MONTOUR RUN WATERSHED ASSOCIATION

Abandoned Mine Drainage Cleanup Plan

September 2003

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Acknowledgements

This project has been made possible through the hard work and dedication of the

Montour Run Watershed Association

With leadership provided by the MRWA volunteer Board Members

Stan Sattinger, President
Alex Ropelewski, Vice President
Donna Walker, Treasurer
Donna Rosser, Secretary
Ed Nelson
Jon Pavlakovich

Special Thanks to

John Davidson, Mine Conservation Inspector,
Pennsylvania Department of Environmental Protection
Carla Howard, Student Intern, University of Pittsburgh

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Terry Pallas, Project Advisor

Additional thanks to

All the volunteers dedicated to improving Montour Run

Hollow Oak Land Trust

Imperial Land Corporation

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Introductory Narrative

The Montour Run Watershed is located in western Allegheny County, Pennsylvania within portions of Findlay, Moon, Robinson, and North Fayette Townships as well as Coraopolis Borough. Montour Run originates at the confluence of the North and South Forks and flows about 12.8 miles in a general northeasterly direction. Major tributaries of Montour Run include Enlow Run, McClarens Run, Milk Run, Meeks Run, Trout Run and Salamander Run. The approximately 36.6-square mile watershed has long been dominated by the Pittsburgh International Airport as well as by bituminous coal mining activities, woodlands, golf courses, small communities, and rural residential housing. In more recent years, however, development has occurred at a very rapid pace both within and adjacent to the watershed including the construction of housing plans, retail and office buildings, light industrial complexes and a major highway. Despite developmental pressures Montour Run is still largely a scenic, undeveloped, wooded, steep-sloped, flood-prone valley. An 11.5-mile long reach of the former Montour Railroad has been converted to a popular hiking trail and bikeway for recreational enjoyment of the watershed.

This report is an extension and continuation of previous and ongoing efforts of the residents of the Montour Run Watershed and other interested parties to address issues concerning the water quality and overall ecological health of the streams from the headwaters to the confluence with the Ohio River. The mouth of Montour Run is located in the Neville Island backchannel at Coraopolis, about 9.4 miles downstream of Pittsburgh, PA. Abandoned mine drainage is one of several impacts to the watershed. This report identifies and describes options to passively treat 13 abandoned mine discharges that have been ranked according to potential environmental benefit, and overall project feasibility. Implementation of these recommendations will be the next step to improve the water quality and aquatic resources of the Montour Run Watershed.

Other efforts to document the conditions of the watershed include the *Montour Run Watershed Water Quality and Aquatic Resources Report* completed in 1997 by the US Army Corps of Engineers, Pittsburgh District as well as the *Montour Run River Conservation and Land Use Plan* completed in 1999 by KCI Technologies, Inc. (Both references were used for this Introductory Narrative.) According to these reports the majority of the mine drainage pollution originates from pre-1940s deep mines and abandoned 1950's to 1960's surface mining operations. Acidity within the watershed appears to be declining possibly due to either contact with limestone or the large amounts of alkaline slag aggregate used in the construction of highways and runways within the watershed. In addition, thousands of acres of old strip mines have been reclaimed as a consequence of the construction of the Pittsburgh International Airport as well as their utilization as a landfill by Browning Ferris Industries (BFI). This reclamation has also most likely resulted in the improvement of water quality within the watershed. Even though most streams within the basin are alkaline, abandoned mine drainage still causes significant stream degradation especially in the western and central portions of the watershed. Metals associated with mine drainage, particularly aluminum, appear to be the major cause of impairment.

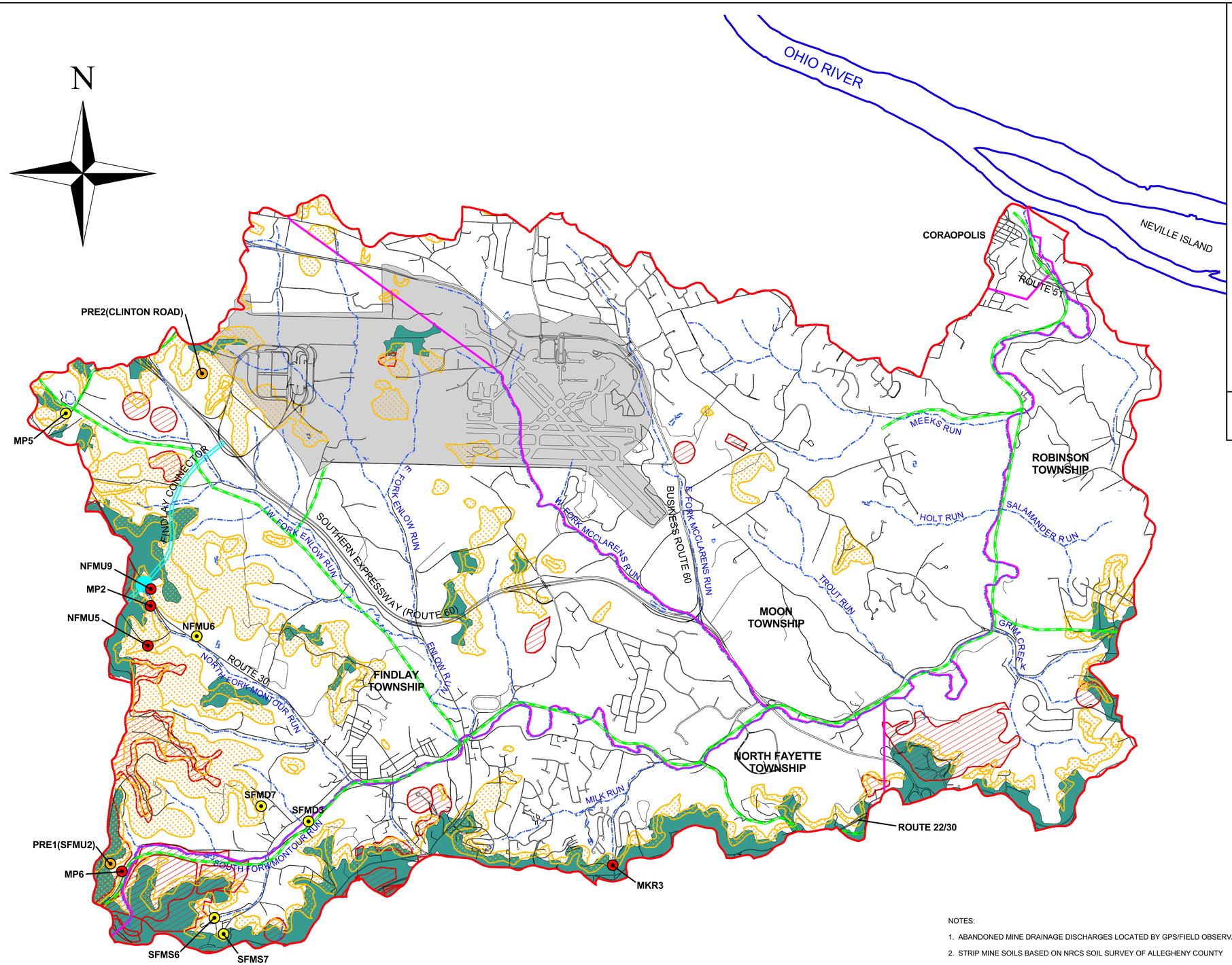
In the fall of 2000 and spring of 2001, the Montour Run Watershed Association (MRWA) conducted two stream walks to pinpoint the major abandoned mine discharge sites within the watershed. Water samples collected were analyzed by the PA DEP. Later, in the fall of 2001, a year-long water sampling program was initiated to gather water chemistry and flow data for the AMD discharges. The data collected during that monitoring phase has been compiled and used in conjunction with other data to develop this remediation plan. This phase of the project is funded by the Pennsylvania Department of Environmental Protection's Growing Greener Program.

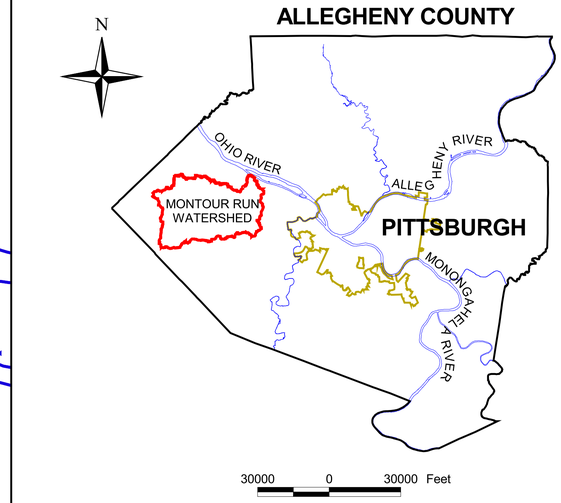
Thirteen abandoned mine drainage sites are included in this report. Twelve of these sites were evaluated by BioMost, Inc. with assistance from Aquascape Wetland and Environmental Services and one site, PRE2(CLINTON ROAD) was evaluated by USFilter. Grant applications were submitted to the PA DEP under the Growing Greener Program in February 2003 for both the PRE1(SFMU2) (a.k.a. Boggs Road) and the PRE2(CLINTON ROAD) sites. These sites were given the notation of "PRE" in their title to indicate that they were evaluated prior to this report. At the time of report preparation, both of these projects were being reviewed by the PA DEP. Both the PRE1(SFMU2) and the PRE2(CLINTON ROAD) sites are included as Priority Sites and listed as "Projects Under Review".

The thirteen sites included in this report were selected by the MRWA with assistance from the PA DEP. Several alternative restoration techniques were considered to address the discharges including remining, conventional (active) treatment systems, and passive treatment systems. Based on long-term operation and maintenance requirements, overall environmental impact considering both natural and cultural resources and general project feasibility, passive treatment systems were the preferred alternative at all of the sites.

Preliminary passive treatment system designs were developed and cost estimates were prepared for the twelve sites. Using this information and other criteria included in the Prioritization Matrix, recommendations were made to the MRWA. Through the consideration of these recommendations coupled with the MRWA's extensive knowledge of the watershed, five High Priority sites were selected. Conceptual designs and more detailed cost estimates were generated for these High Priority sites.

Through the implementation of the recommended restoration plans included in this report, it is the intention of the MRWA to make a significant and lasting improvement to the water quality and aquatic resources within the Montour Run Watershed.





LOCATION MAP - SCALE: 1" = 30,000'

- WATERSHED BOUNDARY

ABANDONED MINE DRAINAGE DISCHARGE LOCATIONS

- HIGH PRIORITY SITES
- PRIORITY SITES UNDER REVIEW
- OTHER SITES
- STREAMS
- MONTOUR TRAIL
- TOWNSHIP BOUNDARY
- OHIO RIVER
- FINDLAY CONNECTOR
- PROPOSED INTERCHANGE
- ROADS
- STRIP MINE SOILS
- PERMITTED STRIP MINES
- DEEP MINES (WPA MAPPING)
- PITTSBURGH INTERNATIONAL AIRPORT

NOTES:

1. ABANDONED MINE DRAINAGE DISCHARGES LOCATED BY GPS/FIELD OBSERVATION BY BIOMOST
2. STRIP MINE SOILS BASED ON NRCS SOIL SURVEY OF ALLEGHENY COUNTY
3. PERMITTED STRIP MINES BASED ON PA DEP MINE PERMIT INDEX MAPS
4. DEEP MINES BASED ON PA DEP MINE PERMIT INDEX MAPS (WORKS PROJECTS ADMINSTRATION MAPPING)
5. FINDLAY CONNECTOR BASED ON AVAILABLE TURNPIKE COMMISSION MAPPING
6. LAYERS RECIEVED FROM MONTOUR RUN WATERSHED ASSOCIATION:

   WATERSHED BOUNDARY
   STREAMS
   MONTOUR TRAIL
   TOWNSHIP BOUNDARY
   OHIO RIVER
   ROADS
   PITTSBURGH INTERNATIONAL AIRPORT

MONTOUR RUN WATERSHED ASSOCIATION

ABANDONED MINE DRAINAGE CLEANUP PLAN

MONTOUR RUN WATERSHED
ALLEGHENY COUNTY, PENNSYLVANIA
Scale: 1" = 2000' Date: September 2003

BioMost, Inc., Cranberry Township, Pennsylvania

Prioritization Matrix

DISCHARGE (aka) *[includes]*	Feasibility	Complexity	Benefit To Watershed	Land Use Constraints	Property Impact	Maintenance	Cost	TOTAL SCORE
MP6	10	10	8	9	7	10	10	**64**
NFMU5 (MP8) *[MP3]*	10	10	9	9	9	7	10	**64**
PRE1(SFMU2) (BOGGS)	8	9	9	9	9	10	10	**64**
NFMU9	8	7	8	9	10	7	8	**57**
SFMD7	10	9	5	8	8	7	9	**56**
MKR3	7	6	10	7	7	7	10	**54**
MP2	7	8	7	6	8	10	8	**54**
MP5	7	8	7	6	8	8	9	**53**
NFMU6 *[MP7]*	7	7	5	8	9	7	6	**49**
SFMD3	7	7	4	7	6	7	7	**45**
SFMS7	5	7	7	6	5	7	7	**44**
SFMS6	3	3	9	2	1	7	9	**34**

1 = Worst Score (low feasibility, complicated, relatively non-beneficial, constrained land use, high/negative impact to property, high maintenance, poor cost/benefit)
10 = Best Score (high feasibility, simple, very beneficial, complies with land use, low/positive impact to property, low maintenance, good cost/benefit)

Denotes High Priority Site or Project Under Review Priority Site.

PRE2(CLINTON ROAD) Site is not included in the above matrix but is a Project Under Review Priority Site.

SFMD7 received a relatively high total score due mainly to the favorable site conditions that contributed to higher feasibility and complexity scores; however, due to the relatively low direct benefit to the watershed, this discharge was not chosen as a High Priority Site.

Please note that even though some of the projects will have a relatively small direct environmental impact, some of these sites have a high potential for and may serve to develop significant indirect environmental impacts through community education and awareness.

PRIORITY SITES

Projects Under Review
PRE1(SFMU2)
PRE2(CLINTON ROAD)

High Priority Sites
MKR3
NFMU9
MP2
NFMU5
MP6

Water Monitoring Summary Table

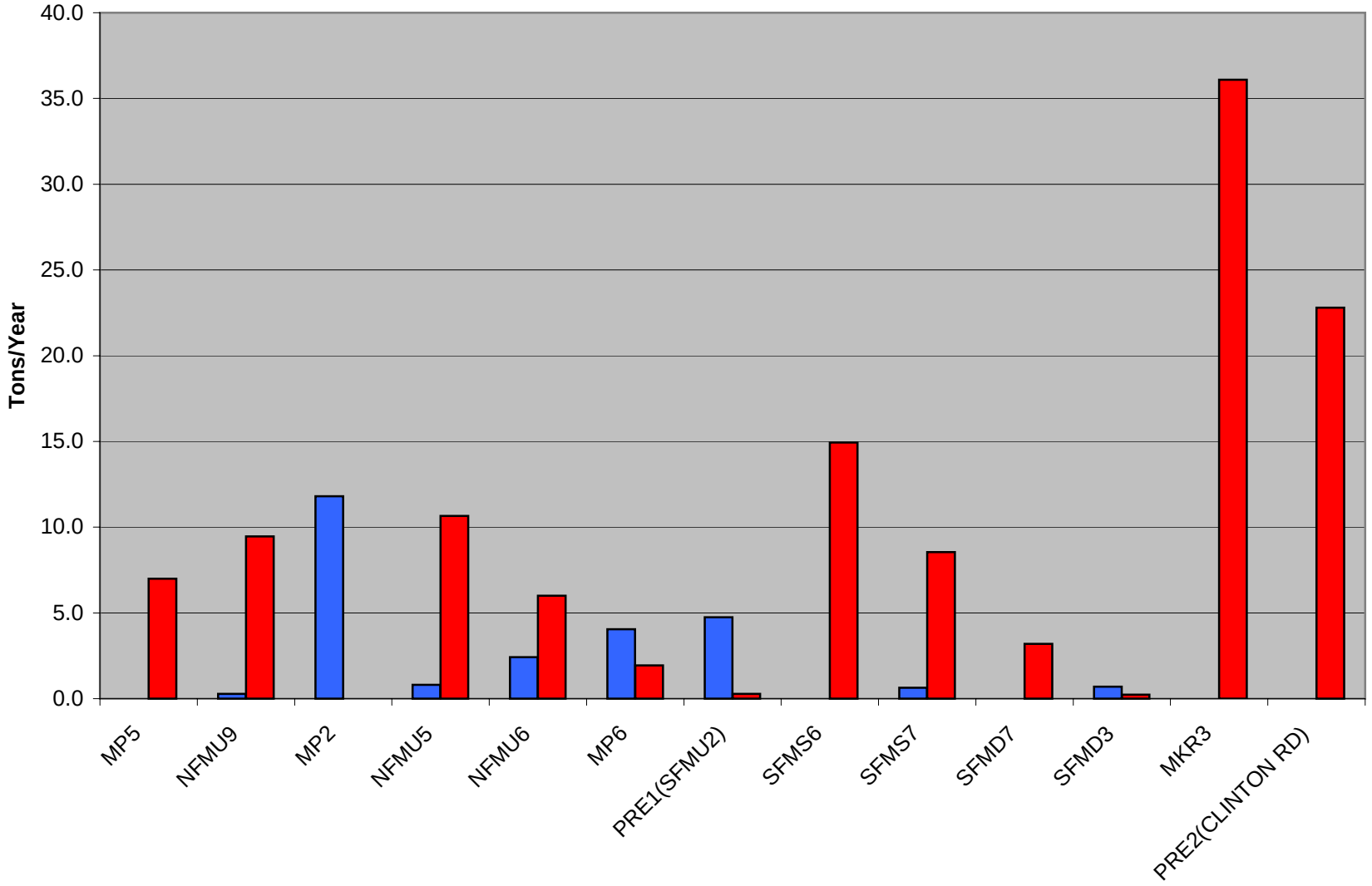
DISCHARGE (aka) *[includes]*	Value	Flow (gpm)	Field pH	Lab pH	Alk (L.) (mg/l)	M. Acid (mg/l)	C. Acid (mg/l)	Fe (mg/l)	Mn (mg/l)	Al (mg/l)	Sulfate (mg/l)	TSS (mg/l)	Alk Load (#/yr)	M. Acid Load (#/yr)	C. Acid Load (#/yr)	Fe Load (#/yr)	Mn Load (#/yr)	Al Load (#/yr)	Alk Load (t/yr)	M. Acid Load (t/yr)	Fe Load (t/yr)	Mn Load (t/yr)	Al Load (t/yr)
MP5	MIN	2	3.3	3.0	0	176	148	1.7	5.9	21.3	349	0	0	2008	1606	73	73	219					
MP5	MAX	38	3.3	3.5	3	326	316	9.0	16.2	47.1	1674	16	365	50005	42669	621	1789	6278					
MP5	**AVG**	**13**	**3.3**	**3.4**	**0**	**241**	**209**	**4.7**	**7.9**	**29.5**	**765**	**6**	**0**	**14016**	**12045**	**219**	**475**	**1716**	**0.0**	**7.0**	**0.1**	**0.2**	**0.9**
NFMU9	MIN	17	4.7	3.2	0	54	47	4.9	4.8	4.8	338	0	0	5804	3358	365	365	365					
NFMU9	MAX	98	4.8	4.9	14	184	153	26.1	10.2	14.4	1641	28	2592	65627	54933	5877	4088	4928					
NFMU9	**AVG**	**41**	**4.8**	**4.1**	**5**	**101**	**92**	**16.2**	**8.4**	**7.1**	**623**	**12**	**548**	**18907**	**17046**	**2738**	**1497**	**1387**	**0.3**	**9.5**	**1.4**	**0.7**	**0.7**
MP2	MIN	3	6.8	6.6	91	0	7	1.0	1.9	0.0	251	0	1460	0	110	0	37	0					
MP2	MAX	91	7.0	7.4	230	0	324	168.0	5.7	2.8	766	196	79935	0	69131	35843	2044	621					
MP2	**AVG**	**32**	**6.9**	**7.0**	**153**	**0**	**30**	**12.7**	**3.8**	**0.1**	**475**	**28**	**23616**	**0**	**5001**	**2227**	**511**	**37**	**11.8**	**0.0**	**1.1**	**0.3**	**0.0**
NFMU5 (MP8) *[MP3]*	MIN	36	4.6	3.0	0	25	32	0.7	2.0	4.7	334	6	0	10658	8906	292	402	1278					
NFMU5 (MP8) *[MP3]*	MAX	114	4.6	5.6	13	138	159	8.2	3.7	17.3	898	32	6388	39822	38216	1460	1132	4490					
NFMU5 (MP8) *[MP3]*	**AVG**	**53**	**4.6**	**4.3**	**6**	**99**	**81**	**3.5**	**2.7**	**11.3**	**566**	**19**	**1606**	**21316**	**17739**	**730**	**621**	**2482**	**0.8**	**10.7**	**0.4**	**0.3**	**1.2**
NFMU6 *[MP7]*	MIN	12	4.9	4.0	9	24	12	0.0	2.3	0.0	76	8	511	1716	913	0	438	0					
NFMU6 *[MP7]*	MAX	197	6.0	6.4	19	57	40	0.7	12.2	4.9	1195	14	13469	29894	15805	329	2811	2336					
NFMU6 *[MP7]*	**AVG**	**75**	**5.5**	**5.6**	**14**	**39**	**26**	**0.4**	**6.3**	**2.3**	**712**	**11**	**4855**	**12009**	**7702**	**110**	**1570**	**803**	**2.4**	**6.0**	**0.1**	**0.8**	**0.4**
MP6	MIN	5	5.7	4.8	13	0	13	1.2	3.5	0.0	268	0	475	0	913	219	183	0					
MP6	MAX	78	5.8	6.2	120	158	114	41.5	10.2	9.5	1433	24	25331	19710	17192	6132	2227	1059					
MP6	**AVG**	**31**	**5.8**	**5.5**	**55**	**35**	**52**	**15.7**	**7.7**	**1.7**	**969**	**8**	**8103**	**3869**	**6680**	**1971**	**1022**	**219**	**4.1**	**1.9**	**1.0**	**0.5**	**0.1**
PRE1(SFMU2) (BOGGS)	MIN	9	6.7	6.4	48	0	28	7.0	6.0	0.0	357	8	4015	0	1205	365	329	0					
PRE1(SFMU2) (BOGGS)	MAX	55	6.8	6.9	104	19	67	30.0	9.2	0.0	1540	22	14819	4125	12374	5220	1716	0					
PRE1(SFMU2) (BOGGS)	**AVG**	**31**	**6.8**	**6.7**	**76**	**3**	**43**	**16.9**	**7.7**	**0.0**	**1079**	**18**	**9490**	**548**	**6023**	**2336**	**1022**	**0**	**4.7**	**0.3**	**1.2**	**0.5**	**0.0**
SFMS6	MIN	5	3.2	3.0	0	209	181	1.4	2.4	27.9	182	0	0	5220	4964	37	73	840					
SFMS6	MAX	75	3.3	3.8	0	308	276	7.4	3.4	43.3	1266	4	0	95630	88148	2446	840	12447					
SFMS6	**AVG**	**25**	**3.3**	**3.4**	**0**	**264**	**229**	**2.8**	**2.7**	**35.0**	**900**	**2**	**0**	**29857**	**26025**	**438**	**292**	**3906**	**0.0**	**14.9**	**0.2**	**0.1**	**2.0**
SFMS7	MIN	35	4.2	3.8	0	31	34	1.0	1.6	5.0	301	0	0	6862	7519	219	329	1095					
SFMS7	MAX	60	4.3	5.7	26	121	98	3.4	3.3	14.3	1124	12	5694	23178	16790	621	584	2519					
SFMS7	**AVG**	**45**	**4.3**	**4.4**	**6**	**89**	**61**	**1.8**	**2.4**	**9.0**	**630**	**5**	**1278**	**17082**	**11753**	**365**	**475**	**1752**	**0.6**	**8.5**	**0.2**	**0.2**	**0.9**
SFMD7	MIN	0	3.0	3.0	0	152	111	0.7	1.8	15.0	353	0	0	183	146	0	0	37					
SFMD7	MAX	30	4.0	3.4	0	194	172	5.3	3.1	20.5	1019	24	0	20623	18031	329	292	2117					
SFMD7	**AVG**	**9**	**3.3**	**3.2**	**0**	**173**	**139**	**2.9**	**2.2**	**17.5**	**721**	**7**	**0**	**6315**	**5110**	**110**	**73**	**621**	**0.0**	**3.2**	**0.1**	**0.0**	**0.3**
SFMD3	MIN	0	5.4	4.0	8	0	9	0.0	0.7	1.3	231	4	0	0	37	0	0	0					
SFMD3	MAX	17	7.0	7.2	112	116	129	2.0	4.4	20.7	548	64	3066	2519	4563	37	110	767					
SFMD3	**AVG**	**8**	**6.2**	**6.2**	**56**	**18**	**43**	**0.4**	**1.6**	**7.0**	**372**	**27**	**1387**	**475**	**1278**	**0**	**37**	**219**	**0.7**	**0.2**	**0.0**	**0.0**	**0.1**
MKR3	MIN	40	3.3	3.0	0	111	59	0.5	0.5	7.4	262	0	0	28361	18688	219	183	2300					
MKR3	MAX	300	3.5	3.5	0	184	155	2.3	1.8	23.7	581	6	0	185311	126582	913	1205	17374					
MKR3	**AVG**	**117**	**3.4**	**3.4**	**0**	**140**	**100**	**1.0**	**1.0**	**13.5**	**362**	**2**	**0**	**72197**	**50881**	**475**	**475**	**6935**	**0.0**	**36.1**	**0.2**	**0.2**	**3.5**
PRE2(CLINTON ROAD)		**44**	**3.8**	**3.6**	**0**	**238**	**183**	**3.5**	**11.3**	**25.8**	**1219**	**8**	**0**	**45604**	**35105**	**678**	**2169**	**4952**	**0.0**	**22.8**	**17.6**	**0.3**	**3.5**

