01082)	
NOV 26...	2.40	2.40	.960	1.10	<.200	<.200	.010	.050	550	544	
JAN 13...	2.30	2.40	.980	1.20	<.200	<.200	.260	.066	572	592	
JUN 04...	2.70	--	1.10	--	<.200	--	.012	--	610	--	

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404403076072401 -- Silver Creek Mine Tunnel--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water, unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water, unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water, unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
NOV 26...	.160	.180	<.050	<.050	<.040	<.040	.060	.068	.040	.040
JAN 13...	.160	.190	<.050	<.050	<.030	<.030	.065	.080	<.020	<.020
JUN 04...	.170	--	<.050	--	<.010	--	.074	--	<.020	--

  

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water, unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water, unfltrd ug/L (28011)
NOV 26...	<.100	<.100	.330	.420	4.30	4.60	202	199	.070	.200
JAN 13...	<.100	<.100	.360	.460	4.50	5.00	220	225	.061	.220
JUN 04...	<.100	--	.420	--	4.70	--	241	--	.065	--



**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404320076103201 -- Pine Forest Mine**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 18...	1200	1028	1028	3.0	260	9.0	.2	2	5.7	--
NOV 26...	1530	1028	1028	2.7	280	5.0	--	--	5.7	--
DEC 17...	1400	1028	1028	3.2	400	5.0	.5	5	5.6	--
Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, fltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 18...	870	11.5	--	66.0	--	62.2	--	1.3	--	3.8
NOV 26...	810	11.5	64.7	64.3	61.4	60.4	1.30	1.3	3.75	3.7
DEC 17...	800	11.4	63.0	64.4	57.0	57.2	1.35	1.4	3.65	3.6
Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Acidity, water, unfltrd, mg/L as CaCO3 (00435)	Silica, water, fltrd, mg/L (00955)	Silica, water, unfltrd, mg/L (00956)	Sulfate, water, fltrd, mg/L (00945)	Sulfate, water, unfltrd, mg/L (00946)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Aluminum, water, fltrd, mg/L (01106)	Aluminum, water, unfltrd recoverable, mg/L (01105)
NOV 18...	33.0	--	--	11.6	--	430	--	<.003	--	670
NOV 26...	33.0	--	11.6	11.6	420	420	<.003	.006	430	645
DEC 17...	38.0	--	11.1	11.3	530	530	<.004	<.004	265	705
Date	Antimony, water, fltrd, ug/L (01095)	Antimony, water, unfltrd, ug/L (01097)	Arsenic, water, fltrd, ug/L (01000)	Arsenic, water, unfltrd, ug/L (01002)	Barium, water, fltrd, ug/L (01005)	Barium, water, unfltrd recoverable, ug/L (01007)	Beryllium, water, fltrd, ug/L (01010)	Beryllium, water, unfltrd recoverable, ug/L (00998)	Bismuth, water, fltrd, ug/L (01015)	Bismuth, water, unfltrd recoverable, ug/L (01017)
NOV 18...	--	<.040	--	2.70	--	12.0	--	.900	--	<.030
NOV 26...	<.040	<.040	2.30	2.30	12.0	12.0	.900	1.00	<.030	<.030
DEC 17...	<.030	<.030	.500	<.500	12.0	12.0	1.00	1.20	<.040	<.040
Date	Cadmium, water, fltrd, ug/L (01025)	Cadmium, water, unfltrd, ug/L (01027)	Cerium, water, fltrd, ug/L (01110)	Cerium, water, unfltrd, ug/L (01112)	Cesium, water, fltrd, ug/L (01115)	Cesium, water, unfltrd, ug/L (01117)	Chromium, water, fltrd, ug/L (01030)	Chromium, water, unfltrd recoverable, ug/L (01034)	Cobalt, water, fltrd, ug/L (01035)	Cobalt, water, unfltrd recoverable, ug/L (01037)
NOV 18...	--	.090	--	5.60	--	.100	--	2.00	--	81.0
NOV 26...	.100	.100	5.70	5.40	.100	.100	1.00	1.00	86.5	83.5
DEC 17...	.190	.140	6.20	6.30	.140	.140	<1.00	<1.00	81.5	87.5

