UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Decision Rationale
Total Maximum Daily Loads
Paint Creek, UNT Paint Creek and Babcock Creek
Somerset and Cambria Counties, Pennsylvania

Signed

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Jon M. Capacasa, Director
Water Protection Division

Date: *3/27/2007*

Decision Rationale
Total Maximum Daily Loads
Paint Creek, UNT Paint Creek and
Babcock Creek
Watershed TMDL

I. Introduction

The Clean Water Act (CWA) requires that Total Maximum Daily Loads (TMDLs) be developed for those waterbodies identified as impaired by the state where technology-based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a margin of safety (MOS), that may be discharged to a waterbody without exceeding water quality standards.

The Pennsylvania Department of Environmental Protection (PADEP) Bureau of Watershed Management submitted the *Paint Creek, UNT Paint Creek and Babcock Creek Watershed TMDL, Somerset and Cambria Counties, for Acid Mine Drainage Affect Segments* (TMDL Report) dated January 19, 2007, to the U.S. Environmental Protection Agency (EPA) which was received for final Agency review on February 15, 2007. The waterbodies are listed for the three primary metals associated with acid mine drainage (AMD) (*i.e.*, iron, manganese, and aluminum), pH, and siltation and a variety of other impairments. This report addresses the three primary metals and pH. Siltation and the other impairments will be addressed at a future date, therefore, this TMDL addresses three segments on Pennsylvania's 1996 Section 303(d) list of impaired waters.

EPA's rationale is based on the TMDL Report and information contained in the attachments to the report. EPA's review determined that the TMDL meets the following eight regulatory requirements pursuant to 40 CFR Part 130:

1. The TMDLs are designed to implement the applicable water quality standards.
2. The TMDLs include a total allowable load as well as individual wasteload allocations (WLAs) and load allocations (LAs).
3. The TMDLs consider the impacts of background pollutant contributions.
4. The TMDLs consider critical environmental conditions.
5. The TMDLs consider seasonal environmental variations.
6. The TMDLs include a MOS.
7. There is reasonable assurance that the proposed TMDLs can be met.
8. The TMDLs have been subject to public participation.

II. Summary

Table 1 presents the 1996, 1998, 2002, and 2004 Section 303(d) listing information for the impaired segment first listed in 1996.[1]

Table 1. 303(d) Sublist for the Paint Creek, UNT Paint Creek, Babcock Watersheds

State Water Plan (SWP) Subbasin: 18-E Paint Creek, UNT Paint Creek and Babcock Creek								
Year	Miles	Segment ID	DEP Stream Code	Stream Name	Designated Use	Data Source	Source	EPA 305(b) Cause Code
1996	0.7	5133	45223	Paint Creek	CWF - TSF	305(b) Report	RE	metals
1996	0.5	5134	45259	UNT Paint Creek	CWF	305(b) Report	RE	metals
1996	3.5	NA	45260	Babcock Creek	CWF	SWMP	RE	metals
1998	1.11 0.46	5133 5134	45223	Paint Creek	CWF TSF	SWMP	AMD	metals
1998	0.46	5134	45259	UNT Paint Creek	CWF	SWMP	AMD	metals
1998	3.5	NA	45260	Babcock Creek*	CWF	SWMP	AMD	metals
2002	1.0	990102-0930-TVP	45260	Babcock Creek, Paint Creek	CWF	SWAP	AMD	pH metals
2002	1.6	20010628-1130-ALF	45223	Paint Creek	CWF	SWAP	AMD	pH metals
2002	4.1	20010628-1300-ALF	45223	Paint Creek	CWF	SWAP	AMD	pH
2002	3.0	20010628-1430-ALF	45223	Paint Creek	CWF	SWAP	AMD	siltation pH metals
2002	4.7	20010629-1115-ALF	45223	Paint Creek	TSF	SWAP	AMD	pH metals
2004	4.7	20010629-1115-ALF	45223	Paint Creek	TSF		AMD	pH metals
2004	0.4	990331-1532-ALF	45223	Paint Creek	TSF		AMD	metals
2004	3.0	20010628-1430-ALF	45223	Paint Creek	CWF		AMD	siltation pH metals