Calculated Acidity is based on Total Metals; For the following parameters a value of 0 indicates Fe <0.3 mg/L, Mn <0.3 mg/L, Al <0.5 mg/L, TSS < 3 mg/L; D.= Dissolved; M. = Measured; C. = Calculated; Note PRE2 data from single sampling event; Standard Postmining Discharge Effluent Limits (025 Pa. § Code 87.102 Group A, Instantaneous Maximum): Fe(total) = 7 mg/l, Mn(total) = 5.0 mg/l, TSS = 90 mg/l, pH >6.0 and <9.0

High Priority Site Priority Site Under Review Other Site

Loadings

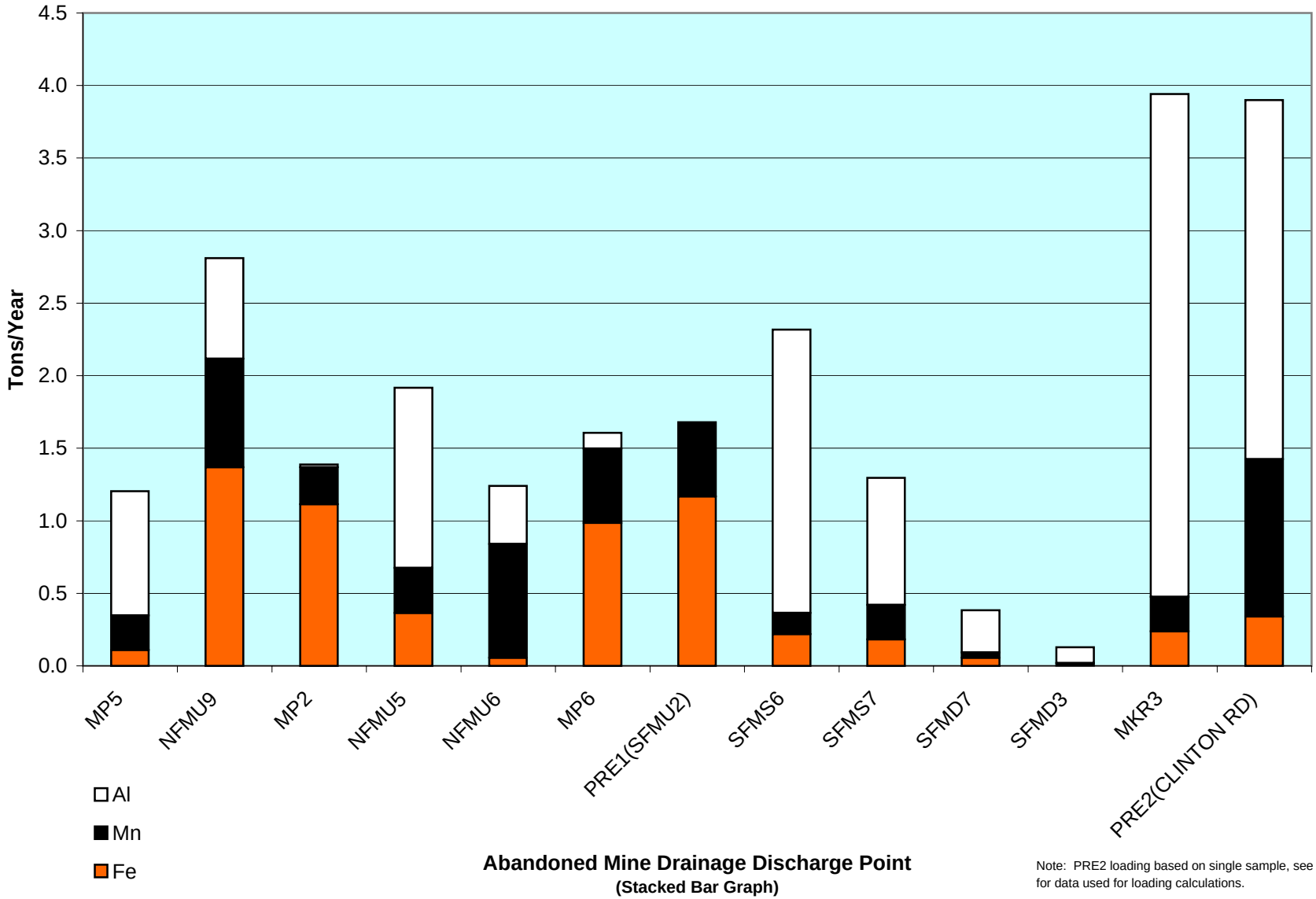
Acidity & Alkalinity
(Tons/Year)



Note: PRE2 loading based on single sample, see appendix for data used for loading calculations.

Loadings

Iron (Fe) - Manganese (Mn) - Aluminum (Al)
(Tons/Year)



Abandoned Mine Drainage Discharge Point
(Stacked Bar Graph)

Note: PRE2 loading based on single sample, see appendix for data used for loading calculations.

Site Information Table

Discharge (aka) / Latitude / Longitude / Township	Average Discharge Characteristics												Mining History				Property Owner (at point source location)		
	Flow	pH	Alkalinity		Acidity		Iron		Mn		Al		Mine	Company	Years	Coal			
	gpm	su	mg/l	t/yr	mg/l	t/yr	mg/l	t/yr	mg/l	t/yr	mg/l	t/yr	Name		Operated	Rights	Map & Parcel #	Name	Mailing Address
MP5													Clinton Lake Mine	Boyle Coal Co.	Ca. 1939	Clinton Block Coal Co.	Map P1	PRECISION KIDD STEEL	One Quality Way, W.
40-29-29	13	3.4	0	0.0	241	7.0	4.7	0.1	7.9	0.2	29.5	0.9		Clinton Lake Coal Co.			9910-X-00231	CO, INC	Aliquippa, PA 15001
80-17-33													(unk-surface mine)	(unk-not on MPI)	Pre-1977				
Findlay																			
NFMU9 (MP1)													Clinton No. 1	Clinton Block Coal Co.	Ca. 1938	Clinton Block Coal Co.	Map S	COUNTY OF	County Office Building
40-28-15	41	4.1	5	0.3	101	9.5	16.2	1.4	8.4	0.7	7.1	0.7				County of Allegheny	9910-X-00489?	ALLEGHENY	Pittsburgh, PA 15219
80-16-48																			
Findlay																			
MP2													Clinton No. 1	Clinton Block Coal Co.	Ca. 1938	Clinton Block Coal Co.	Map S	MAZZARO COAL &	Box M
40-28-12	32	7.0	153	11.8	0	0.0	12.7	1.1	3.8	0.3	0.1	0.0	(unk-surface mine)	(unk-not on MPI)	Pre-1977	Union Collieries Co.?	9910-X-82665	DISPOSAL CO.	Clinton, PA 15026
80-16-47																			
Findlay																			
NFMU5 (MP8)													Clinton No. 1	Clinton Block Coal Co.	Ca. 1938	Clinton Block Coal Co.	Map S	RASPAT, Victor	889 SR 30
40-27-57	53	4.3	6	0.8	99	10.7	3.5	0.4	2.7	0.3	11.3	1.2	(unk-surface mine)	(unk-not on MPI)	Pre-1977		9910-X-01446		Imperial, PA 15126
80-16-54																Raspat, V. et ux(1966)			
Findlay																			
NFMU6													Clinton No. 1	Clinton Block Coal Co.	Ca. 1938	Clinton Block Coal Co.	Map R	COUNTY OF	County Office Building
40-27-57	75	5.6	14	2.4	39	6.0	0.4	0.1	6.3	0.8	2.3	0.4	(unk-surface mine)	(unk-not on MPI)	Pre-1977		9910-X-00489?	ALLEGHENY	Pittsburgh, PA 15219
80-16-23																County of Allegheny	9910-X-00832?		
Findlay																			
MP6													Partridge Mine	Pittsburgh Coal Co.		Pittsburgh Coal Co.	Map J1	KROPF, William Keith &	121 Boggs Road
40-26-23	31	5.5	55	4.1	35	1.9	15.7	1.0	7.7	0.5	1.7	0.1	Russell No. 2	Aloe Coal Co.	Ca. 1966	ALOE, William & Arthur	9910-X-50034	Mary K.	Imperial, PA 15126
80-17-05													Corrado Mine	Aloe Coal Co.	Ca. 1990	Imperial Land Corp.			
Findlay																KROPF, W. & Imperial			
PRE1(SFMU2) (BOGGS RD.)													Partridge Mine	Pittsburgh Coal Co.		Pittsburgh Coal Co.	Map J1	KROPF, William Keith &	121 Boggs Road
40-26-26	31	6.7	76	4.7	3	0.3	16.9	1.2	7.7	0.5	0.0	0.0	Russell No. 2	Aloe Coal Co.	Ca. 1966	ALOE, William & Arthur	9910-X-50033	Mary K.	Imperial, PA 15126
80-17-07																KROPF, K. & Imperial			
Findlay																			
SFMS6													Partridge Mine	Pittsburgh Coal Co.		Pittsburgh Coal Co.	Map 19	ZAWACKI, Joseph F.	3 Pyda Street
40-26-06	25	3.4	0	0.0	264	14.9	2.8	0.2	2.7	0.1	35.0	2.0	Russell No. 2	Aloe Coal Co.	Ca. 1966	ALOE, William & Arthur &	9929-X-50022		RD 1
80-16-15																COOK, Wayne			Imperial, PA 15126
North Fayette																			
SFMS7													Partridge Mine	Pittsburgh Coal Co.		Pittsburgh Coal Co.	Map L	VALENTI, J. W.	Santiago Distributing Co.
40-25-59	45	4.4	6	0.6	89	8.5	1.8	0.2	2.4	0.2	9.0	0.9	Russell No. 2	Aloe Coal Co.	Ca. 1966	ALOE, William & Arthur	9929-X-50392?	(now VALENTI, T. J.)	8175 Steubenville Pike
80-16-10																	9929-X-01697?	(now VALENTI, T. I.)	Imperial, PA 15126
North Fayette																			
SFMD7													(unk-surface mine)	(unk-not on MPI)	Pre-1977		Map I1	WEST ALLEGHENY	PO Box 55
40-26-47	8	3.2	0	0.0	174	2.9	3.0	0.1	2.2	0.0	17.7	0.3	(area unmined?)				9910-X-80052	SCHOOL DISTRICT	Imperial, PA 15126
80-15-50																			
Findlay																			
SFMD3													Mine #2	Jean Coal Co.	Ca. 1920		Map H	CHERNIK, Charles R. &	250 North Star Road
40-26-42	8	6.2	56	0.7	18	0.2	0.4	0.0	1.6	0.0	7.0	0.1	(unk-surface mine)	(unk-not on MPI)	Pre-1977		9929-X-82199?	Constance L. (?)	Imperial, PA 15126
80-15-26																CONSOL			
North Fayette																			
MKR3													Dickson(Dixon) Mine	Pittsburgh Coal Co.	Ca. 1937	Pittsburgh Coal Co.	Map D	NAGODE, Donald L. &	Harvester Drive
40-26-25	117	3.4	0	0.0	140	36.1	1.0	0.2	1.0	0.2	13.5	3.5	(unk-surface mine)	(unk-not on MPI)	Pre-1977		9929-X-01676	Margaret M.	Oakdale, PA 15071
80-12-44																CONSOL			
North Fayette																			
PRE2(CLINTON RD)													NA	NA	Pre-1977	County of Allegheny	NA	ALLEGHENY COUNTY	1000 Airport Boulevard, Suite 4000
40-31-12	44	3.6	0	0.0	238	22.8	3.5	17.6	11.3	0.3	25.8	3.5						AIRPORT AUTHORITY	Pittsburgh, PA 15231
80-15-36																			
Findlay																			

Notes: average lab pH (not averaged from H-ion concentrations); Measured acidity used (not calculated from pH and metals concentrations) This table is based on a preliminary compilation of available information.
Further investigation may necessitate revisions. Mining history information relates to the area hydrologically related to discharge location. A title search has not been completed to determine property ownership and coal rights.

Alternative Restoration Options

Each of the five priority sites (MKR3, NFMU9, MP2, NFMU5, MP6) were evaluated based on available information to determine the preferred restoration method. Options considered on a general-basis for each site included remining and installation of either active or passive treatment systems. Feasibility included identifying factors limiting construction area based on a preliminary site inspection relating to cultural features (developed areas, public roads, historical areas, etc.), to natural resources (probable protected areas relating to wetlands, threatened and endangered species, etc.), and to setting (topography, geology, etc.) The evaluation also considered, in general, design, permitting, construction, Operation and Maintenance costs and potential impact to the environment (projected water quality improvement) and to the community (safety, aesthetics, etc.). The permitting process requires detailed, site-specific, investigations which may significantly revise the feasibility of the recommended restoration project.

Remining potential in the probable recharge area of the discharges

MP6: The coal reserves southeast of Boggs Road have been essentially exhausted by surface mining, while northwest of this public road an area with stumps and ribs appear to remain. There are no known permits pending or in process for this site. In addition, the landowners have declined previous offers to have their property surface mined.

NFMU9: The coal reserves have been extensively mined by both surface and underground methods. Stumps and ribs, however, may remain in a portion of the area hydrologically-related to the discharge. Based on the final design and "as-built" construction of the Findlay Connector, this discharge may be impacted potentially requiring a revised conceptual site plan.

MKR3, MP2, NFMU5: The probable recharge area has been previously mined by surface and underground methods. There is a high probability that the reserves are exhausted.

Conventional Treatment Systems

In all cases, active treatment was eliminated as a preferred alternative due to long-term chemical, electrical, and labor costs and to safety issues.

Passive Treatment Systems

Based on the discharge characteristics and area potentially available for construction (executed landowner approval required), passive systems are the preferred alternative in all cases. Final effluent is expected to meet or exceed standard mining effluent limits and to substantially improve the receiving stream. The components selected use known passive treatment technology.

A conceptual design has been provided for each discharge. As an alternative, however, the wetland component of the NFMU9 passive system may be eliminated by increasing the size of the wetlands for MP2 commensurately.

Individual Site Recommendations

The following section is a compilation of brief, one page, descriptions for each of the 12 abandoned mine discharges and recommended passive treatment systems. This information is preliminary and may be substantially revised based on further site investigation and review of additional instruments of record and of other selected data.

General sizing abbreviations: square feet (SF); short ton (T); acre (AC)

Key to Abbreviations for Passive Treatment Components

Aerobic Wetland(WL) – a vegetated (native species) wetland constructed to collect metal solids from treated or untreated net alkaline drainage prior to discharging into a stream (influent area excavated to function as **settling pond**)

Anoxic Limestone Drain(ALD) – an excavation containing buried limestone aggregate installed to generate alkalinity when the dissolved oxygen and dissolved aluminum content are very low

Forebay(FB) – a shallow pond installed to collect sediment and debris prior to an alkalinity-generating component

Flush Pond(FP) – a shallow pond installed to retain metal particulates flushed from an alkalinity-generating component

Hybrid Flow Pond(HFP) – a pond containing limestone aggregate installed to generate alkalinity

Horizontal Flow Limestone Bed(HFLB) – an excavation filled with limestone aggregate used to generate alkalinity and precipitate manganese after removal of dissolved iron and aluminum

Vertical Flow Pond(VFP) – a pond containing treatment media, such as limestone aggregate and compost, installed to generate alkalinity

MP5

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
13	38	3.4	3.0	0	0	241	326	5	9	8	16	30	47

Site Conditions: The discharge issues from a PVC pipe near the edge of Moon-Clinton Road (SR-3089). A portion of the discharge that flows from the end of the pipe is immediately collected by a plastic culvert pipe and conveyed to a catch basin on the west side of SR-3089. The remainder of the discharge issues from a compromised joint in the pipe located a short distance upgradient and is collected by the same catch basin. The flow is conveyed under SR-3089 to a second catch basin that empties to a culvert that discharges directly to the headwaters of West Fork of Enlow Run. The outlet of the culvert is submerged in the stream channel.

Limited space exists west of SR-3089 due to residential and commercial properties on either side of the discharge and the proximity of SR-3089. However, a potential construction area of about two acres is located on the east side of the road downgradient of the discharge and is owned by the Township of Findlay (Public Works Facility). This area is zoned Village District.

Preferred Treatment Method (req. area): *1,200T HFP → 3,000SF FP → 2,000SF WL (~1½ ac).* Due to the low iron content, the use of compost is not required. Using limestone aggregate only will eliminate the potential for nuisance odors typically present when compost is used in passive systems. This system could be installed along the stream channel and could also function as a riparian buffer protection project. This project, located in the uppermost headwaters, could potentially make a significant improvement in water quality in the stream.