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404320076103201 -- Pine Forest Mine--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, fltrd, ug/L (01040)	Copper, water, unfltrd recover- able, ug/L (01042)	Copper, water, fltrd, ug/L (82331)	Dyspros- ium, water, unfltrd ug/L (82330)	Dyspros- ium, water, unfltrd ug/L (50573)	Erbium, water, fltrd, ug/L (01246)	Erbium, water, unfltrd ug/L (50574)	Euro- pium, water, fltrd, ug/L (01236)	Euro- pium, water, unfltrd ug/L (50575)	Gado- linium, water, fltrd, ug/L (01219)	Gado- linium, water, unfltrd ug/L (01219)
NOV 18...	--	2.00	--	.560	--	.300	--	.150	--	.760	
NOV 26...	1.00	2.00	.560	.520	.280	.290	.160	.130	.770	.700	
DEC 17...	<.500	1.60	.630	.640	.320	.320	.160	.170	.800	.830	
Date	Gallium, water, fltrd, ug/L (01120)	Gallium, water, unfltrd ug/L (01122)	German- ium, water, fltrd, ug/L (01125)	German- ium, water, unfltrd ug/L (01127)	Gold, water, fltrd, ug/L (82334)	Gold, water, unfltrd ug/L (71910)	Holmium, water, fltrd, ug/L (50577)	Holmium, water, unfltrd ug/L (01247)	Indium, water, fltrd, ug/L (62843)	Indium, water, unfltrd ug/L (01168)	
NOV 18...	--	.070	--	<.020	--	<.010	--	.110	--	<.010	
NOV 26...	.060	.070	<.020	.020	<.010	<.010	.100	.100	<.010	<.010	
DEC 17...	.045	.046	.026	.023	<.010	<.010	.120	.120	<.010	<.010	
Date	Iron, water, fltrd, ug/L (01046)	Iron, water, unfltrd recover ug/L (01045)	Lantha- num, water, fltrd, ug/L (01180)	Lantha- num, water, unfltrd ug/L (01182)	Lead, water, fltrd, ug/L (01049)	Lead, water, unfltrd recover ug/L (01051)	Lithium, water, fltrd, ug/L (01130)	Lithium, water, unfltrd recover ug/L (01132)	Mangan- ese, water, fltrd, ug/L (01056)	Mangan- ese, water, unfltrd recover ug/L (01055)	
NOV 18...	--	17400	--	2.80	--	.400	--	36.0	--	5960	
NOV 26...	17600	16800	2.80	2.80	.300	.500	35.5	35.5	5840	5820	
DEC 17...	15900	16700	3.20	3.10	.240	.520	36.5	36.0	5610	5650	
Date	Molyb- denum, water, fltrd, ug/L (01060)	Molyb- denum, water, unfltrd recover ug/L (01062)	Neodym- ium, water, fltrd, ug/L (50579)	Neodym- ium, water, unfltrd ug/L (01237)	Nickel, water, fltrd, ug/L (01065)	Nickel, water, unfltrd recover ug/L (01067)	Praseo- dymium, water, fltrd, ug/L (50582)	Praseo- dymium, water, unfltrd ug/L (01238)	Rhenium, water, fltrd, ug/L (50583)	Rhenium, water, unfltrd ug/L (01242)	
NOV 18...	--	.050	--	2.90	--	92.0	--	.720	--	<.020	
NOV 26...	.090	.080	3.00	2.80	91.0	90.0	.740	.710	<.020	<.020	
DEC 17...	.230	.230	3.20	3.30	91.0	91.0	.760	.820	<.020	<.020	
Date	Rubid- ium, water, fltrd, ug/L (01135)	Rubid- ium, water, unfltrd ug/L (01137)	Samar- ium, water, fltrd, ug/L (82323)	Samar- ium, water, unfltrd ug/L (82322)	Selen- ium, water, fltrd, ug/L (01145)	Selen- ium, water, unfltrd ug/L (01147)	Silver, water, fltrd, ug/L (01075)	Silver, water, unfltrd recover ug/L (01077)	Stront- ium, water, fltrd, ug/L (01080)	Stront- ium, water, unfltrd recover ug/L (01082)	
NOV 18...	--	2.20	--	.580	--	<.200	--	<.010	--	547	
NOV 26...	2.10	2.20	.640	.560	<.200	<.200	.010	.020	536	530	
DEC 17...	2.20	2.20	.670	.690	<.200	<.200	.014	.017	524	531	

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES  
ACID MINE DRAINAGE PROJECTS IN THE UPPER SCHUYLKILL AND UPPER LEHIGH RIVER BASINS**

**404320076103201 -- Pine Forest Mine--Continued**

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbium water, fltrd, ug/L (50586)	Terbium water unfltrd ug/L (01218)	Thall- ium, water, fltrd, ug/L (01057)	Thall- ium, water, unfltrd ug/L (01059)	Thorium water, fltrd, ug/L (82365)	Thorium water unfltrd ug/L (82364)	Thulium water, fltrd, ug/L (50587)	Thulium water unfltrd ug/L (01245)	Tung- sten, water, fltrd, ug/L (01155)	Tung- sten, water, unfltrd ug/L (01154)
NOV 18...	--	.120	--	<.050	--	<.040	--	.040	--	.030
26...	.110	.100	<.050	<.050	<.040	<.040	.040	.040	.040	.040
DEC 17...	.110	.120	<.050	<.050	<.030	<.030	.042	.044	.091	.089

  

Date	Vanad- ium, water, fltrd, ug/L (01085)	Vanad- ium, water, unfltrd ug/L (01087)	Ytterb- ium, water, fltrd, ug/L (01194)	Ytterb- ium, water, unfltrd ug/L (01196)	Yttrium water, fltrd, ug/L (01201)	Yttrium water unfltrd ug/L (01203)	Zinc, water, fltrd, ug/L (01090)	Zinc, water, unfltrd recover- able, ug/L (01092)	Uranium natural water, fltrd, ug/L (22703)	Uranium natural water unfltrd ug/L (28011)
NOV 18...	--	.200	--	.210	--	3.10	--	122	--	.130
26...	<.100	<.100	.230	.200	3.10	3.10	126	122	.120	.120
DEC 17...	<.100	<.100	.250	.270	3.40	3.50	147	146	.097	.130