[1]Pennsylvania's 1996, 1998, 2002, and 2004 Section 303(d) lists were approved by the Environmental Protection Agency (EPA). The 1996 Section 303(d) list provides the basis for measuring progress under the 1997 lawsuit settlement of *American Littoral Society and Public Interest Group of Pennsylvania v. EPA.*

State Water Plan (SWP) Subbasin: 18-E Paint Creek, UNT Paint Creek and Babcock Creek								
2004	4.1	20010628-1301-ALF	45223	Paint Creek	CWF		AMD	pH siltation
2004	0.5	20010628-0931-ALF	45259	UNT Paint Creek	CWF		AMD	metals
2004	1.1	20010628-1131-ALF	45262	UNT Paint Creek	CWF		AMD	pH metals
2004	0.5	20010628-1131-ALF	45263	UNT Paint Creek	CWF		AMD	pH metals

Resource Extraction = RE
Cold Water Fishery = CWF
Trout Stocked Fisheries = TSF
Surface Water Monitoring Program = SWMP
Surface Water Assessment Program = SWAP
Abandoned Mine Drainage = AMD

See Attachment D of the TMDL Report, *Excerpts Justifying Changes Between the 1996, 1998, 2002, and 2004 Section 303(d) Lists*. The use designations for the stream segments in this TMDL can be found in PA Title 25 Chapter 93.9t. Section IV, Table 3 of this decision rationale shows the TMDLs for the Penn Run Watershed.

In 1997, PADEP began utilizing the Statewide Surface Waters Assessment Protocol to assess Pennsylvania's waters. This protocol is a modification of EPA's 1989 Rapid Bioassessment Protocol II and provides for a more consistent approach to conducting biological assessments than previously used methods. The biological assessments are used to determine which waters are impaired and should be included on the State's Section 303(d) list.

The TMDLs in this report were developed using a statistical procedure to ensure that water quality criteria are met 99% of the time as required by Pennsylvania's water quality standards at Pennsylvania Code Title 25, Chapter 96.3c. Table 3 of the TMDL Report lists the TMDLs for the Paint Creek Watershed, addressing metals and pH in the stream segments.

TMDLs are defined as the summation of the point source WLAs plus the summation of the nonpoint source LAs plus a MOS and are often shown as follows:

$$TMDL = \sum WLAs + \sum LAs + MOS$$

The TMDL is a written plan and analysis established to ensure that a waterbody will attain and maintain applicable water quality standards. The TMDL is a scientifically-based strategy which considers current and foreseeable conditions, utilizes the best available data, and accounts for uncertainty with the inclusion of a MOS value. Since conditions, available data, and the understanding of natural processes can change more than anticipated by the MOS, there exists the option of refining the TMDL for resubmittal to EPA.

III. Background

Previous surface mining activities in the watershed have resulted in impacts to Paint Creek, UNT Paint Creek and Babcock Creek. There are several surface mine permits that have permitted discharges in the Paint Creek, UNT Paint Creek and Babcock Creek Watershed. Cooney Brothers Coal Company, Surface Mine Permit No. 11803038, NPDES PA0121533, permit was re-issued for reclamation only. The listed facilities are for treatment of post-mining discharges. Rosebud Mining Company, Permit No. 56841328, NPDES No. PA0033677, has a permitted discharge in the Paint Creek Watershed for the Windber Mine No. 78. Hoffman Mining Inc., Permit No. 11000104, NPDES No. PA0248851, has permitted discharges in the Paint Creek Watershed for Hoffman Longwall No. 10 mine. Hoffman Mining Inc., Permit No. 11060103, NPDES No. PA0262242, has a permitted discharge for the No.10 West. Heritage Mining Co., Permit No. 11050102, NPDES No. PA0249831, has a permitted discharge into the Paint Creek Watershed.

PADEP treats each segment on the Section 303(d) list as a separate TMDL and expresses each TMDL as a long-term average loading. (See the *Paint Creek, UNT Paint Creek and Babcock Creek Watershed TMDL* Report, Attachment C, for the TMDL calculations.)