Preliminary Cost Estimate Range: $140,000 - $160,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
Precision Kidd Steel Co., Inc.	Property: 20 Machett Road, Clinton, PA 15026 Mailing: One Quality Way, W. Aliquippa, PA 15001
Township of Findlay	Property: 1058 Moon-Clinton Road, Clinton, PA 15026 Mailing: Route 30, Clinton, PA 15026

NFMU9

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	Max.	avg.	max.	avg.	max.	avg.	max.
41	98	4.1	3.2	5	0	101	184	16	26	8	10	7	14

Site Conditions: A severely impacted seep zone (~1 ac) along the east side of SR-30 drains to a culvert that drains to the North Fork Montour Run headwaters approximately 400' upstream of the confluence with discharge MP2. This area is located within 300-500' of a proposed interchange of the Findlay Connector with SR-30. The site on the east side of SR-30 is zoned Heavy Industrial. Area available for construction is limited due to the proximity of the discharge to SR-30, the North Fork of Montour Run, the proposed location of the Findlay Connector and site topography. This site is readily accessed from SR-30.

Preferred Treatment Method (req. area): *4,000SF FB → 2,000T VFP → 7,000SF FP → 15,000SF WL → 1,500T HFLB (~4 ac).* The HFLB could be considered optional if space is too limited. More detailed site evaluation will help to determine if the entire system could be constructed on the east side of US 30. This project could potentially make a significant improvement in water quality in the stream.

Preliminary Cost Estimate Range: $280,000 - $330,000

Other Options: A portion of the system, including the wetland and optional HFLB, could be constructed west of US 30. This could intercept the MP2 discharge that would potentially require additional area for system construction on a separate residential (Tennyson) property adjacent to MP2. To avoid possible residential conflicts, sufficient area may be available on vacant land (Raspat property) further downgradient. In either case, a shared wetland could provide treatment for both discharges. (MP2 is a net-alkaline, iron-bearing, discharge that would be treated with a 50,000SF WL.) Construction may impact a possibly non-degraded wetland area and could require construction of additional mitigation wetlands.

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
County of Allegheny.	Property: Along State Route 30, Findlay Township Mailing: County Office Building, Pittsburgh, PA 15219
MAZZARO COAL & DISP. CO.	Property: Along State Route 30, Findlay Township Mailing: Box M, Clinton, PA 15026
TENNYSON, David and Linda	Property: 3807 Burgettstown Road, Imperial, PA 15126 Mailing: (same)
RASPAT, Victor	Property: Along State Route 30, Findlay Township Mailing: 889 State Route 30, Imperial, PA 15126

MP2

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	Max.	avg.	max.	avg.	max.	avg.	max.
32	91	7.0	6.6	153	91	0	0	13	168	4	6	0	3

Site Conditions: The discharge issues from a steep and deeply incised watercourse at the base of strip mine spoil and drains directly to the headwaters of North Fork Montour Run. Due to the available elevation change in the watercourse, the discharge could be collected at an elevation to allow a treatment system to be constructed upstream of the confluence of the discharge and the stream. This area is located along North Fork and may impact potentially non-degraded wetland areas that would require mitigation. Additional construction area and site access may require additional property (Tennyson). This area is zoned Light Industrial.

Preferred Treatment Method (req. area): *5,000SF FB → 50,000SF WL (~2 ac).* This is a net alkaline discharge that would require a relatively straightforward aerobic wetland system to allow the iron to oxidize, form solids, and settle prior to entering North Fork Montour Run.

Preliminary Cost Estimate Range: $170,000 - $200,000

Other Options: Due to the proximity of NFMU9, the wetland proposed for the MP2 system could also be used as the wetland portion of the NFMU9 system. Due to possible site access constraints and potential impacts to existing wetlands, this system could be installed further downstream on vacant land owned by Raspat.

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
MAZZARO COAL & DISP. CO.	Property: Along State Route 30, Findlay Township Mailing: Box M, Clinton, PA 15026
TENNYSON, David and Linda	Property: 3807 Burgettstown Road, Imperial, PA 15126 Mailing: (same)
RASPAT, Victor	Property: Along State Route 30, Findlay Township Mailing: 889 State Route 30, Imperial, PA 15126

NFMU5

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
54	114	4.3	3.0	6	0	99	138	4	8	3	4	11	17

Site Conditions: This point is a combination of both surface and deep mine discharges. Drainage from the deep mine discharge known as MP3 is included in NFMU5. The area is a gently sloping stream valley bounded to the south by reclaimed strip mines and bounded to the north by residential/lawn areas. Further downgradient the riparian area on both sides of the stream is wooded. Overall, site conditions are favorable to the construction of a passive treatment system. This area is zoned Light Industrial.

Preferred Treatment Method (req. area): *4,000SF FB → 2,200T VFP → 7,000SF FP → 6,000SF WL (~3 ac).* Due to the relatively small (<100ac) drainage area above the discharge monitoring point, a system could be constructed directly in the stream channel. An overflow diversion system could also be incorporated into the design.

Preliminary Cost Estimate Range: $230,000 - $260,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
RASPAT, Victor	Property: Along State Route 30, Findlay Township Mailing: 889 State Route 30, Imperial, PA 15126

NFMU6

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
75	197	5.6	4.0	14	9	39	57	0	1	6	12	2	5

Site Conditions: This discharge flows in a broad, gently sloping stream valley. The site is generally described as former mine-impacted land that is reverting to unmanaged woodland. The potential construction area is readily accessible from US 30 and is zoned Heavy Industrial. The potential construction area may include potentially non-degraded wetland areas that would require mitigation.

Preferred Treatment Method (req. area): *7,000SF FB → 3,000T VFP → 7,000SF FP → 2,000SF WL (~3 ac).* Due to the relatively large (>100ac) drainage area above the discharge monitoring point, a stream intake could be installed to convey drainage up to the design flow into the passive system. Excess flow related to precipitation events would bypass the system.

Preliminary Cost Estimate Range: $260,000 -$290,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
County of Allegheny.	Property: Along State Route 30, Findlay Township Mailing: County Office Building, Pittsburgh, PA 15219

MP6

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
31	78	5.5	4.8	55	13	35	158	16	42	8	10	2	10

Site Conditions: This discharge, which receives drainage from both surface and underground mining activities, is monitored at a point along Boggs Road. A small wetland area has formed in the front yards of residential properties. A portion of the drainage issues from strip mine areas along the east side of Boggs Road from which the coal reserve has been essentially exhausted. Drainage associated with the underground mines along the west side of Boggs Road comes from historic workings located on both the Kropf and Imperial Land Corporation properties. Reportedly, there is mineable coal located in this area that would affect the deep mine portion of the discharge; however, there are no current mine permits that have been issued or that are pending/in-process. Both potentially affected landowners have partnered with the Montour Run Watershed Association in the past (Kropf & Imperial Land Corporation).

Preferred Treatment Method (req. area): *20,000SF WL → 1,100T HFLB (~1AC).* Since 1/30/01, the pH has been 5 or above with aluminum concentrations staying near or below 1 mg/l. Additionally, there has only been one occasion during this time period where the acidity exceeded the alkalinity(9/18/02). Due to the relatively low manganese and elevated alkalinity concentrations, the HFLB could be considered optional. There is probably sufficient room to construct a wetland at the monitoring point location; however, this area is the front yard(s) of the Kropf residence(s). Additional area is located just downgradient on vacant properties owned by Kropf and Imperial Land Corporation. If constructed downgradient, the MP6 system would receive effluent from the currently proposed SFMU2 (Boggs Road) system for which a grant application has been submitted to the PA DEP through the Growing Greener initiative. The excess alkalinity from the SFMU2 drainage would provide additional alkalinity to aid in treatment.

Preliminary Cost Estimate Range: $70,000 - $110,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
KROPF, W. Keith & Mary	Property: Numerous Parcels Along Boggs Road, Imperial, PA 15126 Mailing: 121 Boggs Road, Imperial, PA 15126
Imperial Land Corporation	Property: Along Boggs Road, Imperial, PA 15126 (near BFI Landfill) Mailing: 200 Neville Road, Pittsburgh, PA 15225

PRE1(SFMU2)

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
31	55	6.7	6.4	76	48	3	19	16	30	8	9	0	0

Site Conditions: This discharge issues from the toe of spoil from an abandoned mine. This site is characterized by an impacted wetland area that drains to a watercourse that traverses a residential lawn area and flows into the South Fork Montour Run headwaters. This area is zoned Heavy Industrial.

Preferred Treatment Method (req. area): *2,000SF FB → 20,000SF WL (~1 ac).*
This system was previously evaluated with a public-private partnership effort with the Montour Run Watershed Association and was submitted under the Pennsylvania Department of Environmental Protection (PA DEP), Growing Greener Grant Program for funding. At the time of this report, the application is being reviewed by the PA DEP. Based on the location in the watershed and the quality and quantity of the discharge, this project could have a very significant impact on stream quality.

Preliminary Cost Estimate Range: $100,000 - $120,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
KROPF, W. Keith & Mary	Property: 121 Boggs Road, Imperial, PA 15126 Mailing: 121 Boggs Road, Imperial, PA 15126

SFMS6

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
25	75	3.4	3.0	0	0	263	308	3	7	3	3	35	43

Site Conditions: This is an abandoned underground mine discharge which issues from a terra cotta drain pipe located between a residential outbuilding and Crawford Street in the Village of Santiago. A road culvert collects the drainage that is conveyed to an unnamed tributary to South Fork Montour Run. The unnamed tributary is typically a gently sloping wetland area located in the center of the village. There is approximately one acre of potential construction area located in this stream channel/wetland area. It is bounded to the north and west by Crawford Street, to the east by a commercial business and to the south by numerous residential properties.

Preferred Treatment Method (req. area): *2,400T HFP → 6,000SF FP → 4,000SF WL (~2 ac).* In order to install this system as close to the source of the discharge as possible, numerous landowners would be affected with large portions of the relatively small residential lots being affected. In addition, the system would have to be installed above and below the commercial business (Imperial Truck Body & Equip., Inc.). Due to the location of the discharge in the center of the village, the construction area is extremely limited but this project could have significant impact on water quality in the stream.

Preliminary Cost Estimate Range: $230,000 - $250,000+

Other Options: Due to the location of SFMS6 & SFMS7 within the village of Santiago, further evaluation may indicate installation of a single passive system to treat both discharges. A portion of the stream could be diverted up to a given design flow into the system and allow excess flow associated with storm events to bypass the system. Based on preliminary observations during high flow (April 2003), stream pH is ~ 6 immediately downstream of the village and the streambed is only slightly stained with metal precipitates. Based on a preliminary review of available tax map and other information, installation of a system further downstream would potentially affect fewer landowners. Additional evaluation of the impact of this unnamed tributary on South Fork Montour Run may provide additional insight on the recommended course of action.

Potentially Affected Landowners (Located in North Fayette Township)

Name (bold if source location)	Address
ZAWACKI, Joseph F.	Property: 547 Private Road (aka 3 Pyda Street), Imperial, PA 15126 Mailing: 3 Pyda Street RD1, Imperial, PA 15126
(possibility of numerous owners)	Numerous properties could be affected a system were to be constructed.

SFMS7

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
45	60	4.4	3.8	6	0	89	121	2	3	2	3	9	14

Site Conditions: This drain from an abandoned underground mine issues in a diffuse seep zone generally bounded by the village of Santiago to the north, Old Steubenville Pike to the south, a completed strip mine/fill area to the west and Santiago Road to the east. Based on site topography and other cultural features, there is about ½ acre available for construction. The source area is zoned General Commercial.

Preferred Treatment Method (req. area): *1,200T HFP → 4,000SF FP (~1 ac).* There is a potential for the installation of the system above the village of Santiago. However, preliminary evaluation indicates that the space is very limited for the construction of a passive system. The proximity of the village directly downgradient is also a notable constraint. This project could make a significant impact on stream quality.

Preliminary Cost Estimate Range: $130,000 – 160,000

Other Options: Due to the location SFMS6 & SFMS7 within the village of Santiago, further evaluation may indicate the installation of a single passive system to treat both discharges. This system could divert a given design flow from the stream into the system and allow excess flow associated with high flow periods to bypass the system. Based on preliminary observations during high flow (April 2003), stream pH is ~6 leaving the village with only little metal staining observed on the streambed. Based on a preliminary review of available tax map and other information, the further downstream a system is installed the fewer the number of potentially affected owners. Further evaluation of the impact of this unnamed tributary on the South Fork Montour Run may provide additional insight on the recommended course of action.

It may be potentially viable to install a passive system on the SFMS7 discharge (over-size if feasible) and allow the effluent from this system to mix with the SMFS6 discharge. The natural wetlands located in Santiago could allow for particulate settling. Minor wetland enhancements made with hand-tools and haybales could help to maximize retention time within the natural wetlands.

Potentially Affected Landowners (Located in North Fayette Township)

Name (bold if source location)	Address
VALENTI, Theodore J.	Property: Steubenville Pke, Imperial, PA 15126 Mailing: 8175 Steubenville Pike, Imperial, PA 15126

SFMD7

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
8	30	3.2	3.0	0	0	174	194	3	5	2	3	18	21

Site Conditions: This discharge from an abandoned underground mine issues from a drain located near Wilson School and upgradient of a townhouse complex accessed from Meander Street. The area below the discharge is a gently sloping wooded area that is generally well suited for construction of a passive treatment system. Reportedly, the coal associated with this drainage has been permitted to be surfaced mined. However, the mine reported was not activated due to the proximity of the public school and related safety concerns. There is a potential for future coal extraction coincident with the construction of athletic fields on the school property. This area is zoned Medium Density Residential.

Preferred Treatment Method (req. area): *1,000T HFP → 4,000SF FP → 1,000SF WL (~1½ ac).* This system would be located on school property near the Wilson School, a potential exists for this site to function as a "real-life" watershed restoration project that could be incorporated into the science and/or environmental curriculum. This discharge flows in a watercourse to South Fork Montour Run and has less stream impact compared to larger discharges located further upstream.

Preliminary Cost Estimate Range: $120,000 - $140,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
West Allegheny School Dist.	Property: Boggs Road, Imperial, PA 15126 Mailing: PO Box 55, Imperial, PA 15126

SFMD3

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
8	17	6.2	4.0	56	112	18	116	0	2	2	4	7	21

Site Conditions: This abandoned mine discharge issues from a drain/seep area along the Montour Trail and North Star Road. A concrete culvert conveys the drainage under North Star Road and to a watercourse that drains directly to South Fork Montour Run. Potential construction area exists in a vacant wooded area between North Star Road and the stream. This area is generally bounded by South Fork Montour Run to the north and east, North Star Road to the south, and a residential property to the west. This area is zoned Rural Residential.

Preferred Treatment Method (req. area): *500T HFP → 3,000 SF FP (~1 ac).* This would be a relatively small system located within viewing distance from the Montour Trail. Based on the position in the downstream portion of South Fork Montour Run, the stream should maintain a significant flow year round in this area and the potential to incorporate public stream access may be pertinent. However, based on the relative low flow and pollutant loadings, this project would have a lesser impact on stream quality than larger discharges located further upstream.

Preliminary Cost Estimate Range: $90,000 - $120,000

Potentially Affected Landowners (Located in North Fayette Township)

Name (bold if source location)	Address
CHERNIK, CHARLES & CONSTANCE (?)	Property: Along North Star Road, Imperial, PA 15126 Mailing: 250 North Star Road, Imperial, PA 15126

MKR3

Representative Water Quality

Flow (gpm)		**pH** (s.u.)		**Alkalinity** (mg/l)		**Acidity** (mg/l)		**Iron** (mg/l)		**Manganese** (mg/l)		**Aluminum** (mg/l)	
avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
117	300	3.4	3.0	0	0	140	184	1	2	1	2	14	24

Site Conditions: A terra cotta deep mine drain pipe discharges directly to the headwaters of Milk Run. The potential construction area located immediately downgradient is bounded by Mahoney Road on the east, a steep stream valley wall on the west and an entrance road to a mobile home park to the north. Due to the location in the uppermost headwaters of the stream and limited contributory drainage area (<100ac), a passive system could be installed directly in the stream channel. This area is located along a relatively highly traveled road and is zoned Mobile Home Park.

Preferred Treatment Method (req. area): *20,000SF FB→ 6,000T HFP → 14,000SF FP (~6 ac)* This system would utilize a Hybrid Flow Pond (HFP) that does not require compost and will not have standing water. The forebay (FB) and Flush Pond (FP) would have standing water and a safety fence would be recommended. This system is located in the headwaters of Milk Run and would make a very significant improvement in the water quality of the stream.

Preliminary Cost Estimate Range: $450,000 - $500,000

Potentially Affected Landowners (Located in North Fayette Township)

Name (bold if source location)	Address
NAGODE, DONALD & MARGARET	Property: Along Steubenville Pike (and Mahoney Road), North Fayette, PA 15234 Mailing: Harvester Drive, Oakdale, PA 15071
The Hall Family Trust	Property: Along Maloney Road (aka Mahoney Road), Oakdale, PA, 15071 Mailing: Maloney Road (aka Mahoney Road), North Fayette, PA 15234

PRE2(CLINTON RD)

Representative Water Quality

Flow (gpm)	**pH** (s.u.)	**Alkalinity** (mg/l)	**Acidity** (mg/l)	**Iron** (mg/l)	**Manganese** (mg/l)	**Aluminum** (mg/l)
44	3.6	0	238	4	11	26

Site Conditions:
Severely degraded mine drainage issues from numerous small discharges on an abandoned strip mine in the headwaters of the West Fork of Enlow Run. Due to the diffuse nature of the seep zone, an anoxic collection system will be used to direct the flow into the proposed treatment system. The potential construction area is generally bounded by Route 60 to the south and strip mine spoils to the North, East and West. This project is located on Airport Authority property and is zoned Business Park.

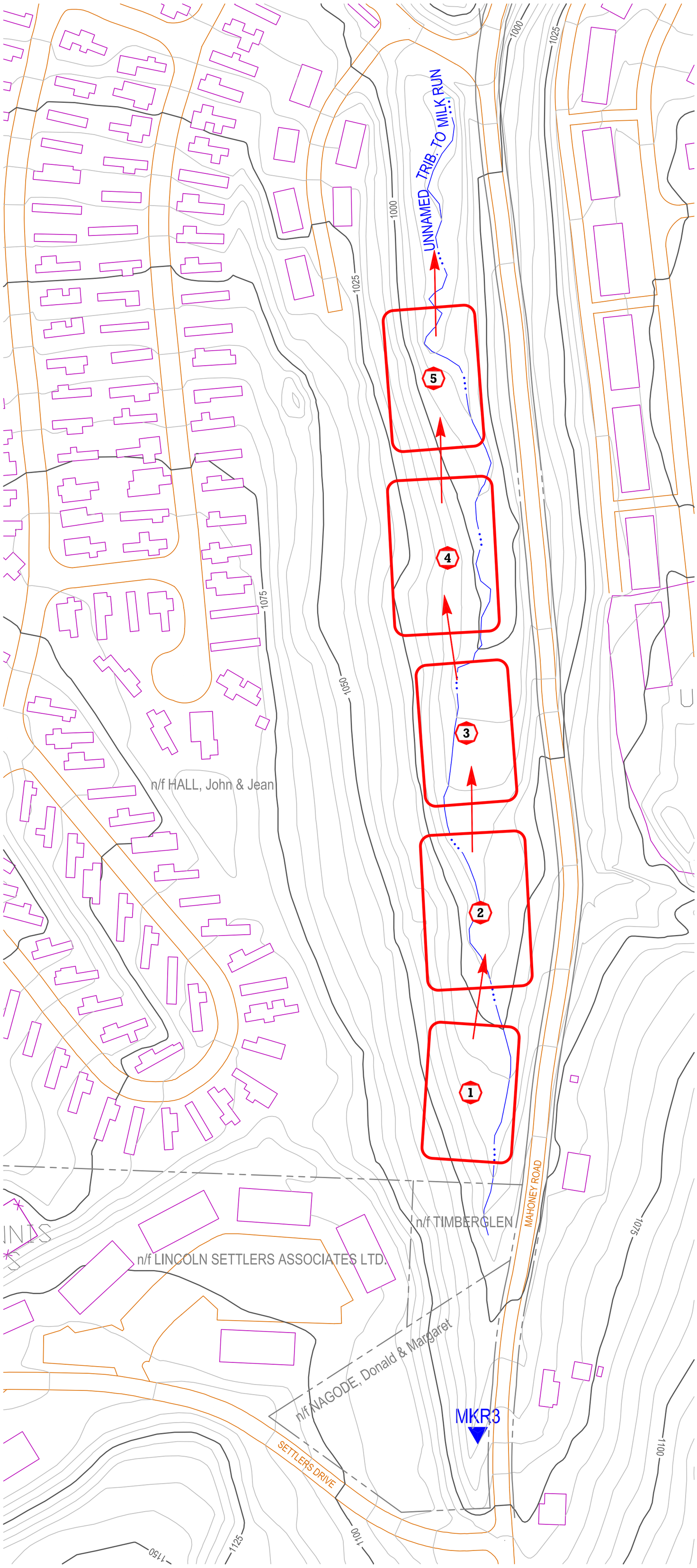
Preferred Treatment Method (req. area): *SB→ SAPS →ALD →LWL →AWL (~10 ac)* This conceptual passive treatment system design was developed by USFilter, Engineering and Construction and includes a Stilling Basin/Sediment Trap (SB), Successive Alkaline Producing System (SAPS), Anoxic Limestone Drain (ALD), Lined Wetlands (LWL) and Aerobic Wetlands (AWL). Additional monitoring will be used to determine the final design of the treatment system.

Preliminary Cost Estimate Range: $272,000 - $282,000

Potentially Affected Landowners (Located in Findlay Township)

Name (bold if source location)	Address
ALLEGHENY COUNTY AIRPORT AUTHORITY	Property: East of Clinton Road/North of Route 60, Findlay Township, PA Mailing: 1000 Airport Boulevard, Suite 4000, Pittsburgh, PA 15231

Please note: Information included for the PRE2(CLINTON ROAD) site pertaining to Site Conditions, Treatment Method, Cost Estimate and Landowner was taken from a 2003 Growing Greener grant application prepared with assistance from USFilter and provided by the Montour Run Watershed Association. Water quality information was provided by the Montour Run Watershed Association (sample analyses by the PA DEP).



Notes:

Base map compiled from topographic mapping generated in conjunction with PA Turnpike Commission Findlay Connector Project (Undated).

Abandoned Mine Drainage Discharges Located by GPS/Field Observation by BioMost, Inc.

Approximate property line locations and owner information compiled from available Allegheny County records reviewed between March 2003 and April 2003 and do not represent a property survey.

Based on GIS mapping provided by the Montour Run Watershed Association as prepared by KCI Technologies, Inc. for the River Conservation and Land Use Plan (April 1999), there are no unstable soils in the project area. Areas of steep slopes are represented by the contours as shown.

The passive treatment system components as shown are conceptual only. The actual size and configuration is subject to change based on further site investigation/project development, field conditions and/or other factors.

Underground and overhead utilities to be located prior to final design.

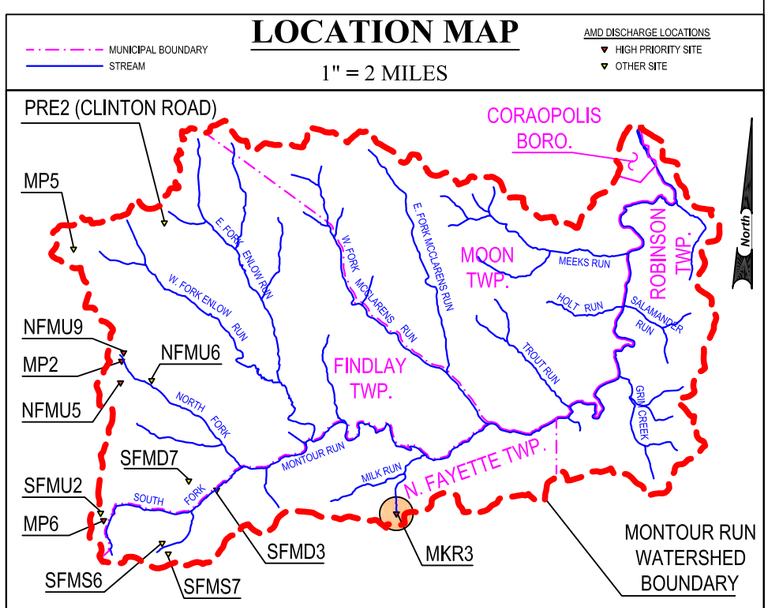
MKR3 — ABANDONED MINE DRAINAGE DISCHARGE LOCATION

\# — PASSIVE TREATMENT COMPONENT NUMBER (KEYED TO TABLE)

- PROPERTY LINE (APPROXIMATE LOCATION)
- EXISTING ROAD
- PROPOSED PASSIVE TREATMENT SYSTEM COMPONENT
- PASSIVE TREATMENT SYSTEM GENERALIZED FLOW PATH
- EXISTING STRUCTURE
- CONTOUR LINE - INDEX
- CONTOUR LINE - INTERMEDIATE
- STREAM

PASSIVE TREATMENT SYSTEM COMPONENT TABLE

COMPONENT #	DESCRIPTION
1	3,700 CY FOREBAY
2	3,000 T HYBRID FLOW POND
3	4,000 CY SETTLING/FLUSH POND/WETLAND
4	3,000 T HYBRID FLOW POND/WETLAND
5	4,000 CY SETTLING/FLUSH POND



MONTOUR RUN WATERSHED ASSOCIATION

ABANDONED MINE DRAINAGE CLEANUP PLAN

MONTOUR RUN WATERSHED

MILK RUN SUBWATERSHED

ALLEGHENY COUNTY, PENNSYLVANIA

CONCEPTUAL SITE PLAN MKR3 DISCHARGE

Scale: 1" = 100' **September 2003**

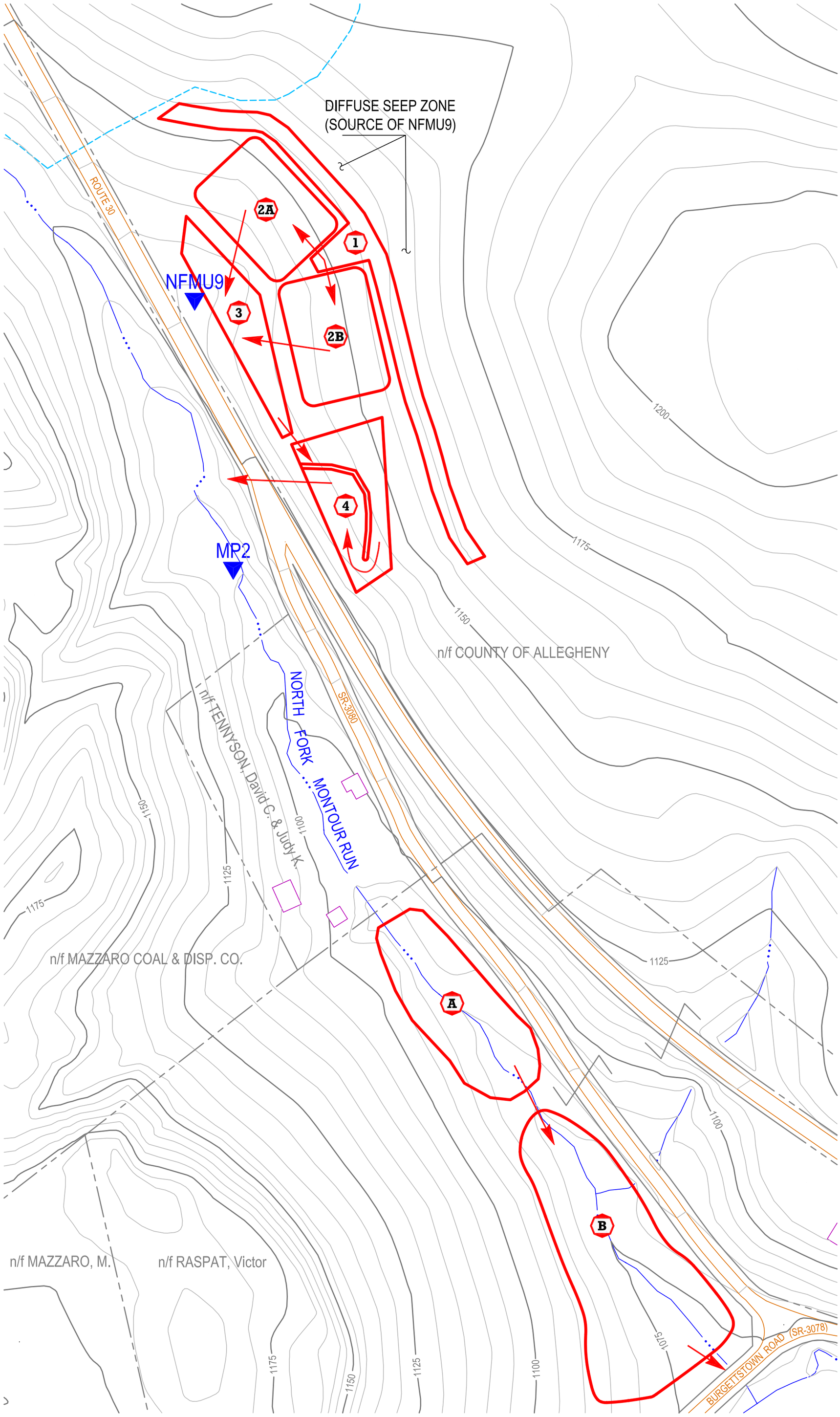
BioMost, Inc., Cranberry Township, Pennsylvania

Mining and Reclamation Services

149ACAD/149M/M100

REPRESENTATIVE DISCHARGE CHARACTERISTICS

DISCHARGE	Flow (gpm)		pH (s.u.)		Alkalinity (mg/l)		Acidity (mg/l)		Iron (mg/l)		Manganese (mg/l)		Aluminum (mg/l)	
	avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
MKR3	117	300	3.4	3.0	0	0	140	184	1	2	1	2	14	24



North

Notes:

Base map compiled from topographic mapping generated in conjunction with PA Turnpike Commission Findlay Connector Project (Undated).

Abandoned Mine Drainage Discharges Located by GPS/Field Observation by BioMost, Inc.

Approximate property line locations and owner information compiled from available Allegheny County records reviewed between March 2003 and April 2003 and do not represent a property survey.

Based on GIS mapping provided by the Montour Run Watershed Association as prepared by KCI Technologies, Inc. for the River Conservation and Land Use Plan (April 1999), there are no unstable soils in the project area. Areas of steep slopes are represented by the contours as shown.

The passive treatment system components as shown are conceptual only. The actual size and configuration is subject to change based on further site investigation/project development, field conditions and/or other factors. As an alternative, the B1 and B2 wetlands could be enlarged by 15,000 SF and wetland A4 be eliminated.

Based on the final design and "as-built" construction of the Findlay Connector, discharge NFMU9 may be impacted, potentially requiring a revised conceptual site plan.

Underground and overhead utilities to be located prior to final design.

NFMU9 — ABANDONED MINE DRAINAGE DISCHARGE LOCATION

(#) — PASSIVE TREATMENT COMPONENT NUMBER (KEYED TO TABLE)

- PROPERTY LINE (APPROXIMATE LOCATION)
- EXISTING ROAD
- PROPOSED PASSIVE TREATMENT SYSTEM COMPONENT
- PASSIVE TREATMENT SYSTEM GENERALIZED FLOW PATH
- EXISTING STRUCTURE
- CONTOUR LINE - INDEX
- CONTOUR LINE - INTERMEDIATE
- STREAM
- APPROXIMATE BOUNDARY OF PROPOSED FINDLAY CONNECTOR CONSTRUCTION AREA

PASSIVE TREATMENT SYSTEM COMPONENT TABLE

COMPONENT #	DESCRIPTION [DISCHARGE TREATED]
1	2,600 CY COLLECTION SYSTEM/FOREBAY [NFMU9]
2A	1,000 T VERTICAL FLOW POND (1 OF 2 IN PARALLEL) [NFMU9]*
2B	1,000 T VERTICAL FLOW POND (1 OF 2 IN PARALLEL) [NFMU9]*
3	2,500 CY SETTLING/FLUSH POND [NFMU9]
4	15,000 SF WETLAND [NFMU9]
A	14,000 SF WETLAND [MP2]
B	41,000 SF WETLAND [MP2]

*2,000 Total Tons of Limestone for both Vertical Flow Ponds.

REPRESENTATIVE DISCHARGE CHARACTERISTICS

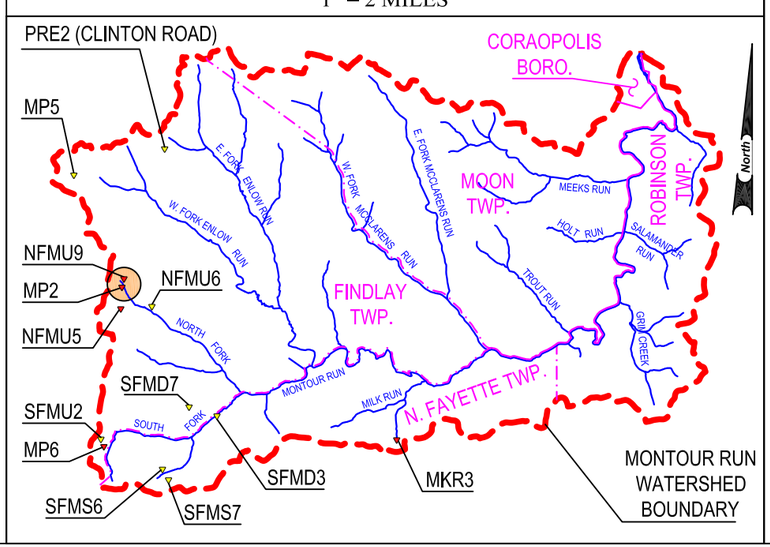
DISCHARGE	Flow (gpm)		pH (s.u.)		Alkalinity (mg/l)		Acidity (mg/l)		Iron (mg/l)		Manganese (mg/l)		Aluminum (mg/l)	
	avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
NFMU9	41	98	4.1	3.2	5	0	101	184	16	26	8	10	7	14
MP2	32	91	7.0	6.6	153	91	0	0	13	168	4	6	0	3

LOCATION MAP

1" = 2 MILES

MUNICIPAL BOUNDARY
STREAM

AMD DISCHARGE LOCATIONS
HIGH PRIORITY SITE
OTHER SITE



MONTOUR RUN WATERSHED ASSOCIATION

ABANDONED MINE DRAINAGE CLEANUP PLAN

MONTOUR RUN WATERSHED

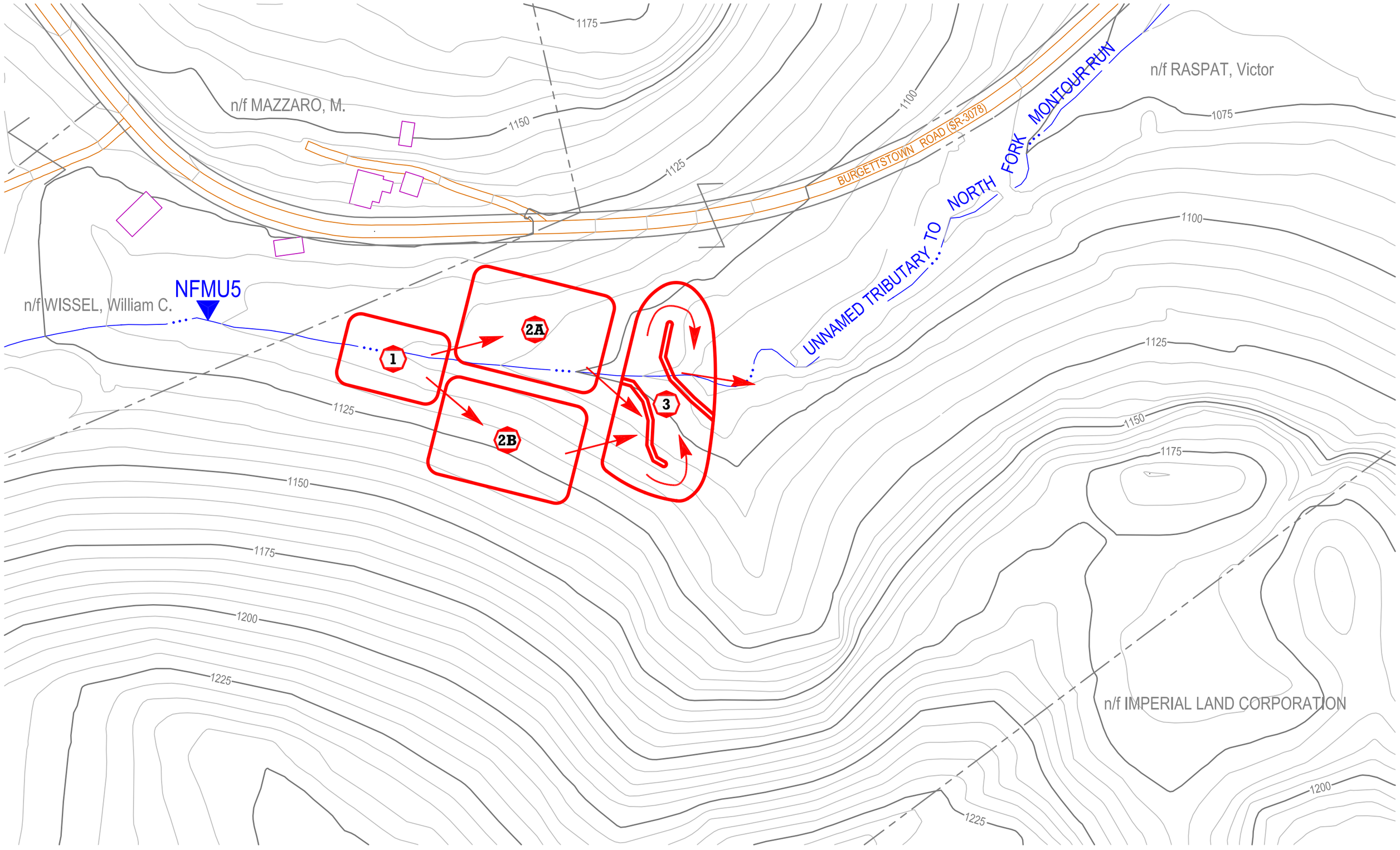
NORTH FORK MONTOUR RUN SUBWATERSHED
ALLEGHENY COUNTY, PENNSYLVANIA

CONCEPTUAL SITE PLAN NFMU9 & MP2 DISCHARGES

Scale: 1" = 100' **September 2003**

BioMost, Inc., Cranberry Township, Pennsylvania
Mining and Reclamation Services

149ACAD/149N/N92100



North

Notes:

Base map compiled from topographic mapping generated in conjunction with PA Turnpike Commission Findlay Connector Project (Undated).

Abandoned Mine Drainage Discharges Located by GPS/Field Observation by BioMost, Inc.

Approximate property line locations and owner information compiled from available Allegheny County records reviewed between March 2003 and April 2003 and do not represent a property survey.

Based on GIS mapping provided by the Montour Run Watershed Association as prepared by KCI Technologies, Inc. for the River Conservation and Land Use Plan (April 1999), there are no unstable soils in the project area. Areas of steep slopes are represented by the contours as shown.

The passive treatment system components as shown are conceptual only. The actual size and configuration is subject to change based on further site investigation/project development, field conditions and/or other factors.

Underground and overhead utilities to be located prior to final design.

100 50 0 100 200

REPRESENTATIVE DISCHARGE CHARACTERISTICS

DISCHARGE	Flow (gpm)		pH (s.u.)		Alkalinity (mg/l)		Acidity (mg/l)		Iron (mg/l)		Manganese (mg/l)		Aluminum (mg/l)	
	avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
NFMU5	54	114	4.3	3.0	6	0	99	138	4	8	3	4	11	17

NFMU5 — ABANDONED MINE DRAINAGE DISCHARGE LOCATION

— PASSIVE TREATMENT COMPONENT NUMBER (KEYED TO TABLE)

- PROPERTY LINE (APPROXIMATE LOCATION)
- EXISTING ROAD
- PROPOSED PASSIVE TREATMENT SYSTEM COMPONENT
- PASSIVE TREATMENT SYSTEM GENERALIZED FLOW PATH
- EXISTING STRUCTURE
- CONTOUR LINE - INDEX
- CONTOUR LINE - INTERMEDIATE
- STREAM

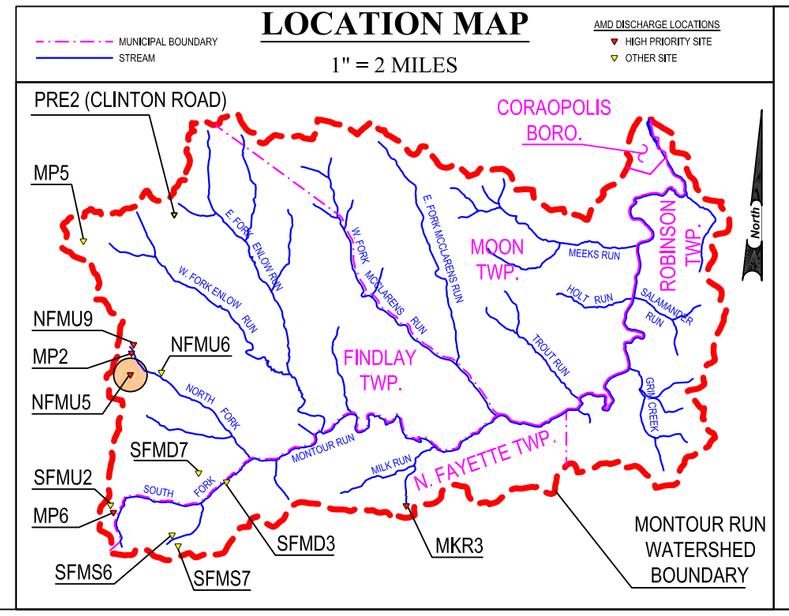
PASSIVE TREATMENT SYSTEM COMPONENT TABLE

COMPONENT #	DESCRIPTION
1	1,000 CY FOREBAY
2A	1,100 T VERTICAL FLOW POND (1 OF 2 IN PARALLEL)*
2B	1,100 T VERTICAL FLOW POND (1 OF 2 IN PARALLEL)*
3	12,000 SF SETTLING POND/WETLAND