The Surface Mining Control and Reclamation Act of 1977 (SMCRA, Public Law 95-87) and its subsequent revisions were enacted to establish a nationwide program to, among other things, protect the beneficial uses of land and water resources, protect public health and safety from the adverse effects of current surface coal mining operations, and promote the reclamation of mined areas left without adequate reclamation prior to August 3, 1977. SMCRA requires a surface mining permit for the development of new, previously mined, or abandoned sites for the purpose of surface mining. Permittees are required to post a performance bond that will be sufficient to ensure the completion of reclamation requirements by the regulatory authority in the event that the applicant forfeits. Mines that ceased operating by the effective data of SMCRA (often called "pre-law" mines) are not subject to the requirements of SMCRA.

Computational Procedure

The TMDLs were developed using a statistical procedure to ensure that water quality criteria are met 99% of the time as required by Pennsylvania's water quality standards. A two-step approach was used for the TMDL analysis of impaired stream segments.

The first step used a statistical method for determining the allowable instream concentration at the point of interest necessary to meet water quality standards. An allowable long-term average instream concentration was determined at each sample point for metals and acidity. The analysis was performed using Monte Carlo simulation to determine the necessary long-term average concentration needed to attain water quality criteria 99% of the time, and the simulation was run assuming the data set was log normally distributed. Using @Risk[2], each

[2]@Risk – Risk Analysis and Simulation Add-in for Microsoft Excel, Palisade Corporation, Newfield, NY, 1990-1997.

pollutant source was evaluated separately by performing 5000 iterations of the model where each iteration was independent of all other iterations. This procedure was used to determine the required percent reduction that would allow the water quality criteria to be met instream at least 99% of the time. A second simulation that multiplied the percent reduction by the sampled value was run to ensure that criteria were met 99% of the time. The mean value from this data set represents the long-term average concentration that needs to be met to achieve water quality standards.

The second step was a mass balance of the loads as they passed through the watershed. Loads at these points were computed based on average annual flow. Once the allowable concentration and load for each pollutant was determined, mass-balance accounting was performed starting at the top of the watershed and working downstream in sequence. This mass balance or load tracking through the watershed utilized the change in measured loads from sample location to sample location as a guide for expected changes in the allowable loads.

The existing and allowable long-term average loads were computed using the mean concentration from @RISK multiplied by the average flow. The loads were computed based on average annual flow and should not be taken out of the context for which they are intended. They are intended to depict how the pollutants affect the watershed and where the sources and sinks are located spatially in the watershed. A critical flow was not identified, and the reductions specified in this TMDL apply at all flow conditions.

In addition to the above analysis, the WLAs for the NPDES permitted pit water treatment ponds were determined. Typically, surface mining operations include an open pit where overburden material has been removed to access the underlying coal, and this pit can accumulate water primarily through direct precipitation and surface runoff. The pit water is pumped to a nearby treatment pond where it is treated to the level necessary to meet effluent limitations. However, precipitation events allow intermittent discharges from the treatment pond. If accurate flow data are available for a treatment pond, they can be used to quantify the WLA by multiplying the flow by the best available technology (BAT) effluent limitations for treatment ponds. However, these flow data are typically not available. Alternatively, PADEP calculated a total average flow for the water draining to the pit using average annual precipitation, the area of the pit, and a runoff factor. Utilizing this value and BAT treatment pond effluent limits, the WLAs were determined.

IV. Discussions of Regulatory Requirements

EPA has determined that these TMDLs are consistent with statutory and regulatory requirements and EPA policy and guidance.

1. The TMDLs are designed to implement the applicable water quality standards.

Water quality standards are state regulations that define the water quality goals of a waterbody. Standards are comprised of three components: (1) designated uses, (2) criteria necessary to protect those uses, and (3) antidegradation provisions that prevent the degradation of water quality. The Paint Creek Watershed has been designated by Pennsylvania as a cold water fishery or trout stocking fishery with criteria to protect the aquatic life use, and the designation can be found at Pennsylvania Title 25 §93.9t. To protect the designated use as well as the existing use, the water quality criteria shown in Table 2 apply to all evaluated segments. The table includes the instream numeric criterion for each parameter and any associated specifications.