*2,200 Total Tons of Limestone for both Vertical Flow Ponds

LOCATION MAP

1" = 2 MILES



MONTOUR RUN WATERSHED ASSOCIATION

ABANDONED MINE DRAINAGE CLEANUP PLAN

MONTOUR RUN WATERSHED

NORTH FORK MONTOUR RUN SUBWATERSHED

ALLEGHENY COUNTY, PENNSYLVANIA

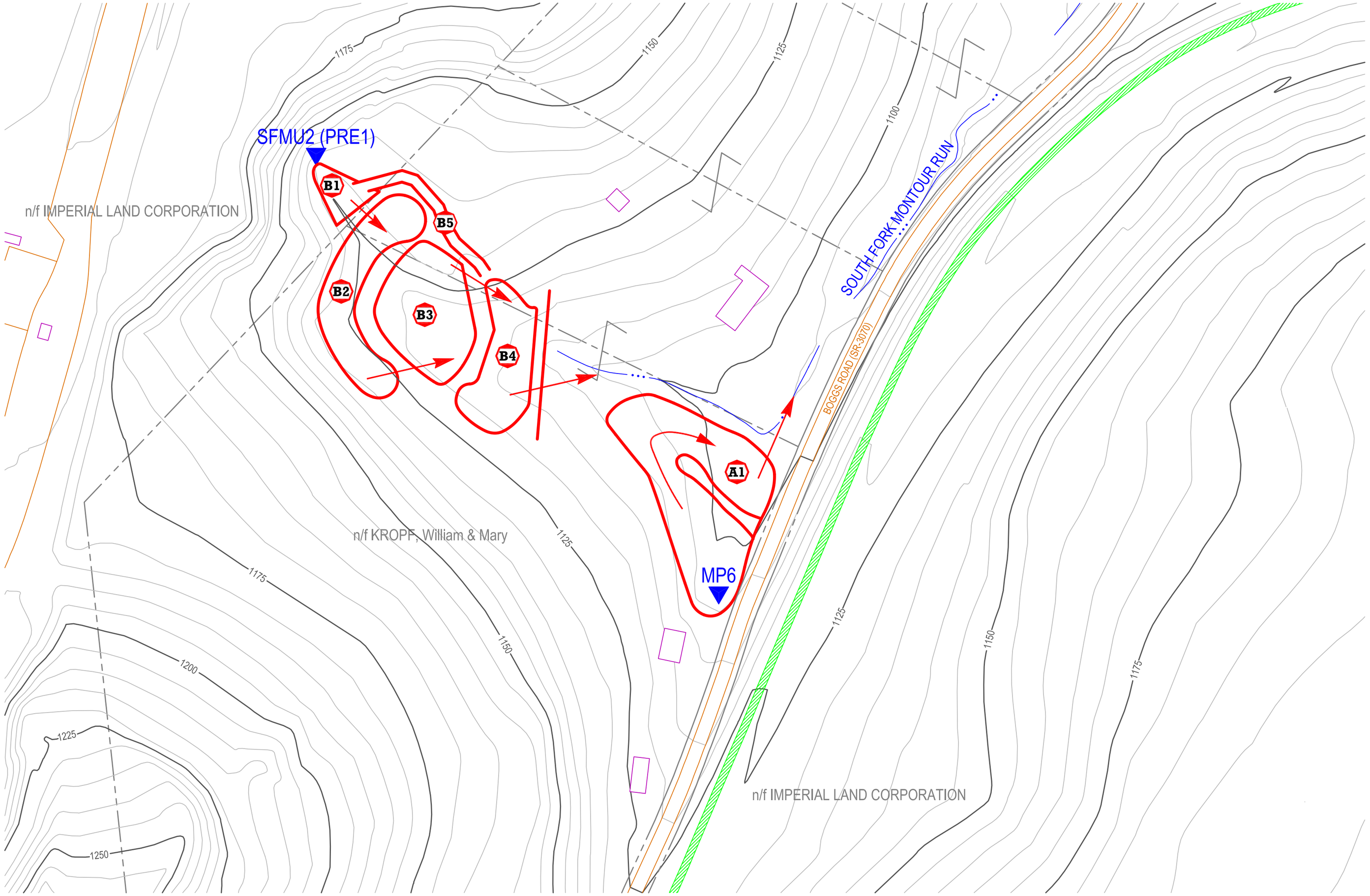
CONCEPTUAL SITE PLAN NFMU5 DISCHARGE

Scale: 1" = 100' September 2003

BioMost, Inc., Cranberry Township, Pennsylvania

Mining and Reclamation Services

149ACAD/149NN5100



100 50 0 100 200

PASSIVE TREATMENT SYSTEM COMPONENT TABLE

COMPONENT #	DESCRIPTION [DISCHARGE TREATED]
A1	1/2 ACRE WETLAND [MP6]
B1	2,000 SF FOREBAY [SFMU2 (PRE1)]
B2	10,000 SF SETTLING POND [SFMU2 (PRE1)]
B3	11,000 SF WETLAND [SFMU2 (PRE1)]
B4	10,000 SF POLISHING POND [SFMU2 (PRE1)]
B5	BIOSWALE/FLOW CONTROL CHANNEL [SFMU2 (PRE1)]

REPRESENTATIVE DISCHARGE CHARACTERISTICS

DISCHARGE	Flow (gpm)		pH (s.u.)		Alkalinity (mg/l)		Acidity (mg/l)		Iron (mg/l)		Manganese (mg/l)		Aluminum (mg/l)	
	avg.	max.	avg.	min.	avg.	min.	avg.	max.	avg.	max.	avg.	max.	avg.	max.
MP6	31	78	5.5	4.8	55	13	35	158	16	42	8	10	2	10
SFMU2	31	55	6.7	6.4	76	48	3	19	16	30	8	9	0	0

Notes:

Base map compiled from topographic mapping generated in conjunction with PA Turnpike Commission Findlay Connector Project (Undated).

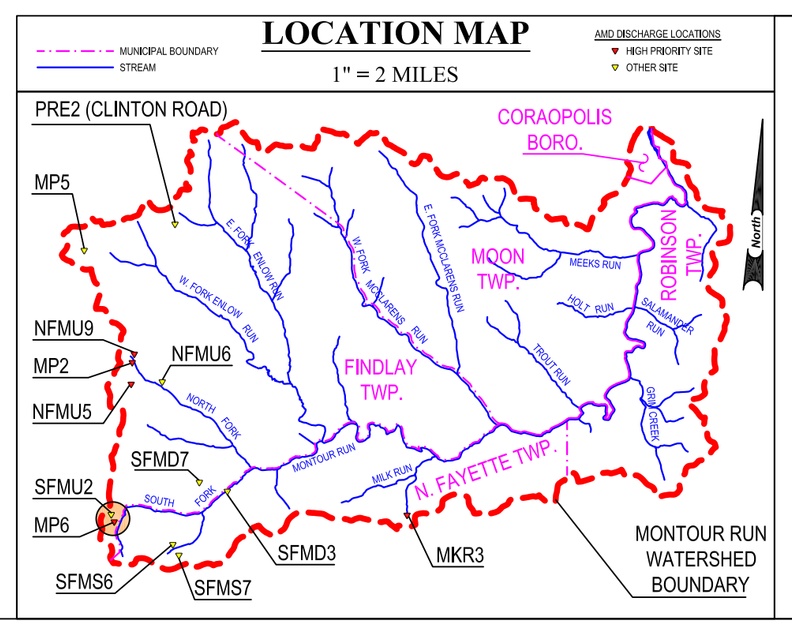
Abandoned Mine Drainage Discharges Located by GPS/Field Observation by BioMost, Inc.

Approximate property line locations and owner information compiled from available Allegheny County records reviewed between March 2003 and April 2003 and do not represent a property survey.

Based on GIS mapping provided by the Montour Run Watershed Association as prepared by KCI Technologies, Inc. for the River Conservation and Land Use Plan (April 1999), there are no unstable soils in the project area. Areas of steep slopes are represented by the contours as shown.

The passive treatment system components as shown are conceptual only. The actual size and configuration is subject to change based on further site investigation/project development, field conditions and/or other factors. As an option, treated effluent from the SFMU2 system may be directed into the MP6 system to aid in treatment.

Underground and overhead utilities to be located prior to final design.



MONTOUR RUN WATERSHED ASSOCIATION

ABANDONED MINE DRAINAGE CLEANUP PLAN

MONTOUR RUN WATERSHED

SOUTH FORK MONTOUR RUN SUBWATERSHED
ALLEGHENY COUNTY, PENNSYLVANIA

CONCEPTUAL SITE PLAN
MP6 & SFMU2 (PRE1) DISCHARGES

Scale: 1" = 100' September 2003

BioMost, Inc., Cranberry Township, Pennsylvania
Mining and Reclamation Services

149ACAD/149SIS100

MKR3

Construction Cost Estimate

	QTY	UNIT	COST	TOTAL	CATEGORY TOTAL
CONSTRUCTION					
E&S Controls	6	AC	$1,312	$7,872	
Clear and Grubb	6	AC	$1,463	$8,778	
Access Road	350	LF	$8.27	$2,895	
Revegetation	4.5	AC	$609	$2,741	
Mobilization/Demob	1	LS	$6,500	$6,500	
Fence	1800	LF	$17.16	$30,888	
Construction Equipment & Labor	1	JOB	$182,112	$182,112	
Mitigation Wetland Construction	1	JOB	$42,000	$42,000	
			TOTAL CONSTRUCTION COST:		**$283,785**
CONSTRUCTION MATERIALS					
Geotextiles	6180	SY	$0.50	$3,090	
Pipe - Solid, Perf, Fittings, Etc.				$41,076	
Stone - AASHTO #1	6000	T	$12.50	$75,000	
Stone - AASTHO #57	700	T	$11.50	$8,050	
Stone - Rip Rap	400	T	$12.50	$5,000	
			TOTAL CONSTRUCTION MATERIAL COST:		**$132,216**
CONTRACTUAL					
Permitting				$25,000	
Design				$21,500	
Survey				$7,500	
Analysis				$3,000	
Permitting/Design - Wetland Mitigation				$18,000	
			TOTAL CONTRACTUAL COST:		**$75,000**
LAND ACQUISITION COSTS					
Estimated Cost	6	ac	$2,500	$15,000	
			TOTAL LAND AQUISITION COST:		**$15,000**
			TOTAL INSTALLATION COSTS:		***$506,001***

Estimated Annual Operation and Maintenance Costs: **$240 - $2,480**

Permits & Approvals Anticipated to be Required for System Construction

Road Bond (Twp. Rd.)	PA One Call	PNDI	GIF
PHMC	PPC	NPDES	E&S
Joint Permit	EA	Restoration Waiver	GP-4

Estimated total time to obtain all necessary permits and approvals: **6-12 months**

Permits & Approvals: The list of anticipated Permits & Approvals and estimated timeframe is based on current regulations and experience with similar projects. This list and estimated timeframe is subject to change based on revised regulations and other factors. Please see the Permit and Approval Section of this report for a more detailed description of the permits listed.

Cost estimate basis: Average BAMR Cost (Daniel Sammarco, PE, PA DEP, 2nd Annual Southwest Watershed Workshop, Greensburg, PA 10/21/00) adjusted for inflation (5 years) at 3.1% per year; AMD Treat 3.1, 2002, (US Dept. of Interior, Office of Surface Mining); representative contractual and construction costs from recent grants awarded through the PA DEP Growing Greener Program; other available information including vendor quotes/invoices and internet sites. All costs are estimates and are subject to change based on further project development, inflation, and other factors.

NFMU9

Construction Cost Estimate

	QTY	UNIT	COST	TOTAL	CATEGORY TOTAL
CONSTRUCTION					
E&S Controls	6	AC	$1,312	$7,872	
Clear and Grubb	5	AC	$1,463	$7,315	
Access Road	100	LF	$8.27	$827	
Revegetation	4.5	AC	$609	$2,741	
Mobilization/Demob	1	LS	$6,500	$6,500	
Fence	700	LF	$17.16	$12,012	
Construction Equipment & Labor	1	JOB	$126,357	$126,357	
			TOTAL CONSTRUCTION COST:		**$163,624**
CONSTRUCTION MATERIALS					
Geotextiles	4226	SY	$0.50	$2,113	
Pipe - Solid, Perf, Fittings, Etc.				$21,138	
Stone - AASHTO #1	2000	T	$12.50	$25,000	
Stone - AASTHO #57	300	T	$11.50	$3,450	
Stone - Rip Rap	400	T	$12.50	$5,000	
Compost	350	CY	$10.00	$3,500	
			TOTAL CONSTRUCTION MATERIALS COST:		**$60,201**
CONTRACTUAL					
Permitting				$19,500	
Design				$29,500	
Survey				$4,500	
Analysis				$3,920	
			TOTAL CONTRACTUAL COST:		**$57,420**
LAND ACQUISITION COSTS					
Estimated Cost	6	ac	$2,500	$15,000	
			TOTAL LAND AQUISITION COST:		**$15,000**
			TOTAL INSTALLATION COSTS:		***$296,245***

Estimated Annual Operation and Maintenance Costs: **$240 - $2,480**

Permits & Approvals Anticipated to be Required for System Construction

HOP	PA One Call	PNDI	GIF
PHMC	PPC	NPDES	E&S
Joint Permit	Restoration Waiver	EA	GP-4

Estimated total time to obtain all necessary permits and approvals: **6-12 months**

Permits & Approvals: The list of anticipated Permits & Approvals and estimated timeframe is based on current regulations and experience with similar projects. This list and estimated timeframe is subject to change based on revised regulations and other factors. Please see the Permit and Approval Section of this report for a more detailed description of the permits listed.

Cost estimate basis: Average BAMR Cost (Daniel Sammarco, PE, PA DEP, 2nd Annual Southwest Watershed Workshop, Greensburg, PA 10/21/00) adjusted for inflation (5 years) at 3.1% per year; AMD Treat 3.1, 2002, (US Dept. of Interior, Office of Surface Mining); representative contractual and construction costs from recent grants awarded through the PA DEP Growing Greener Program; other available information including vendor quotes/invoices and internet sites. All costs are estimates and are subject to change based on further project development, inflation, and other factors.

MP2

Construction Cost Estimate

	QTY	UNIT	COST	TOTAL	CATEGORY TOTAL
CONSTRUCTION					
E&S Controls	3	AC	$1,312	$3,936	
Clear and Grubb	3	AC	$1,463	$4,389	
Access Road	50	LF	$8.27	$414	
Revegetation	1.75	AC	$609	$1,066	
Mobilization/Demob	1	LS	$5,400	$5,400	
Construction Equipment & Labor	1	JOB	$95,383	$95,383	
Mitigation Wetland Construction	1	JOB	$13,860	$13,860	
			TOTAL CONSTRUCTION COST:		**$124,448**
CONSTRUCTION MATERIALS					
Compost	1000	CY	$10.00	$10,000	
Pipe - Culverts	180	FT	$40.00	$7,200	
Stone - AASTHO #57	100	T	$11.50	$1,150	
Stone - Rip Rap	100	T	$12.50	$1,250	
			TOTAL CONSTRUCTION MATERIALS COST:		**$19,600**
CONTRACTUAL					
Permitting				$17,500	
Design				$17,500	
Survey				$3,500	
Analysis				$1,620	
Permitting/Design - Wetland Mitigation				$5,940	
			TOTAL CONTRACTUAL COST:		**$46,060**
LAND ACQUISITION COSTS					
Estimated Cost	3.3	ac	$2,500	$8,250	
			TOTAL LAND AQUISITION COST:		**$8,250**
			TOTAL INSTALLATION COSTS:		***$198,358***

Estimated Annual Operation and Maintenance Costs: **$120 - $1,500**

Permits & Approvals Anticipated to be Required for System Construction

HOP	Road Bond (state)	PA One Call	PNDI
GIF	PHMC	PPC	NPDES
E&S	Joint Permit	EA	GP-4

Estimated total time to obtain all necessary permits and approvals: **6-12 months**

Permits & Approvals: The list of anticipated Permits & Approvals and estimated timeframe is based on current regulations and experience with similar projects. This list and estimated timeframe is subject to change based on revised regulations and other factors. Please see the Permit and Approval Section of this report for a more detailed description of the permits listed.

Cost estimate basis: Average BAMR Cost (Daniel Sammarco, PE, PA DEP, 2nd Annual Southwest Watershed Workshop, Greensburg, PA 10/21/00) adjusted for inflation (5 years) at 3.1% per year; AMD Treat 3.1, 2002, (US Dept. of Interior, Office of Surface Mining); representative contractual and construction costs from recent grants awarded through the PA DEP Growing Greener Program; other available information including vendor quotes/invoices and internet sites. All costs are estimates and are subject to change based on further project development, inflation, and other factors.

NFMU5

Construction Cost Estimate

	QTY	UNIT	COST	TOTAL	CATEGORY TOTAL
CONSTRUCTION					
E&S Controls	3	AC	$1,312	$3,936	
Clear and Grubb	3	AC	$1,463	$4,389	
Access Road	100	LF	$8.27	$827	
Revegetation	2	AC	$609	$1,218	
Mobilization/Demob	1	LS	$6,500	$6,500	
Fence	400	LF	$17.16	$6,864	
Construction Equipment & Labor	1	JOB	$98,847	$98,847	
			TOTAL CONSTRUCTION COST:		**$122,581**
CONSTRUCTION MATERIALS					
Geotextiles	4400	SY	$0.50	$2,200	
Pipe - Solid, Perf, Fittings, Etc.				$20,506	
Stone - AASHTO #1	2200	T	$12.50	$27,500	
Stone - AASTHO #57	200	T	$11.50	$2,300	
Stone - Rip Rap	300	T	$12.50	$3,750	
			TOTAL CONSTRUCTION MATERIALS COST:		**$56,256**
CONTRACTUAL					
Permitting				$20,300	
Design				$24,400	
Survey				$4,500	
Analysis				$3,500	
			TOTAL CONTRACTUAL COST:		**$52,700**
LAND ACQUISITION COSTS					
Estimated Cost	3	ac	$2,500	$7,500	
			TOTAL LAND AQUISITION COST:		**$7,500**
			TOTAL INSTALLATION COSTS:		***$239,037***

Estimated Annual Operation and Maintenance Costs: **$240 - $2,480**

Permits & Approvals Anticipated to be Required for System Construction

HOP	Road Bonds (state)	PA One Call	PNDI
GIF	PHMC	NPDES	E&S
PPC	Joint Permit	EA	GP-4

Estimated total time to obtain all necessary permits and approvals: **6-12 months**

Permits & Approvals: The list of anticipated Permits & Approvals and estimated timeframe is based on current regulations and experience with similar projects. This list and estimated time frame is subject to change based on revised regulations and other factors. Please see the Permit and Approval Section of this report for a more detailed description of the permits listed.

Cost estimate basis: Average BAMR Cost (Daniel Sammarco, PE, PA DEP, 2nd Annual Southwest Watershed Workshop, Greensburg, PA 10/21/00) adjusted for inflation (5 years) at 3.1% per year; AMD Treat 3.1, 2002, (US Dept. of Interior, Office of Surface Mining); representative contractual and construction costs from recent grants awarded through the PA DEP Growing Greener Program; other available information including vendor quotes/invoices and internet sites. All costs are estimates and are subject to change based on further project development, inflation, and other factors.

MP6

Construction Cost Estimate

	QTY	UNIT	COST	TOTAL	CATEGORY TOTAL
CONSTRUCTION					
E&S Controls	1.5	AC	$1,312	$1,968	
Clear and Grubb	1.5	AC	$1,463	$2,195	
Access Road	50	LF	$8.27	$414	
Revegetation	1	AC	$609	$609	
Mobilization/Demob	1	LS	$3,000	$3,000	
Construction Equipment & Labor	1	JOB	$33,079	$33,079	
			TOTAL CONSTRUCTION COST:		**$41,264**
CONSTRUCTION MATERIALS					
Compost	215	CY	$10.00	$2,150	
Stone - AASTHO #57	50	T	$11.50	$575	
Stone - Rip Rap	80	T	$12.50	$1,000	
			TOTAL CONSTRUCTION MATERIALS COST:		**$3,725**
CONTRACTUAL					
Permitting				$15,500	
Design				$10,500	
Survey				$2,700	
Analysis				$1,250	
			TOTAL CONTRACTUAL COST:		**$29,950**
LAND ACQUISITION COSTS					
Estimated Cost	1.5	ac	$2,500	$3,750	
			TOTAL LAND AQUISITION COST:		**$3,750**
			TOTAL INSTALLATION COSTS:		***$78,689***

Estimated Annual Operation and Maintenance Costs: **$120 - $1,200**

Permits & Approvals Anticipated to be Required for System Construction

HOP	Road Bond (state)	PA One Call	PNDI
GIF	PHMC	PPC	GP-4
E&S	Restoration Waiver	EA	

Estimated total time to obtain all necessary permits and approvals: **4-8 months**

Permits & Approvals: The list of anticipated Permits & Approvals and estimated timeframe is based on current regulations and experience with similar projects. This list and estimated time frame is subject to change based on revised regulations and other factors. Please see the Permit and Approval Section of this report for a more detailed description of the permits listed.

Cost estimate basis: Average BAMR Cost (Daniel Sammarco, PE, PA DEP, 2nd Annual Southwest Watershed Workshop, Greensburg, PA 10/21/00) adjusted for inflation (5 years) at 3.1% per year; AMD Treat 3.1, 2002, (US Dept. of Interior, Office of Surface Mining); representative contractual and construction costs from recent grants awarded through the PA DEP Growing Greener Program; other available information including vendor quotes/invoices and internet sites. All costs are estimates and are subject to change based on further project development, inflation, and other factors.

Operation & Maintenance

Routine System Operation

When conducting routine inspections, note condition and stability of berms and overall site vegetation. Check for vandalism and illegal dumping.

Vertical Flow and Hybrid Flow Ponds
Passive treatment system components of this type should be inspected on a monthly to quarterly basis. Occasionally, the water levels in the vertical/hybrid flow ponds may need to be adjusted and accumulated material removed from the spillways. Periodically, the vertical/hybrid flow ponds will need to be flushed (15 minutes/flush pipe) to remove accumulated precipitates from within the pipes/treatment media. This will most likely occur during every other inspection event. Annually, a more thorough flushing, is recommended.

Settling Ponds/Wetlands and Forebays
Inspections of these passive treatment system components should be conducted on a quarterly basis, or more frequently if completed in conjunction with other types of system components. These components will typically have a rock-lined spillway or pipe-type outlet structure. In either case, accumulated debris should be periodically removed to maintain the design water level. The overall health of the wetland portion of these components should also be monitored to ensure sustainable vegetative growth. This may require occasional re-plantings to maintain species diversity and, if desired, removal of dominant or invasive plants.

For all types of passive treatment components, the inspections will include observing the system to ensure proper water flow through each component and should also include field-testing for pH using a test kit or meter. The pH measurements will give an overall indication of system performance. These inspections should take about 1-3 hours per event and may require small hand tools and some light labor. If completed by volunteers, this would cost only the time/travel associated with this activity; however, a "high-end" estimate is provided based on PADEP OM&R labor cost for paid personnel.

Estimated annual operation and maintenance time: 12 – 36 hours

Estimated annual operation and maintenance cost: $0 - $1440

General System Maintenance

Every few years, debris removal and minor reparations using small equipment (i.e., backhoe, skid-steer loader, etc.) may be necessary. These repairs will vary depending on weather, site conditions, and other factors. Based on similar projects, the project partners may be willing to donate these services for the first five years of operation and reduce overall costs to the MRWA.

Estimated operation and maintenance time (every three years): 8 – 16 hours

Estimated annual average operation and maintenance cost: $240 - $1,040

Replacement/Reconstruction

The conceptual design life for the passive systems included in this report is 25 years. Based on the discharge characteristics over time, weather, and other factors, the system may need to be recharged with fresh treatment media and/or otherwise updated based on the current state of treatment technology at that time. The above noted costs do not take this into consideration.

Permits & Approvals

General

PA DOT Highway Occupancy Permit (HOP)
Required for construction or alteration of an existing access road from a state road.

Road Bonds
If a state road has a posted weight restriction (i.e. 10 tons) a road bond will be required for delivery of materials (such as limestone). An inspection before and after hauling is required. If any damage occurs due to the deliveries, the permit holder is required to repair, or pay for repairs, prior to bond release. Township roads also usually require bonding and the process is similar to bonding state roads. This requirement can be passed onto the construction contractor.

PA One-Call
All activities that involve excavation must notify the PA One Call System at 1-800-242-1776. This must be completed during the design process 10-90 days prior to final design to determine the locations of any underground utilities to be avoided. A second PA One-Call notification must be made 3-10 days prior to the start of any excavation.

Pennsylvania Natural Diversity Inventory (PNDI)
One-page project screening, typically submitted to the County Conservation District, to determine the presence of species of special concern. Required for all DEP permits.

If no species are indicated to be potentially within the project area, the PNDI screening will result in a "No Potential Conflict" and no further action is required. If the screening results in a potential conflict, the appropriate agency must be contacted for consultation and recommendations.

General Information Form (GIF)
To be submitted to the DEP in order to determine which environmental permits and approvals are required for a specific project. Does not result in any permits or approvals. There are no review fees for this submission.

Cultural Resource Notice (PHMC)
Required for a Joint Permit to document any archeological sites and historic structures that may be encountered during the project. Only required for an NPDES (National Pollutant Discharge Elimination System) Individual permit that affects more than 10 acres or if an Environmental Assessment is being prepared. An Individual NPDES permit is not required within the Montour Run Watershed for Earth Disturbance activities. (See below.)

Preparedness, Prevention, and Contingency Plan (PPC)
Required to be developed and must be available on site if fuel, oil, chemicals, etc. are to be kept/handled on site. The Plan is not required to be submitted for review and approval; however, the County Conservation District may request to review the Plan.

Earth Disturbance (PA Code Title 25 Chapter 102)

Note: If the proposed earth disturbance activity is located in a watershed listed as Special Protection Waters, which are either Exceptional Value or High Quality, an Individual NPDES permit is required; however, Montour Run is listed as a Trout Stocked Fishery (TSF). Therefore, a *General* NPDES Permit is required. More stringent Best Management Practices and higher permit fees are required when an Individual NPDES is necessary.

There are different requirements for NPDES permits associated with earth disturbance activities based on the total amount of area that will be affected. These permits are intended to include all areas that will be disturbed during a single project, which may include several phases. These are typically more applicable to land development projects such as multi-phase residential developments. Generally speaking, each of the high priority areas will be approached as individual projects.

Erosion and Sedimentation Control Plan (E&S)

5000 SF to 1 acre: A written E&S Plan must be prepared. This plan does not need to be submitted to Conservation District for review or approval.

1 acre to <5 acres *without* a point source discharge: A written E&S Plan must be prepared. An NPDES permit for stormwater discharges associated with construction activities is not required. This plan does not need to be submitted to Conservation District for review or approval.

1 acre to <5 acres *with* a point source discharge: An NPDES permit will need to be obtained through the County Conservation District, which will require a reviewed and approved E&S Plan plus General Permit Registration. Permit and Review Fees apply.

>5 acres: Same requirements as 1 acre to <5 acres with point source discharge.

Water Obstruction and Encroachment (PA Code Title 25 Chapter 105)

Intake and Outfall Structures (GP-4)
GP-4 registration is required for all stream intake and outfall structures. These typically include pipe inlets from streams into a passive treatment system and pipe or spillway outlets from a passive treatment system to a stream. An Erosion and Sedimentation Control Plan for the Intake/Outfall structure must be submitted for review with the GP registration form. Review fees will apply.

Joint Permit
Required for any structure or activity that changes, expands or diminishes the course, current, or cross-section of a watercourse, floodway or body of water. Bodies of water include both natural and artificial lakes, ponds, reservoirs, swamps, marshes, and wetlands. Application fees will apply. A Joint Permit Application requires the following submission: GIF, Fee, Notifications, PHMC, PNDI, Site Plans, Location Map, Narrative,

Photographs, Environmental Assessment, approved E&S Plan, Hydrologic and Hydraulic Analysis, Stormwater Management Analysis (if applicable), Floodplain Management Analysis (if applicable), Risk Assessment (if applicable), Professional Engineer's Seal and Certification (if applicable), Alternative Analysis and Mitigation Plan (if applicable). Depending on the nature of the activity and existing conditions, the permit requirements may be waived. (See Restoration Waiver below.) Please note that if a Joint Permit is required, an E&S Plan must be submitted, reviewed, and approved by the County Conservation District. Review fees will apply but permit fees will not be required.

Environmental Assessment (EA)

An Environmental Assessment involves a Resource Identification and a Project Description. All water resources need to be identified on a site including the identification and delineation of wetlands according the 1987 ACOE Wetland Delineation Manual along with a description of the aquatic habitats. Under the Project Description, impacts to resources are identified and assessed. Restoration Waiver: If the project is being conducted under a restoration plan, approved in writing by the Department of Environmental Protection, water obstruction and encroachment permit requirements may be waived with a Restoration Waiver. Documentation similar to that required for the Joint Permit is to be submitted to the PA DEP for review including the Environmental Assessment. If the project includes wetland impacts, the mitigation requirements are waived for any wetlands documented as meeting the following environmental parameters: a site containing less than 0.05 acre of vegetated wetlands; pH<5, Aluminum>0.6 mg/l, Iron> 7.0 mg/l, or Manganese> 4.0 mg/l. If the project is to affect <1 acre of existing wetlands and/or <250 linear feet of stream channel, the project is eligible for authorization under the Pennsylvania State Programmatic General Permit 2 (PASPGP2). If the project affects ≥1 acre of existing wetlands or >250 linear feet of stream, the submitted information will be forwarded to the US Army Corps of Engineers for review. Subsequently, additional information may be requested by the Corps. If the project is to impact non-degraded wetlands, additional mitigation wetlands may be required, depending on the nature of the passive system.

General Estimated Timeframes

Permit/Approval	Preparation	Review/Comment	Finalization
HOP	1 – 5 days	1 – 4+ weeks	1 – 2 months
Road Bonds	1 – 5 days	1 – 4 weeks	1 month
PA One Call	<1 day	3 days	3 days
PNDI (w/o conflict)	<1 day	1 day	1 week
PNDI (w/conflict)	<1 day	1 – 4+ weeks	1 – 4+ weeks
GIF	1-5 days	1 week	1 – 2 weeks
PHMC (non significant)	1-5 days	15 days	1 month
PHMC (significant)	1-5 days	2 – 8 months	1 – 9+ months
E & S Plan (written only)	1-2 weeks	NA	1-2 weeks
E & S Plan (approved)	1-3 weeks	1 – 2 months	1 – 3 months
General NPDES Permit w/Approved E&S Plan	1-6 weeks	1 – 2 months	1 – 4 months
GP-4	1 – 5 days	1 – 2 months	1 – 2 months
Joint Permit	1 – 3 months	2 – 4 months	3 – 7+ months
Restoration Waiver	1 – 3 months	2 – 4 months	3 – 7+ months
PPC	1 day	NA	NA

Estimated Environmental Benefits

Based upon the water quality data provided by the Pennsylvania Department of Environmental Protection, the table below provides the estimated amount of pollutants (pollutant loading) expected to be removed upon successful installation of the passive treatment systems for each of the five defined priority discharges. If all five discharges are effectively treated, the combined impact will be the neutralization of 116,000 lbs/yr or 58 tons per year of acidity and the removal of nearly 24,000 lbs/year (12 tons/year) of metals that will no longer enter Montour Run and the associated tributaries namely the North Fork, South Fork, and Milk Run. The substantial improvement in water quality should result in an improvement to the ecological health and biodiversity of the watershed.

In addition, with alkalinity-generating components proposed for MKR3, NFMU9, and NFMU5, the final effluent is expected to contain about 70 mg/l of excess alkalinity (estimate: >150 lbs/day; >50,000 lbs/yr) which will provide buffering capacity to the receiving stream, limiting the impact of, or treating, any other degraded downstream mine discharges. (For MP2 and MP6, passive components that generate alkalinity are not proposed, as the discharges appear to have sufficient alkalinity for metal precipitation.)

Discharge	Pollutant Loading Projected to be Removed by Passive Systems							
	Acidity		Iron		Manganese		Aluminum	
	(lbs/yr)	(T/yr)	(lbs/yr)	(T/yr)	(lbs/yr)	(T/yr)	(lbs/yr)	(T/yr)
MKR3	72,200	36	500	<1	500	<1	6,900	4
NFMU9	18,900	10	2,700	1	1,500	1	1,400	1
MP2	NA	NA	2,200	1	500	<1	NA	NA
NFMU5	24,300	11	700	<1	600	<1	2,500	1
MP6	3,900	2	2,000	1	1,000	1	200	<1
Total	119,300	59	8,100	4	4,100	2	11,000	6

Loadings rounded; total metals and acidity loadings from measured laboratory concentrations; (See Water Monitoring Summary Table.)

Based on the Conceptual Site Plans, an estimated total of 114,000 SF (2 ½ acres) of naturally-functioning wetlands with high plant species diversity are also proposed for treatment and to create wildlife habitat.

- MKR3: 10,000 SF
- NFMU9: 15,000 SF
- MP2: 55,000 SF
- NFMU5: 12,000 SF
- MP6: 22,000 SF

Potential Funding Sources

Funding Source	Contact Information	Eligible Uses	Amount	Terms and Conditions	Proposal Submission Time Frame	Grant Period Length
PA DEP Growing Greener Program	DEP Grants Center RCSOB, 15th Floor 400 Market Street, P.O. Box 8776 Harrisburg, PA 17105 717-705-5400 817-PAGREEN www.dep.state.pa.us	Watershed restoration implementation (construction) projects, O&M, education/outreach projects, watershed organization, and watershed assessment.	No known maximum or minimum	2% maximum Administration costs; No required match; Reimbursement grant.	Once a year, generally in February or March.	2-3 years
US EPA Section 319 Nonpoint Source Program	Jane Earle, PA DEP 717-772-5173 Russ Wagner, PA DEP 717-772-5642 or PA DEP Grants Center or Robert Wayland, Director, Office of Wetlands, Oceans, and Watersheds Mail Code 4501T USEPA 1200 Pennsylvania Avenue NW Washington, DC 20460	Projects that address nonpoint sources including AMD restoration (construction projects). Watersheds with approved TMDLs are considered a priority.	No known maximum or minimum	Reimbursement grant; EPA approved QA/QC plan required.	Currently able to apply at the same time and with the same application as PA Growing Greener.	33 months
US OSM Appalachian Clean Streams Initiative	David Hamilton Harrisburg Field Office 415 Market Street, Suite 3 Harrisburg, PA 17101 717-782-2285 dhamil@osmre.gov	AMD restoration (construction projects) in the Appalachian Region.	Up to around $100,000 but there is no defined maximum.	No administrative expenses allowed.	Rolling application until all available funds have been awarded.	2 years maximum
PA DCNR River Conservation Grants	Kathy Frankel Tracy Robinson 1405 State Office Building 300 Liberty Avenue Pittsburgh, PA 15222 412-880-0486	Implementation grants are available to carry out projects or activities defined in an approved river conservation plan.	$2,500 minimum request.	Must have an approved river conservation plan; Grants require a 50% match.	Once a year typically due in October, but can vary.	NA

Potential Funding Sources

Funding Source	Contact Information	Eligible Uses	Amount	Terms and Conditions	Proposal Submission Time Frame	Grant Period Length
EPA Watershed Initiative	Robert Wayland, Director, Office of Wetlands, Oceans, and Watersheds Mail Code 4501T USEPA 1200 Pennsylvania Avenue NW Washington, DC 20460.	Provides assistance to state and local communities to protect and restore inland and coastal watersheds.	About $300,000 to $1,300,000	One time award; Requires Governor support; 25% Non-federal Match is required; Requires an EPA approved QA/QC plan if funded.	RFP expected to be announced in Summer 2003.	2-3 years
Western Pennsylvania Watershed Program	John Dawes RR#1, Box 152 Alexandria, PA 16611 814-669-4847 www.wpawp.org	Watershed restoration and preservation projects including AMD.	No known minimum or maximum, but funding is typically not more than $20,000 per project.	Process begins with a 2-page letter of inquiry & proof of 501-c3 status including brief description of project, goals, funding amount & brief budget description along with 1 page grant application available on web.	Typically in spring and fall.	NA
Dominion Foundation	Pennsylvania Community Investment Board Attn: Ms. Anita M. Wilson Dominion Peoples 625 Liberty Avenue Pittsburgh, PA 15222 http://www.dom.com/about/community/foundation	Projects that preserve, protect and improve the quality of the environment in the communities Dominion companies operate.	$1,000 to $15,000	Written application; Refer to website: www.dom.com/about/community/ foundation/applications.jsp	Applications excepted year round, but renewals must be received by Sept. 1st	NA
Common Grant Application	Grant Makers of Western Pennsylvania 650 Smithfield St., Suite 210 Pgh, PA 15222 412-471-6488	Variety of uses; The application can be used for many different foundations, although each foundation should be contacted individually.	Varies	Common Grant Cover sheet required for all foundations.	Varies	Varies

Potential Funding Sources

Funding Source	Contact Information	Eligible Uses	Amount	Terms and Conditions	Proposal Submission Time Frame	Grant Period Length
The Heinz Endowment	Caren E. Glotfelty, Environment Program Director The Heinz Endowments 30 Dominion Tower 625 Liberty Avenue Pittsburgh PA 15222-3115 http://www.heinz.org	Restore and protect watersheds, ecosystems and landscapes; Decrease human impact (point and non-point) sources; Encourage public awareness, empower grassroots organizations, and build partnerships to address environmental preservation and remediation.	No known minimum or maximum	Two-step process; Requires a Letter of Inquiry; Then only if asked could a grant be submitted.	Letter of Inquiry can be submitted at any time.	NA
Richard King Mellon Foundation	Mr. Michael Watson Vice President Richard King Mellon Foundation One Mellon Bank Center 500 Grant Street, Suite 4106 Pittsburgh, PA 15219-2502 http://fdncenter.org/grantmaker/rkmellon/index.html	Protection and preservation of natural resources.	No known minimum or maximum	Generally prefers projects in southwestern PA. Can use the Common Grant Application, but must still submit required attachments listed on their application.	Can be submitted any time.	Can vary
River Network Watershed Assistance Grants	WAG Program River Network 520 SW 6th Avenue #1130 Portland, OR 97204 http://www.rivernetwork.org	Development of plans of and support to organizations involved in watershed restoration and protection through partnership efforts.	$1,000 to $30,000	Preference given to organizations with operating budgets <$200,000 who are involved in local watershed partnerships. Cannot be used for the direct purpose of on-the-ground restoration projects.	Typically due in July. No Solicitation Announced for 2003 as of yet.	18 months

Potential Funding Sources

Funding Source	Contact Information	Eligible Uses	Amount	Terms and Conditions	Proposal Submission Time Frame	Grant Period Length
Roy A. Hunt Foundation	One Bigelow Square Suite 630 Pittsburgh, PA 15219-3030 412-281-8734 http://www.rahuntfdn.org	Eligible projects include a broad range of programs designed to benefit, conserve, and/or restore natural resources and ecosystems.	$25,000 to $50,000	Letter of inquiry required.	General Grants due on April 15th and September 15th; Special Initiative Grants are due on February 15th and July 15th.	NA
The Pittsburgh Foundation	The Pittsburgh Foundation One PPG Place, 30th Floor Pittsburgh, PA 15222-5401 412-391-5122 www.pittsburghfoundation.org	Although the environment is not in their top 5 priority list, these grants can be submitted through their Responsiveness Fund	No known minimum or maximum	Letter of inquiry required; Funding focus is on organizations located in Allegheny County.	Can be submitted at any time.	NA
WPCAMR Regional Watershed Support Initiative Grant	WPCAMR Donohoe Center RD #12 – Box 202-B Greensburg, PA 15601 724-837-527 http://amrclearinghouse.org	Activities related to abandoned mine reclamation.	Up to $5,000	20% Match required; Preference goes to organizations that have been in existence for less than one year, but others are eligible.	December 31st	About 6 months
North American Wetlands Conservation Council	Attn: Small Grants Coordinator Division of Bird Habitat Conservation U.S. Fish and Wildlife Service 4401 North Fairfax Drive Mailstop MBSP 4075 Arlington, Virginia 22203 http://birdhabitat.fws.gov	Program promotes principal conservation actions supported by NAWCA; They are acquisition, creation, enhancement and restoration of wetlands and wetland-associated uplands.	Up t0 $50,000	Implementation only; Overhead (Admin) must not be > 10%; Must also submit Standard Form 424.	May be submitted at any time, but must be dated no later than Friday, November 28, 2003	NA
The Home Depot, Inc	www.homedepotfoundation.org	Environmental grants focus on forestry, sustainability and green design, cleanup and recycling, and lead poisoning prevention.	$5,000 to $25,000	Must take on-line eligibility test to obtain application	Apply at any time	NA

Potential Funding Sources

Additional Resources:

The Foundation Center's *The Philanthropy News Digest*
http://fdncenter.org/pnd

Foundation Center at Carnegie Library of Pittsburgh
http://www.clpgh.org/locations/foundationcenter/

Michigan State University Library Website
http://www.lib.msu.edu/harris23/grants/grants.htm

Custom Development Solutions
http://www.cdsfunds.com/

Foundations
http://www.foundations.org

APPENDIX

MONTOUR RUN WATER MONITORING DATABASE

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP5	5/30/96	Measured	38		3.3				0	304	3.8	8.6	38.1	885	6
MP5	6/24/96	Measured	30		3.3				0	254	3.0	6.7	29.6	773	
MP5	7/23/96	Measured	25		3.3				0	264	3.9	7.4	30.5	738	
MP5	8/20/96	Measured	13		3.3				0	256	5.9	7.3	28.9	660	
MP5	9/16/96	Measured	8		3.3				0	260	6.3	6.6	27.6	818	
MP5	11/20/96	Measured	20		3.3				0	198	2.7	5.9	22.0	854	
MP5	12/11/96	Measured	25		3.5				0	214	2.7	6.1	22.4	822	
MP5	1/22/97	Measured	20		3.4				0	226	3.6	7.6	27.6	792	4
MP5	2/26/97	Measured	20		3.4				0	246	3.1	6.3	23.3	685	
MP5	3/12/97	Measured	30		3.3				0	228	2.2	7.4	25.0	816	12
MP5	4/23/97	Measured	30		3.4				0	258	3.4	7.5	28.3	741	0
MP5	5/8/97	Measured	25		3.4				0	260	4.2	7.4	27.6	760	
MP5	6/5/97	Measured	30		3.3				0	236	2.0	8.2	27.5	800	
MP5	7/17/97	Measured	13		3.3				0	272	4.3	7.7	29.5	698	
MP5	8/18/97	Measured	7		3.4				0	260	6.2	7.6	30.5	834	
MP5	9/30/97	Measured	5		3.3				0	266	7.0	6.6	27.4	707	4
MP5	10/27/97	Measured	4		3.4				0	276	7.9	6.6	27.5	750	
MP5	11/18/97	Measured	20		3.3				0	234	3.7	6.2	24.6	643	
MP5	2/25/98	Measured	25		3.4				3	234	2.7	7.5	27.7	786	
MP5	3/26/98	Measured	30		3.2				0	222	2.6	7.4	27.0	819	8
MP5	4/23/98	Measured	30		3.3				0	214	3.0	7.5	29.3	845	
MP5	5/20/98	Measured	30		3.3				0	280	2.3	11.4	33.4	893	16
MP5	6/29/98	Measured	20		3.3				0	232	3.8	8.1	30.0	842	
MP5	7/22/98	Measured	20		3.4				0	226	3.8	8.0	28.2	743	
MP5	8/20/98	Measured	7		3.4				0	218	6.8	7.6	27.5	726	
MP5	9/29/98	Measured	5		3.4				0	210	8.6	7.7	29.3	745	
MP5	10/28/98	Measured	3		3.4				0	214	8.2	6.8	26.4	758	
MP5	12/14/98	Measured	3		3.4				0	224	9.0	6.5	25.5	755	
MP5	1/20/99	Measured	15		3.4				0	202	3.3	8.7	29.3	739	