Table 2. Applicable Water Quality Criteria

Parameter	Criterion Value (mg/l)	Duration	Total Recoverable/ Dissolved
Aluminum (Al)	0.75	Maximum	Total Recoverable
Iron (Fe)	1.50 0.30	30-day Average Maximum	Total Recoverable Dissolved
Manganese (Mn)	1.00	Maximum	Total Recoverable
pH	6.0 - 9.0	Inclusive	N/A

Pennsylvania Title 25 §96.3c requires that water quality criteria be achieved at least 99% of the time, and TMDLs expressed as long-term average concentrations are expected to meet these requirements. That is, the statistical Monte Carlo simulation used to develop TMDL WLAs and LAs for each parameter resulted in a determination that any required percent pollutant reduction would assure that the water quality criteria would be met instream at least 99% of the time. The Monte Carlo analysis performed 5000 iterations of the model where each iteration was independent of all other iterations and the data set was assumed to be log normally distributed.

EPA finds that these TMDLs will attain and maintain the applicable narrative and numeric water quality standards.

The pH values shown in Table 2 were used as the endpoints for these TMDLs. In the case of freestone streams with little or no buffering capacity, the allowable TMDL endpoint for pH may be the natural background water quality, and these values can be as low as 5.4 (Pennsylvania Fish and Boat Commission). However, PADEP chose to set the pH standard between 6.0 to 9.0, inclusive, which is presumed to be met when the net alkalinity is maintained above zero. This presumption is based on the relationship between net alkalinity and pH, on which PADEP based its methodology to addressing pH in the watershed (see the *Paint Creek, UNT Paint Creek and Babcock Creek Watershed TMDL* Report, Attachment B). A summary of the methodology is presented as follows:

The parameter of pH, a measurement of hydrogen ion acidity presented as a negative logarithm of effective hydrogen ion concentration, is not conducive to standard statistics. Additionally, pH does not measure latent acidity that can be produced from the hydrolysis of metals. PADEP has been using an alternate approach to address the stream impairments noted on the Section 303(d) list due to pH. Because the concentration of acidity in a stream is partially dependent upon metals, it is extremely difficult to predict the exact pH values which would result from treatment of AMD. Therefore, net alkalinity will be used to evaluate pH in these TMDL calculations. This methodology assures that the standard for pH will be met because net alkalinity is able to measure the reduction of acidity. When acidity in a stream is neutralized or is restored to natural levels, pH will be acceptable ($\geq$6.0). Therefore, the measured instream alkalinity at the point of evaluation in the stream will serve as the goal for reducing total acidity at that point. The methodology that is used to calculate the required alkalinity (and therefore pH) is the same as that used for other parameters such as iron, aluminum, and manganese that have numeric water quality criteria. EPA finds this approach to addressing pH to be reasonable.

PADEP also has an alkalinity standard. Alkalinity (of a minimum 20 mg/l calcium carbonate except where natural conditions are less) is related to, but not identical with, pH. Alkalinity is a measure of the buffering capacity of the water. Adequate buffering prevents large swings in pH with additions of small amounts of acid. Although many of the AMD-impacted streams are naturally low in alkalinity, available monitoring data do not always include upstream waters not impacted by AMD. As PADEP does not list waters for inadequate alkalinity, TMDLs are not being developed for alkalinity but PADEP should monitor the waters for alkalinity and if, after these TMDLs are implemented, alkalinity is less than 20 mg/l or natural conditions, PADEP should list the waters for alkalinity and develop TMDLs.

2. The TMDLs include a total allowable load as well as individual WLAs and LAs.

For purposes of these TMDLs only, point sources are identified as permitted discharge points or discharges having responsible parties, and nonpoint sources are identified as any pollution sources that are not point sources. Abandoned mine lands were treated in the allocations as nonpoint sources. As such, the discharges associated with these land uses were assigned LAs (as opposed to WLAs). The decision to assign LAs to abandoned mine lands does not reflect any determination by EPA as to whether there are unpermitted point source discharges within these land uses. In addition, by approving these TMDLs with mine drainage discharges treated as LAs, EPA is not determining that these discharges are exempt from National Polluntant Discharge Elimination System (NPDES) permitting requirements.

Once PADEP determined the allowable concentration and load for each pollutant, a mass balance accounting was performed starting at the top of the watershed and working downstream in sequence. Load tracking through the watershed utilizes the change in measured loads from sample location to sample location as a guide for expected changes in the allowable loads.

PADEP used two basic rules for the load tracking between two ends of a stream segment: (1) if the measured upstream loads are less than the downstream loads, it is indicative that there is an increase in load between the points being evaluated, and no instream processes are assumed, (2) if the sum of the measured loads from the upstream points is greater than the measured load at the downstream point, is indicative that there is a loss of instream load between the points, and the ratio of the decrease shall be applied to the allowable load being tracked from the upstream point.

Tracking loads through the watershed provides a picture of how the pollutants are affecting the watershed based on the available information. The analysis is performed to insure that water quality standards will be met at all points in the stream. EPA finds this approach reasonable.

Table 3 presents a summary of the allowable loads, LAs, and WLAs for the Paint Creek, UNT Paint Creek and Babcock Creek Watershed.

Table 3. TMDL Component Summary for the Paint Creek, UNT Paint Creek and Babcock Creek Watershed

Parameter (lbs/day)	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Identified* (%)
UPC-S-1 - Paint Creek Headwaters						
Aluminum	0.04	0.02	0.0	0.02	0.02	50
Iron	0.02	0.02	0.0	NA	NA	NA
Manganese	0.01	0.01	0.0	NA	NA	NA
Acidity	0.55	0.06	0.0	0.06	0.49	89
UPC-S02 - Paint Creek below Strip Mine						
Aluminum	254.9	16.7	1.1	15.6	238.2	93
Iron	90.1	32.6	1.6	31.0	57.5	64
Manganese	105.5	20.5	1.1	19.4	85.0	81
Acidity	2338.2	0.0	0.0	0.0	2337.7	100
UPC-S03 - Paint Creek upstream of Unnamed Tributary 45262						
Aluminum	899.1	18.3	5.0	13.3	642.6	97
Iron	570.2	49.5	7.5	42.1	463.2	90
Manganese	517.6	28.4	5.0	23.4	404.3	93
Acidity	7511.2	0.0	0.0	0.0	5173.1	100
UPC-S04 - Most upstream site on Unnamed Tributary 45263 to Paint Creek						
Aluminum	0.7	0.5	0.0	0.5	0.2	25
Iron	1.2	0.9	0.0	88.0	0.3	24
Manganese	0.1	0.1	0.0	NA	NA	NA
Acidity	ND	NA	0.0	NA	NA	NA
UPC-S05 - Mouth segment of Unnamed Tributary 45263 to Paint Creek						
Aluminum	37.0	1.1	0.0	1.1	35.7	97
Iron	38.3	1.6	0.0	1.6	36.5	96
Manganese	5.3	1.5	0.0	1.5	3.8	72
Acidity	433.6	9.0	0.0	9.0	424.7	98
UPC-S06 - Mouth segment of Unnamed Tributary 45262 to Paint Creek						
Aluminum	32.8	1.8	0.0	1.8	0.0	0
Iron	26.4	3.8	0.0	3.8	0.0	0
Manganese	7.3	3.6	0.0	3.6	0.0	0
Acidity	319.8	13.7	0.0	13.7	0.0	
UPC-S07 - Paint Creek above confluence with Babcock Creek						
Aluminum	836.3	39.3	0.0	39.3	527.7	93
Iron	571.6	79.8	0.0	79.8	411.7	84
Manganese	514.1	53.3	0.0	53.3	372.1	87
Acidity	7256.0	52.4	0.0	52.4	4559.9	99
BC-S01 - Headwaters of Babcock Creek						
Aluminum	5.3	0.5	0.0	0.5	4.9	91
Iron	3.4	0.9	0.0	0.9	2.5	73
Manganese	2.8	0.5	0.0	0.5	2.3	83