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP5	2/22/99	Measured	25		3.4				0	326	2.8	16.2	47.1	961	4
MP5	3/17/99	Measured	20		3.4				0	294	2.9	10.3	38.3	752	
MP5	4/19/99	Measured	25		3.4				0	224	3.2	8.0	32.1	616	4
MP5	5/24/99	Measured	20		3.5				0	238	4.6	8.5	35.0	939	
MP5	6/23/99	Measured	8		3.4				0	236	5.5	7.5	28.7	763	
MP5	7/22/99	Measured	5		3.4				0	230	6.6	7.0	29.9	671	4
MP5	8/11/99	Measured	12		3.5				0	202	4.0	6.0	26.4	725	
MP5	9/13/99	Measured	5		3.4				0	218	5.7	6.1	22.9	778	
MP5	10/25/99	Measured	4		3.4				0	212	8.3	7.0	27.7	874	
MP5	11/15/99	Measured	5		3.4				0	276	7.3	6.6	27.2	763	
MP5	12/2/99	Measured	5		3.4				0	230	6.8	6.4	26.3	767	
MP5	1/10/00	Measured	5		3.4				0	180	3.4	6.3	22.9	783	
MP5	2/7/00	Measured	5		3.4				0	226	5.1	7.5	26.8	951	4
MP5	3/7/00	Measured	10		3.4				0	212	2.6	9.3	29.9	792	
MP5	4/25/00	Measured	15		3.4				0	268	2.3	10.6	34.9	778	
MP5	5/23/00	Measured	9		3.3				0	260	3.7	8.1	35.2	1227	
MP5	6/28/00	Measured	10		3.4				0	212	2.5	7.6	25.1	741	
MP5	7/20/00	Measured	9		3.4				0	212	3.9	7.8	31.1	741	
MP5	8/28/00	Measured	12		3.3				0	226	2.8	7.7	27.0	790	
MP5	9/26/00	Measured	10		3.4				0	216	6.0	8.1	30.1	751	6
MP5	10/31/00	Measured	7		3.5				0	200	7.6	6.9	25.9	775	
MP5	11/29/00	Measured	7		3.5				0	190	8.0	6.2	24.0	675	6
MP5	1/30/01	Measured	4		3.4				0	188	4.6	6.7	22.9	594	
MP5	2/26/01	Measured	9		3.5				0	176	1.7	6.0	21.3	668	
MP5	5/21/01	Measured	12		3.4				0	274	3.0	9.8	37.0	809	8
MP5	6/14/01	Measured	9		3.3				0	256	5.1	9.2	32.9	603	6
MP5	11/8/01	Measured	5		3.5				0	219	7.7	7.0	28.7	544	
MP5	1/22/02	Flow	7		3.3				0	234	4.4	7.8	26.0	699	
MP5	2/19/02	Measured	7		3.4				0	215	3.9	7.0	24.2	570	

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP5	3/19/02	Measured	7		3.5				0	253	4.9	7.2	27.3	415	
MP5	4/16/02	Flow	8		3.3				0	285	2.2	12.0	37.7	614	
MP5	5/28/02	Measured	10		3.3				0	279	2.4	10.3	35.8	575	
MP5	6/25/02	Measured	9		3.2				0	308	4.2	9.9	42.2	713	12
MP5	7/29/02	Flow	4		3.0				0	262	7.9	9.4	39.8	1674	
MP5	8/26/02	Measured	2		3.4				0	285	8.6	8.3	36.6	788	
MP5	9/18/02	Measured	2		3.4				0	285	8.7	8.3	31.7	646	
MP5	10/30/02	Measured	3		3.3				0	255	7.3	7.2	30.9	349	
MP5	11/21/02	Dry	9		3.3				0	273	5.7	7.4	30.4	729	
MP5	12/16/02	Measured	9		3.3				0	221	5.1	7.1	28.0	608	
MP5	1/27/03	Measured	10	3.3	3.3				0	263	2.3	10.0	32.3	894	0
MP5	2/24/03	Measured	15	3.3	3.3				0	249	3.1	8.3	33.3	873	8
Min			2	3.3	3.0				0	176	1.7	5.9	21.3	349	0
Max			38	3.3	3.5				3	326	9.0	16.2	47.1	1674	16
Avg			13	3.3	3.4				0	241	4.7	7.8	29.5	763	6
Range			36	0.0	0.5				3	150	7.3	10.3	25.8	1325	16

Description: Monitoring Point 5; 6" white plastic pipe; Deep Mine Drain;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
NFMU9	5/30/96	Measured	78		3.2				0	184	13.1	10.0	14.4	840	
NFMU9	6/24/96	Measured	98		3.3				0	152	13.6	9.5	10.9	555	
NFMU9	7/23/96	Measured	80		3.3				0	152	15.5	8.9	10.1	728	8
NFMU9	8/20/96	Measured	45		3.3				0	172	18.2	10.0	10.4	607	
NFMU9	9/16/96	Measured	38		3.3				0	152	17.2	9.2	8.8	724	
NFMU9	11/20/96	Measured	32		3.4				0	138	20.4	8.2	8.3	672	3
NFMU9	12/11/96	Measured	53		3.6				0	132	17.0	8.0	8.8	776	24
NFMU9	1/22/97	Measured	61		3.6				0	132	16.5	7.7	9.7	682	28
NFMU9	2/26/97	Measured	49		3.5				0	138	17.1	8.0	8.9	667	
NFMU9	3/12/97	Measured	61		3.4				0	126	17.2	7.7	8.6	648	
NFMU9	4/23/97	Measured	70		3.6				0	132	14.4	7.6	8.3	567	0
NFMU9	5/8/97	Measured	55		3.5				0	132	16.2	7.8	8.0	677	
NFMU9	6/5/97	Measured	72		3.4				0	136	14.6	7.4	8.1	624	
NFMU9	7/17/97	Measured	55		3.3				0	142	14.2	7.5	6.9	525	
NFMU9	8/18/97	Measured	38		3.7				0	124	19.0	8.8	7.3	639	20
NFMU9	9/30/97				4.8				11	94	22.6	9.3	4.8	615	
NFMU9	10/27/97				4.7				11	108	20.8	9.0	5.6	702	8
NFMU9	11/18/97				4.8				12	96	26.1	9.2	6.2	599	20
NFMU9	2/25/98				3.7				0	116	18.4	8.3	8.5	599	6
NFMU9	3/26/98				3.5				0	112	17.1	8.4	8.7	631	12
NFMU9	4/23/98				3.6				0	100	14.0	8.1	7.5	638	
NFMU9	5/20/98				3.5				0	110	14.5	7.6	7.6	620	8
NFMU9	6/29/98	Measured	66		3.7				0	92	16.5	8.2	6.3	567	
NFMU9	7/22/98	Measured	55		3.8				0	102	19.2	8.9	7.1	581	4
NFMU9	8/20/98	Measured	45		4.6				10	86	18.8	7.3	5.0	681	10
NFMU9	9/29/98	Measured	32		4.6				10	72	24.8	9.9	6.2	709	4
NFMU9	10/28/98	Measured	22		4.4				9	76	20.8	9.2	6.1	641	4
NFMU9	12/14/98	Measured	19		4.6				9	88	23.8	9.5	6.4	687	6
NFMU9	1/20/99	Measured	32		4.8				11	54	18.5	8.1	5.5	593	

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
NFMU9	2/22/99	Measured	45		4.1				5	92	17.5	9.3	9.2	495	12
NFMU9	3/17/99	Measured	55		3.8				0	98	13.2	8.0	8.7	544	
NFMU9	4/19/99	Measured	55		3.8				0	86	12.1	7.7	7.6	539	
NFMU9	5/24/99	Measured	50		3.9				0	80	10.3	8.2	7.8	376	10
NFMU9	6/23/99	Measured	36		3.8				0	72	13.4	8.8	6.4	570	6
NFMU9	7/22/99	Measured	22		4.0				3	68	14.0	8.4	6.2	382	6
NFMU9	8/11/99	Measured	32		3.7				0	72	12.5	7.9	6.3	628	20
NFMU9	9/13/99	Measured	22		4.2				7	88	16.8	8.2	5.9	716	4
NFMU9	10/25/99	Measured	22		4.6				10	68	19.8	9.4	6.1	668	
NFMU9	11/15/99	Measured	17		4.5				10	128	20.0	9.6	6.0	665	
NFMU9	12/2/99	Measured	19		4.7				12	88	21.6	8.8	6.0	620	12
NFMU9	1/10/00	Measured	22		4.8				13	60	19.0	8.9	5.8	958	8
NFMU9	2/7/00	Measured	19		4.6				10	86	20.2	8.8	6.2	662	14
NFMU9	3/7/00	Measured	29		4.7				12	66	17.3	9.0	6.7	648	4
NFMU9	4/25/00	Measured	45		3.9				0	98	11.9	8.2	8.4	654	
NFMU9	5/23/00	Measured	45		3.9				0	74	10.9	7.0	6.8	687	4
NFMU9	6/28/00	Measured	66		3.7				0	88	11.5	8.2	7.4	784	
NFMU9	7/20/00	Measured	45		4.1				5	72	12.9	8.4	6.9	596	
NFMU9	8/28/00	Measured	45		3.7				0	84	10.0	7.0	6.8	736	8
NFMU9	9/26/00		55		4.7				11	66	15.8	8.2	6.8	603	18
NFMU9	10/31/00	Measured	29		4.9				13	70	19.3	8.4	6.3	696	16
NFMU9	11/29/00	Measured	40		4.3				9	74	14.2	7.5	7.5	591	14
NFMU9	1/30/01	Measured	50		4.6				10	58	10.8	6.3	5.3	460	14
NFMU9	2/26/01	Measured	40		4.6				10	68	11.9	6.9	5.9	528	24
NFMU9	5/21/01	Measured	50		3.9				0	80	9.9	7.2	6.7	518	6
NFMU9	6/14/01	Measured	45		3.8				0	64	11.6	8.5	5.9	581	
NFMU9	11/8/01	Measured	17		4.0				4	100	17.5	10.2	6.8	582	
NFMU9	1/22/02	Measured	17		4.6				9	106	4.9	4.8	5.0	511	16
NFMU9	2/19/02	Measured	17		4.8				11	108	21.0	9.2	6.2	582	18

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
NFMU9	3/19/02	Measured	29		4.9				14	109	17.6	8.7	6.3	554	16
NFMU9	4/16/02	Measured	40		4.0				3	104	13.5	8.4	7.5	477	16
NFMU9	5/28/02	Measured	66		3.9				0	84	10.3	7.2	6.5	537	18
NFMU9	6/25/02	Measured	45		3.7				0	111	12.7	9.7	8.0	591	16
NFMU9	7/29/02	Measured	29		4.0				2	87	20.3	10.0	7.0	1641	
NFMU9	8/26/02	Measured	29		4.2				6	108	18.8	9.5	6.5	551	
NFMU9	9/18/02	Measured	22		3.8				0	116	17.3	9.5	5.9	644	
NFMU9	10/30/02	Measured	22		4.6				9	118	16.7	8.5	6.6	338	
NFMU9	11/21/02	Measured	17		4.4				7	128	17.2	9.4	6.3	735	
NFMU9	12/16/02	Measured	22		4.6				10	96	15.2	8.7	6.1	530	
NFMU9	1/27/03	Measured	19	4.7	4.8				10	105	20.9	9.1	6.2	683	24
NFMU9	2/24/03	Measured	36	4.8	4.8				11	87	12.8	7.0	5.5	658	18
Min			17	4.7	3.2				0	54	4.9	4.8	4.8	338	0
Max			98	4.8	4.9				14	184	26.1	10.2	14.4	1641	28
Avg			41	4.8	4.1				5	101	16.2	8.4	7.2	633	12
Range			82	0.1	1.7				14	130	21.2	5.4	9.6	1303	28

Description: North Fork Montour Run Upstream segment; Clinton Block Deep Mine Drain; Also known as MP1;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP2	5/30/96	Measured	91		6.6				138	0	20.0	5.1	0.7	601	80
MP2	6/24/96	Measured	78		6.7				146	0	18.7	4.9	0.0	559	17
MP2	7/23/96	Measured	50		6.6				168	0	17.1	4.7	0.0	500	16
MP2	9/16/96	Measured	17		6.6				146	0	87.2	5.5	0.9	473	196
MP2	11/20/96	Measured	19		6.9				132	0	2.1	3.9	0.0	633	
MP2	12/11/96	Measured	38		7.2				180	0	3.2	3.3	0.0	517	22
MP2	1/22/97	Measured	49		6.9				206	0	168.0	4.1	2.8	413	110
MP2	2/26/97	Measured	45		7.1				206	0	7.8	3.5	0.0	354	
MP2	3/12/97	Measured	66		7.2				204	0	7.9	3.5	0.0	386	
MP2	4/23/97	Measured	49		7.2				220	0	11.5	3.7	0.0	394	0
MP2	5/8/97	Measured	45		7.4				220	0	9.4	3.8	0.0	403	
MP2	6/5/97	Measured	84		7.1				216	0	9.0	3.6	0.0	344	12
MP2	7/17/97	Measured	45		7.2				230	0	10.9	4.0	0.0	402	4
MP2	8/18/97	Measured	25		6.8				170	0	4.4	4.7	0.0	442	4
MP2	9/30/97	Measured	8		6.8				148	0	3.3	4.9	0.0	463	
MP2	10/27/97	Measured	8		7.1				138	0	1.8	5.2	0.0	508	8
MP2	11/18/97	Measured	8		6.9				134	0	3.8	5.7	0.0	487	
MP2	2/25/98	Measured	55		7.2				212	0	5.6	3.0	0.0	370	8
MP2	3/26/98	Measured	72		7.0				198	0	7.3	2.9	0.0	423	18
MP2	4/23/98	Measured	60		7.2				202	0	10.1	3.2	0.0	365	
MP2	5/20/98	Measured	78		7.1				206	0	14.9	3.4	0.0	414	16
MP2	6/29/98	Measured	72		7.1				184	0	8.4	3.7	0.0	423	6
MP2	7/22/98	Measured	50		7.2				216	0	12.2	3.9	0.0	418	
MP2	8/20/98	Measured	22		7.1				196	0	9.8	4.2	0.0	438	10
MP2	9/29/98	Measured	8		7.1				164	0	5.3	5.5	0.0	482	
MP2	10/28/98	Measured	5		6.8				152	0	1.7	4.8	0.0	486	
MP2	12/14/98	Measured	5		6.9				130	0	2.2	3.9	0.0	544	
MP2	1/20/99	Measured	12		6.8				112	0	2.0	2.8	0.0	466	
MP2	2/22/99	Measured	29		7.3				184	0	8.7	2.9	0.0	353	20

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP2	3/17/99	Measured	50		7.3				184	0	8.4	2.8	0.0	453	
MP2	4/19/99	Measured	66		7.4				176	0	6.3	2.9	0.0	436	12
MP2	5/24/99	Measured	50		7.0				182	0	8.8	3.4	0.0	445	20
MP2	6/23/99	Measured	29		7.2				186	0	14.0	3.5	0.0	461	16
MP2	7/22/99	Measured	17		7.2				166	0	9.5	3.7	0.0	469	10
MP2	8/11/99	Measured	12		7.2				158	0	18.8	3.4	0.0	436	48
MP2	9/13/99	Measured	8		7.0				158	0	5.0	3.7	0.0	489	8
MP2	10/25/99	Measured	8		7.1				138	0	1.3	4.3	0.0	577	
MP2	11/15/99	Measured	5		6.8				140	0	1.4	4.4	0.0	552	
MP2	12/2/99	Measured	5		6.9				134	0	1.8	4.3	0.0	515	4
MP2	1/10/00	Measured	5		7.1				122	0	1.3	3.1	0.0	453	
MP2	2/7/00	Measured	3		7.1				122	0	1.0	3.0	0.0	660	
MP2	3/7/00	Measured	12		6.8				124	0	1.8	2.9	0.0	376	
MP2	4/25/00	Measured	50		7.4				168	0	8.1	2.7	0.0	472	8
MP2	5/23/00	Measured	40		7.1				162	0	7.5	2.6	0.0	451	
MP2	6/28/00	Measured	60		6.8				162	0	12.8	3.3	0.0	511	18
MP2	7/20/00	Measured	50		6.7				160	0	11.7	3.6	0.0	404	10
MP2	8/28/00	Measured	66		6.9				148	0	47.5	3.3	1.5	594	32
MP2	9/26/00	Measured	50		7.0				140	0	12.3	3.6	0.0	524	36
MP2	10/31/00	Measured	22		6.9				134	0	15.8	4.3	0.0	590	26
MP2	11/29/00	Measured	17		6.9				118	0	65.3	3.6	0.0	496	154
MP2	1/30/01	Measured	45		6.8				106	0	8.3	3.1	0.0	472	10
MP2	2/26/01	Measured	22		7.2				142	0	5.9	2.5	0.0	444	20
MP2	3/19/01	Measured	40		7.1				154	0	7.0	2.8	0.0	490	20
MP2	6/14/01	Measured	45		6.7				126	0	21.5	4.0	0.0	533	44
MP2	11/8/01	Measured	5		6.7				118	0	3.3	5.2	0.0	549	
MP2	1/22/02	Measured	3		7.1				110	0	3.9	4.0	0.0	485	14
MP2	2/19/02	Measured	5		7.0				116	0	4.1	3.9	0.0	617	8
MP2	3/19/02	Measured	8		6.8				110	0	3.9	3.6	0.0	438	6

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP2	4/16/02	Measured	17		7.0				112	0	4.2	2.7	0.0	294	24
MP2	5/28/02	Measured	60		7.0				126	0	12.3	3.0	0.0	413	24
MP2	6/25/02	Measured	45		7.0				140	0	18.0	3.8	0.0	251	42
MP2	7/29/02	Measured	19		7.0				130	0	17.6	4.3	0.0	766	
MP2	8/26/02	Measured	8		7.1				116	0	9.4	4.6	0.0	503	
MP2	9/18/02	Measured	7		7.1				118	0	6.4	4.9	0.0	587	
MP2	10/30/02	Measured	8		6.9				100	0	2.7	4.1	0.0	332	
MP2	11/21/02	Measured	5		7.0				104	0	1.5	4.4	0.0	660	
MP2	12/16/02	Measured	5		6.7				98	0	2.0	3.4	0.0	554	
MP2	1/27/03	Measured	5	6.8	6.8				108	0	5.8	4.0	0.0	514	12
MP2	2/24/03	Measured	19	7.0	7.2				91	0	2.2	1.9	0.0	455	10
Min			3	6.8	6.6				91	0	1.0	1.9	0.0	251	0
Max			91	7.0	7.4				230	0	168.0	5.7	2.8	766	196
Avg			32	6.9	7.0				153	0	12.7	3.8	0.1	475	28
Range			88	0.2	0.8				139	0	167.0	3.8	2.8	515	196

Description: Monitoring Point 2; Surface Mine Discharge;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
NFMU5	11/8/01	Measured	40		3.6				0	129	8.2	3.1	15.3	483	
NFMU5	1/22/02	Measured	36		3.7				0	121	6.5	3.1	12.5	591	
NFMU5	2/19/02	Measured	36		3.8				0	127	6.4	2.7	13.3	617	
NFMU5	3/19/02	Measured	50		4.9				13	70	5.1	2.1	8.8	489	
NFMU5	4/16/02	Measured	66		4.7				9	62	1.9	2.4	8.9	385	
NFMU5	5/28/02	Measured	114		5.6				13	25	0.7	2.3	4.7	529	26
NFMU5	6/25/02	Measured	66		4.1				6	138	3.2	3.4	15.6	453	12
NFMU5	7/29/02	Measured	55		3.0				0	122	3.7	3.5	17.3	646	
NFMU5	8/26/02	Measured	55		4.3				6	124	2.7	3.7	12.5	898	
NFMU5	9/18/02	Measured	45		3.6				0	135	3.2	2.9	16.4	610	
NFMU5	10/30/02	Measured	55		4.6				10	94	4.0	2.4	8.9	334	
NFMU5	11/21/02	Measured	45		4.3				6	119	3.0	2.5	10.5	722	
NFMU5	12/16/02	Measured	40		4.6				10	60	2.6	2.3	7.2	525	
NFMU5	1/27/03	Measured	40	4.6	4.4				7	98	2.1	2.5	10.9	620	6
NFMU5	2/24/03	Measured	66	4.6	4.8				10	57	1.0	2.0	6.8	540	32
Min			36	4.6	3.0				0	25	0.7	2.0	4.7	334	6
Max			114	4.6	5.6				13	138	8.2	3.7	17.3	898	32
Avg			54	4.6	4.3				6	99	3.6	2.7	11.3	563	19
Range			78	0.0	2.6				13	113	7.5	1.7	12.6	564	26