Parameter (lbs/day)	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Identified* (%)
Acidity	45.6	5.6	0.0	5.6	40.0	88
BC-S02 - Babcock Creek downstream of BC-S01						
Aluminum	44.6	5.5	0.0	5.5	34.3	86
Iron	118.5	6.5	0.0	6.5	109.5	94
Manganese	57.5	4.9	0.0	4.9	50.2	91
Acidity	1016.2	0.8	0.0	0.8	975.4	100
BC-S03 - Babcock Creek upstream of confluence with tributary 45261						
Aluminum	67.1	10.4	0.0	10.4	17.6	63
Iron	86.2	14.7	0.0	14.7	0.0	0
Manganese	72.2	9.6	0.0	9.6	10.1	51
Acidity	1110.2	0.0	0.0	0.0	94.8	100
BC-S05 - Babcock Creek downstream of confluence of UNT 45261						
Aluminum	769.9	12.0	0.0	12.0	15.2	56
Iron	555.2	19.5	0.0	19.5	29.1	60
Manganese	1320.3	14.0	0.0	14.0	72.1	84
Acidity	8984.3	20.2	0.0	20.2	1228.7	98
BC-S06 - Mouth segment of Babcock Creek						
Aluminum	741.2	12.7	0.0	12.7	0.0	0
Iron	532.7	25.8	0.0	25.8	0.0	0
Manganese	1346.0	13.9	0.0	13.9	25.7	65
Acidity	8424.4	31.8	0.0	31.8	0.0	0
MPC-S01 - Paint Creek downstream of confluence with Babcock Creek						
Aluminum	1505.2	35.7	0.0	35.7	13.9	28
Iron	1217.4	64.2	0.0	64.2	154.6	71
Manganese	1691.9	40.7	0.0	40.7	20.4	33
Acidity	15798.6	0.0	0.0	0.0	201.8	100
MPC-S02 - Downstream of MPC-S01 on Paint Creek						
Aluminum	1606.0	36.3	0.0	36.3	100.1	73
Iron	1316.3	65.9	0.0	65.9	97.1	60
Manganese	1795.3	37.3	0.0	37.3	106.7	74
Acidity	17065.2	0.0	0.0	0.0	1266.6	100
MPC-S03 - Paint Creek upstream of confluence with UNT 45258						
Aluminum	2125.4	42.7	17.4	25.4	513.0	92
Iron	1587.4	70.3	26.0	44.3	266.7	79
Manganese	2469.5	50.9	17.4	33.6	660.5	93
Acidity	19855.9	0.0	0.0	0.0	2790.8	100
MPC-S04 - Paint Creek upstream of confluence with Seese Run						
Aluminum	2067.9	58.0	0.0	58.0	0.0	0
Iron	1462.3	115.1	0.0	115.1	0.0	0
Manganese	2258.2	69.2	0.0	69.2	0.0	0
Acidity	21701.5	0.0	0.0	0.0	1845.5	100

Parameter (lbs/day)	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Identified* (%)
SR-S01 - Headwaters segment of unnamed Tributary 45256 to Seese Run						
Aluminum	25.4	0.2	0.0	0.2	25.2	99
Iron	14.2	0.4	0.0	0.4	13.9	97
Manganese	3.1	0.3	0.0	0.3	2.8	90
Acidity	6.6	3.7	0.0	3.7	2.9	44
SR-S02 - UNT 45256 to Seese Run downstream of confluence with UNT 45257						
Aluminum	43.1	0.4	0.0	0.4	17.5	98
Iron	16.0	0.9	0.0	0.9	1.3	60
Manganese	7.1	1.7	0.0	1.7	2.6	61
Acidity	54.6	13.2	0.0	13.2	38.5	75
SR-S03 - Most upstream segment of Seese Run						
Aluminum	3.9	1.3	0.0	1.3	2.6	66
Iron	1.9	1.1	0.0	1.1	0.8	40
Manganese	2.8	2.8	0.0	NA	NA	NA
Acidity	42.6	12.3	0.0	12.3	30.3	71
SR-S04 - Seese Run above confluence with UNT 45256 of Seese Run						
Aluminum	6.8	1.4	0.0	1.4	2.7	66
Iron	4.1	2.5	0.0	2.5	0.9	26
Manganese	4.7	2.7	0.0	2.7	2.0	42
Acidity	8.2	8.2	0.0	8.2	0.0	0
SR-S05 - Seese Run downstream of confluence with UNT 45256 to Seese Run						
Aluminum	7.7	2.8	0.0	2.8	0.0	0
Iron	8.9	3.4	0.0	3.4	0.0	0
Manganese	9.0	5.3	0.0	5.3	0.0	0
Acidity	6.8	6.8	0.0	6.8	0.0	0
SR-S06 - Seese Run upstream of confluence with Weaver Run						
Aluminum	26.6	8.7	0.0	8.7	12.9	60
Iron	18.5	14.4	0.0	14.4	0.0	0
Manganese	29.9	11.8	0.0	11.8	14.4	55
Acidity	125.7	91.7	0.0	91.7	33.9	27
SR-S07 - Most upstream segment of Weaver Run						
Aluminum	0.6	0.6	0.0	0.6	0.0	5
Iron	0.6	0.6	0.0	NA	NA	NA
Manganese	0.6	0.6	0.0	NA	NA	NA
Acidity	25.5	4.2	0.0	4.2	21.3	84
SR-S08 - Weaver Run upstream of confluence with UNT 45251 of Weaver Run						
Aluminum	34.2	3.4	0.0	3.4	30.8	90
Iron	6.2	6.2	0.0	NA	NA	NA
Manganese	27.6	5.8	0.0	5.8	21.8	79
Acidity	713.8	0.0	0.0	0.0	692.4	100
SR-S09 - Mouth of Weaver Run						