Description: North Fork Montour Run Upper Segment; Also known as MP#8; Combination Deep Mine and Surface Mine Drainage; Near Wissel Machine; Includes MP3;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
NFMU6	11/14/01	Measured	17		6.4				19	24	0.6	6.2	0.0	869	
NFMU6	1/22/02	Measured	36		5.7				13	28	0.6	5.0	2.2	76	
NFMU6	2/19/02	Measured	47		5.7				14	25	0.6	4.9	2.1	888	
NFMU6	3/19/02	Measured	130		6.1				19	29	0.5	3.8	1.8	574	
NFMU6	4/16/02	Measured	130		5.7				11	44	0.3	4.0	2.6	627	
NFMU6	5/28/02	Measured	114		5.6				13	25	0.7	2.3	4.7	529	
NFMU6	6/25/02	Measured	70		4.8				11	56	0.4	8.3	4.0	576	
NFMU6	7/29/02	Measured	28		4.0				10	42	0.4	12.0	2.3	965	
NFMU6	8/26/02	Measured	18		4.9				10	57	0.0	12.2	2.8	810	
NFMU6	9/18/02	Measured	12		5.3				10	57	0.4	11.4	1.4	860	
NFMU6	10/30/02	Measured	85		6.2				19	36	0.4	5.9	1.1	356	
NFMU6	11/21/02	Measured	70		6.3				18	48	0.4	5.1	0.9	1195	
NFMU6	12/16/02	Measured	99		5.9				17	33	0.3	4.2	1.6	792	
NFMU6	1/27/03	Measured	71	4.9	5.1				9	41	0.5	5.7	4.9	858	8
NFMU6	2/24/03	Measured	197	6.0	6.0				16	35	0.0	3.3	2.1	710	14
Min			12	4.9	4.0				9	24	0.0	2.3	0.0	76	8
Max			197	6.0	6.4				19	57	0.7	12.2	4.9	1195	14
Avg			75	5.5	5.6				14	39	0.4	6.3	2.3	712	11
Range			185	1.1	2.4				10	34	0.7	9.9	4.9	1119	6

Description: North Fork Montour Run Upstream Segment; Includes MP7; Combination of Deep Mine and Surface Mine Drainage;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP6	7/23/96	Measured	36		5.2				28	124	38.6	9.4	3.9	1074	
MP6	8/20/96	Measured	29		5.0				19	138	41.5	9.6	3.9	950	
MP6	9/16/96	Measured	21		5.0				24	110	38.7	8.6	3.4	764	4
MP6	11/20/96	Measured	29		5.4				38	76	23.7	9.1	3.5	1050	14
MP6	12/11/96	Measured	32		5.4				42	86	22.1	8.7	3.2	999	20
MP6	1/22/97	Measured	38		5.1				30	94	26.9	9.8	3.6	1014	24
MP6	2/26/97	Measured	38		5.8				64	112	17.4	7.2	2.1	837	8
MP6	3/12/97	Measured	41		5.4				42	54	19.1	9.0	2.6	889	8
MP6	4/23/97	Measured	38		5.6				54	84	25.3	10.2	3.2	1184	0
MP6	5/8/97	Measured	32		5.5				46	54	25.9	10.1	2.9	1097	4
MP6	6/5/97	Measured	45		5.8				74	72	17.1	7.6	2.1	896	8
MP6	7/17/97	Measured	29		5.5				46	104	24.6	9.6	2.5	936	
MP6	8/18/97	Measured	22		5.8				82	158	21.1	7.5	1.8	910	4
MP6	9/30/97	Measured	12		5.5				50	132	25.6	8.2	2.2	962	
MP6	10/27/97	Measured	8		5.5				40	114	25.5	8.7	2.3	1007	12
MP6	11/18/97	Measured	22		5.1				26	82	8.2	7.8	2.1	778	
MP6	3/26/98	Measured	50		5.4				36	48	23.1	10.2	2.5	1261	12
MP6	4/23/98	Measured	45		5.8				58	16	19.8	8.7	2.1	1118	
MP6	5/20/98	Measured	45		5.8				66	0	21.5	9.1	2.2	1099	
MP6	6/29/98	Measured	25		6.1				84	0	16.1	6.8	1.5	902	
MP6	7/22/98	Measured	45		5.6				56	17	20.8	8.9	1.9	981	
MP6	8/20/98	Measured	22		5.3				30	44	24.0	8.4	1.7	953	
MP6	9/29/98	Measured	10		5.3				34	38	26.2	8.9	1.9	955	4
MP6	10/28/98	Measured	12		5.1				26	46	23.0	8.5	1.8	991	4
MP6	12/14/98	Measured	5		5.3				30	42	21.7	9.0	1.8	1028	4
MP6	1/20/99	Measured	45		6.0				72	0	1.2	5.2	1.2	745	
MP6	2/22/99	Measured	20		5.7				62	0	9.1	8.4	1.6	1308	
MP6	3/17/99	Measured	45		5.6				50	3	12.3	8.3	1.6	942	
MP6	4/19/99	Measured	50		6.0				84	0	11.4	6.2	1.2	915	

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP6	5/24/99	Measured	40		6.0				92	0	15.2	7.0	1.4	1112	10
MP6	6/23/99	Measured	25		5.2				24	42	17.7	7.5	1.6	978	4
MP6	7/22/99	Measured	19		5.3				26	40	20.3	7.6	1.9	907	
MP6	8/11/99	Measured	17		5.3				36	18	16.0	6.9	1.8	688	12
MP6	9/13/99	Measured	12		5.1				28	50	18.9	7.4	1.5	1009	
MP6	10/25/99	Measured	8		4.8				13	50	21.1	9.2	1.4	1051	
MP6	11/15/99	Measured	14		5.2				28	70	10.9	8.2	1.5	1009	
MP6	12/2/99	Measured	17		5.3				30	11	5.0	7.7	1.6	1085	4
MP6	1/11/00	Measured	29		5.7				70	0	3.0	6.5	1.2	891	4
MP6	2/7/00	Measured	45		5.2				30	26	8.4	8.4	1.6	1055	
MP6	3/7/00	Measured	36		5.6				58	0	5.0	7.4	1.3	798	4
MP6	4/25/00	Measured	5		5.9				78	0	10.7	8.2	1.4	1348	
MP6	5/23/00	Measured	29		5.7				64	0	11.7	6.8	1.5	1433	
MP6	6/28/00	Measured	45		5.9				84	0	11.9	7.3	1.0	970	12
MP6	7/20/00	Measured	40		5.6				64	0	13.9	7.8	1.2	883	
MP6	8/28/00	Measured	36		5.6				54	0	17.7	7.3	1.5	1043	4
MP6	9/26/00	Measured	45		5.8				84	0	11.8	5.4	0.7	919	14
MP6	10/31/00	Measured	25		5.6				50	7	16.8	7.0	9.5	950	
MP6	11/29/00	Measured	17		5.7				68	0	15.9	5.3	1.0	836	12
MP6	1/30/01	Measured	45		6.2				120	0	6.4	3.5	0.6	702	6
MP6	2/28/01	Measured	29		5.9				80	0	4.6	4.9	0.7	726	14
MP6	3/19/01	Measured	66		5.9				80	0	6.8	4.4	0.9	870	20
MP6	4/25/01	Measured	78		5.9				66	0	7.3	5.3	0.7	998	
MP6	11/8/01	Measured	8		5.7				72	3	15.6	7.5	0.6	703	
MP6	1/22/02	Measured	19		5.5				52	1	4.1	7.4	0.7	818	12
MP6	2/19/02	Measured	36		5.6				52	7	3.7	8.1	0.8	1111	6
MP6	3/19/02	Measured	40		5.7				74	0	4.9	7.2	0.7	837	4
MP6	4/16/02	Measured	45		5.8				84	0	5.2	6.9	0.7	1262	8
MP6	5/30/02	Measured	66		5.8				88	0	8.7	7.0	0.6	1152	

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MP6	6/25/02	Measured	45		5.6				62	19	12.7	8.4	0.8	948	
MP6	7/29/02	Measured	29		5.0				50	0	16.1	9.3	0.9	1199	
MP6	8/26/02	Flow	19		5.4				48	39	16.9	8.5	1.0	1377	
MP6	9/18/02	Measured	10		5.4				40	65	17.9	8.3	0.8	1072	
MP6	10/30/02	Measured	17		5.6				64	14	12.8	7.0	0.6	356	
MP6	11/21/02	Measured	22		5.4				48	5	4.4	7.4	0.8	961	
MP6	12/16/02	Measured	36		5.9				84	0	2.1	5.0	0.0	268	
MP6	1/27/03	Measured	32	5.8	5.5				56	4	9.3	8.8	1.2	1119	
MP6	2/25/03	Measured	40	5.7	5.7				66	0	7.6	7.7	0.7	960	0
Min			5	5.7	4.8				13	0	1.2	3.5	0.0	268	0
Max			78	5.8	6.2				120	158	41.5	10.2	9.5	1433	24
Avg			31	5.8	5.5				55	35	15.7	7.7	1.7	969	8
Range			73	0.1	1.4				107	158	40.3	6.7	9.5	1165	24

Description: Monitoring Point 6; Combination of Deep Mine and Surface Mine Discharge;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
PRE1(SFMU2)	11/8/01	Measured	9		6.6				104	0	9.2	8.2	0.0	1026	
PRE1(SFMU2)	1/22/02	Measured	22		6.6				92	0	30.0	7.4	0.0	1184	
PRE1(SFMU2)	2/19/02	Measured	29		6.7				90	0	28.7	7.5	0.0	1053	
PRE1(SFMU2)	3/19/02	Flow	29		6.7				88	0	22.5	7.0	0.0	682	
PRE1(SFMU2)	4/16/02	Measured	50		6.4				56	19	24.0	7.6	0.0	667	
PRE1(SFMU2)	5/30/02	Measured	50		6.4				48	10	13.9	7.9	0.0	1201	8
PRE1(SFMU2)	6/25/02	Measured	45		6.4				48	9	7.2	8.5	0.0	1106	18
PRE1(SFMU2)	7/29/02	Measured	29		6.9				56	0	7.0	9.2	0.0	1421	
PRE1(SFMU2)	8/26/02	Measured	17		6.8				76	0	12.4	8.9	0.0	1381	
PRE1(SFMU2)	9/18/02	Measured	17		6.7				80	0	14.4	8.9	0.0	1323	
PRE1(SFMU2)	10/30/02	Measured	22		6.8				96	0	12.8	7.7	0.0	357	
PRE1(SFMU2)	11/21/02	Measured	22		6.8				88	0	9.2	7.0	0.0	1540	
PRE1(SFMU2)	12/16/02	Measured	25		6.5				84	0	11.5	7.1	0.0	1071	
PRE1(SFMU2)	1/27/03	Measured	45	6.7	6.7				74	0	24.9	6.0	0.0	1093	22
PRE1(SFMU2)	2/24/03	Measured	55	6.8	6.8				62	0	18.4	6.3	0.0	1077	22
Min			9	6.7	6.4				48	0	7.0	6.0	0.0	357	8
Max			55	6.8	6.9				104	19	30.0	9.2	0.0	1540	22
Avg			31	6.8	6.7				76	3	16.4	7.7	0.0	1079	18
Range			46	0.1	0.5				56	19	23.0	3.2	0.0	1183	14

Description: South Fork Montour Run Upstream segment; Below BFI Landfill; Also known as BMI 141-1a;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SFMS6	11/8/01	Measured	5		3.8				0	238	1.4	3.1	37.8	1231	
SFMS6	1/22/02	Measured	6		3.5				0	286	1.9	2.7	34.7	980	
SFMS6	2/19/02	Measured	20		3.4				0	259	2.4	3.4	43.3	1127	
SFMS6	3/19/02	Measured	20		3.4				0	286	2.0	2.9	30.3	916	
SFMS6	4/16/02	Measured	40		3.3				0	308	5.0	2.5	35.3	728	
SFMS6	5/30/02	Measured	75		3.1				0	291	7.4	2.6	37.8	747	
SFMS6	6/25/02	Measured	60		3.3				0	290	4.4	2.6	37.8	594	
SFMS6	7/29/02	Measured	20		3.0				0	249	2.7	2.7	38.9	1016	
SFMS6	8/26/02	Measured	15		3.4				0	273	2.3	2.8	38.8	1266	
SFMS6	9/18/02	Measured	12		3.4				0	271	1.8	2.6	34.5	1193	
SFMS6	10/30/02	Measured	10		3.6				0	209	1.7	2.6	28.9	361	
SFMS6	11/21/02	Measured	15		3.4				0	233	1.8	2.7	31.5	1017	
SFMS6	12/16/02	Measured	20		3.4				0	245	1.7	2.4	27.9	182	
SFMS6	1/27/03	Measured	25	3.3	3.2				0	274	2.8	2.4	35.8	1129	0
SFMS6	2/25/03	Measured	30	3.2	3.2				0	235	3.1	2.6	31.6	1009	4
Min			5	3.2	3.0				0	209	1.4	2.4	27.9	182	0
Max			75	3.3	3.8				0	308	7.4	3.4	43.3	1266	4
Avg			25	3.3	3.4				0	263	2.8	2.7	35.0	900	2
Range			70	0.1	0.8				0	99	6.0	1.0	15.4	1084	4

Description: South Fork Montour Run Santiago segment; Sampled at 16" Terra Cotta pipe below shed in front yard; Deep Mine Discharge;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SFMS7	11/8/01	Measured	50		5.7				26	31	2.1	1.6	5.0	379	
SFMS7	1/29/02	Measured	35		4.0				3	121	2.6	3.0	11.8	944	
SFMS7	2/19/02	Measured	35		3.9				0	106	3.4	3.3	14.3	592	
SFMS7	3/19/02	Measured	38		4.9				8	71	2.2	2.2	6.7	1124	
SFMS7	4/16/02	Measured	40		4.5				8	97	1.2	2.2	8.1	603	
SFMS7	5/30/02	Measured	50		4.6				8	64	1.7	2.1	6.8	471	4
SFMS7	6/25/02	Measured	38		4.5				10	87	1.3	2.4	8.0	301	
SFMS7	7/29/02	Measured	50		4.0				1	91	1.0	2.7	9.8	718	
SFMS7	8/26/02	Measured	50		4.1				4	105	1.1	2.5	8.8	873	
SFMS7	9/18/02	Measured	38		3.8				0	110	1.4	2.7	9.9	593	
SFMS7	10/30/02	Measured	38		4.4				7	103	2.3	2.7	8.7	349	
SFMS7	11/21/02	Measured	50		4.0				2	106	1.5	2.5	9.8	715	
SFMS7	12/16/02	Measured	50		4.5				9	85	1.6	2.0	7.3	597	
SFMS7	1/27/03	Measured	50	4.3	4.0				1	100	2.0	2.6	11.4	660	0
SFMS7	2/25/03	Measured	60	4.2	4.7				8	60	2.4	2.2	8.4	532	12
Min			35	4.2	3.8				0	31	1.0	1.6	5.0	301	0
Max			60	4.3	5.7				26	121	3.4	3.3	14.3	1124	12
Avg			45	4.3	4.4				6	89	1.8	2.4	9.0	630	5
Range			25	0.1	1.9				26	90	2.4	1.7	9.3	823	12

Description: South Fork Montour Run Santiago segment; Deep Mine drain;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SFMD7	1/22/02	Measured	3	3.1	3.2				0	194	2.8	2.0	17.4	830	16
SFMD7	4/16/02	Measured	20	3.2	3.2				0	173	3.0	2.0	15.8	650	8
SFMD7	5/30/02	Measured	25	3.2	3.2				0	152	2.8	2.0	15.0	584	
SFMD7	6/25/02	Measured	15	3.2	3.3				0	163	2.6	2.0	16.5	715	12
SFMD7	7/29/02	Measured	2	3.3	3.0				0	165	5.3	2.2	19.4	1019	24
SFMD7	8/26/02	Measured	0	3.0	3.3				0	190	3.7	3.1	20.5	418	0
SFMD7	9/18/02	Measured	1	4.0	3.3				0	190	4.4	2.9	20.4	880	6
SFMD7	10/30/02	Measured	2	3.3	3.2				0	176	2.8	1.8	18.1	353	4
SFMD7	11/21/02	Measured	3	3.3	3.1				0	184	2.6	1.8	17.5	909	0
SFMD7	12/16/02	Measured	1	3.3	3.4				0	165	0.7	1.9	15.5	729	4
SFMD7	1/27/03	Measured	5	3.3	3.1				0	171	1.9	2.3	18.2	837	0
SFMD7	2/25/03	Measured	30	3.1	3.1				0	157	2.4	2.2	16.0	733	4
Min			0	3.0	3.0				0	152	0.7	1.8	15.0	353	0
Max			30	4.0	3.4				0	194	5.3	3.1	20.5	1019	24
Avg			9	3.3	3.2				0	173	2.9	2.2	17.5	721	7
Range			30	1.0	0.4				0	42	4.7	1.3	5.5	666	24

Description: South Fork Montour Run Downstream segment; Deep Mine Drain;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
SFMD3	11/8/01	Measured	1		6.8				112	0	0.9	1.6	3.3	400	38
SFMD3	4/16/02	Measured	17	5.4	5.6				20	29	0.0	1.6	10.4	517	40
SFMD3	5/30/02	Measured	15	5.6	5.3				16	38	0.3	1.5	11.6	311	44
SFMD3	6/25/02	Measured	3	5.9	6.1				38	19	2.0	2.1	12.5	311	64
SFMD3	7/29/02	Measured	0		4.0				8	116	0.6	4.4	20.7	548	26
SFMD3	8/26/02	Measured	0	7.0	7.2				106	0	0.4	2.1	4.7	408	18
SFMD3	10/30/02	Measured	8	7.0	7.0				76	0	0.3	0.8	1.3	318	16
SFMD3	11/21/02	Measured	3		6.6				70	0	0.0	1.0	1.7	452	4
SFMD3	12/16/02	Measured	12	6.2	6.4				47	0	0.0	0.7	2.4	263	10
SFMD3	1/27/03	Measured	8	6.3	6.8				79	0	0.0	1.1	4.1	330	20
SFMD3	2/25/03	Measured	17	6.3	6.5				42	0	0.0	0.9	4.2	231	14
Min			0	5.4	4.0				8	0	0.0	0.7	1.3	231	4
Max			17	7.0	7.2				112	116	2.0	4.4	20.7	548	64
Avg			8	6.2	6.2				56	18	0.4	1.6	7.0	372	27
Range			17	1.6	3.2				104	116	2.0	3.6	19.4	317	60

Description: South Fork Montour Run Downstream segment; Deep Mine Discharge

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
MKR3	11/8/01	Measured	40		3.5				0	162	2.3	1.8	23.7	456	
MKR3	1/22/02	Measured	75		3.3				0	163	1.1	1.0	15.6	262	
MKR3	2/19/02	Measured	75		3.4				0	146	1.1	1.2	16.7	470	
MKR3	3/19/02	Measured	150		3.4				0	147	0.8	0.9	11.8	316	
MKR3	4/16/02	Measured	150		3.4				0	184	1.4	1.2	19.5	581	
MKR3	5/30/02	Measured	175		3.4				0	145	1.1	1.2	17.0	313	
MKR3	6/25/02	Measured	150		3.5				0	140	1.1	1.2	16.0	414	6
MKR3	7/29/02	Measured	75		3.0				0	127	1.0	0.9	12.3	275	
MKR3	8/26/02	Measured	75		3.4				0	127	0.8	0.7	10.1	301	
MKR3	9/18/02	Measured	60		3.4				0	129	0.8	0.7	8.7	280	
MKR3	10/30/02	Measured	75		3.5				0	119	0.7	0.6	8.4	284	
MKR3	11/21/02	Flow	100		3.4				0	116	0.6	0.6	8.7	399	
MKR3	12/16/02	Measured	125		3.5				0	111	0.5	0.5	7.4	276	
MKR3	1/27/03	Measured	125	3.5	3.3				0	143	0.7	0.9	13.0	396	0
MKR3	2/25/03	Measured	300	3.3	3.4				0	141	0.7	0.9	13.2	401	0
Min			40	3.3	3.0				0	111	0.5	0.5	7.4	262	0
Max			300	3.5	3.5				0	184	2.3	1.8	23.7	581	6
Avg			117	3.4	3.4				0	140	1.0	1.0	13.5	362	2
Range			260	0.2	0.5				0	73	1.8	1.3	16.3	319	6

Description: Milk Run; Sampled at 14" Terra Cotta pipe; Deep Mine Discharge;

Montour Run Water Monitoring Database

Sample Point	Date	Method of Flow Meas.	Flow (gpm)	Field pH	Lab pH	Spec. cond. (umhos/cm)	Field Temp (C)	Alk. (Field) (mg/L)	Alk. (lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	Sulfate (mg/L)	Susp. Solids (mg/L)
PRE2(CLINTON RD)	12/23/02	Measured	44	3.8	3.6				0	238	3.5	11.3	25.8	1219	8
Min			44	3.8	3.6				0	238	3.5	11.3	25.8	1219	8
Max			44	3.8	3.6				0	238	3.5	11.3	25.8	1219	8
Avg			44	3.8	3.6				0	238	3.5	11.3	25.8	1219	8
Range			0	0.0	0.0				0	0	0.0	0.0	0.0	0	0

Description: Allegheny County Airport Authority Property (Same as 061 Unt Below Site)