Parameter (lbs/day)	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Identified* (%)
Aluminum	55.2	9.4	0.0	9.4	14.9	61
Iron	19.3	19.3	0.0	NA	NA	NA
Manganese	41.4	12.9	0.0	12.9	6.6	34
Acidity	561.0	31.0	0.0	31.0	0.0	0
SR-S10 - Seese Run downstream of confluence of Weaver Run						
Aluminum	78.6	19.8	0.0	19.8	0.0	0
Iron	44.8	36.6	0.0	36.6	4.0	10
Manganese	68.2	27.3	0.0	27.3	0.0	0
Acidity	602.7	104.4	0.0	104.4	3.3	3
MPC-S05 - Paint Creek upstream of confluence with Little Paint Creek						
Aluminum	2011.5	172.1	0.0	172.1	0.0	0
Iron	1449.0	222.9	0.0	222.9	0.0	0
Manganese	2008.8	235.1	0.0	235.1	0.0	0
Acidity	17078.7	281.9	0.0	281.9	0.0	0
LPC-S02 - Most upstream segment of Little Paint Creek						
Aluminum	12.0	12.0	0.0	NA	NA	NA
Iron	23.3	23.3	0.0	NA	NA	NA
Manganese	2.3	2.3	0.0	NA	NA	NA
Acidity	ND	NA	0.0	NA	NA	NA
LPC-S03 - Little Paint Creek downstream of LPC-S02						
Aluminum	23.0	15.9	0.0	15.9	7.2	31
Iron	42.8	33.1	0.0	33.1	9.7	23
Manganese	3.3	3.3	0.0	NA	NA	NA
Acidity	ND	NA	0.0	NA	NA	NA
LPC-S04 - Little Paint Creek upstream of confluence with UNT 45228 of Little Paint Creek						
Aluminum	343.0	45.7	0.0	45.7	290.1	86
Iron	1156.1	81.8	0.0	81.8	1064.7	93
Manganese	20.0	20.0	0.0	NA	NA	NA
Acidity	883.4	421.2	0.0	421.2	462.3	52
LPC-S05 - mouth segment of Little Paint Creek						
Aluminum	343.0	47.9	0.0	47.9	0.0	0
Iron	907.3	83.4	0.0	83.4	0.0	0
Manganese	19.8	19.8	0.0	NA	NA	NA
Acidity	447.3	447.3	0.0	447.3	0.0	0
LoP-S01 - Paint Creek downstream of confluence with Little Paint Creek						
Aluminum	2304.3	210.0	0.0	210.0	5.3	2
Iron	2218.2	425.2	0.0	425.2	0.0	0
Manganese	2231.3	301.0	0.0	301.0	156.6	34
Acidity	17023.7	1521.0	0.0	1521.0	0.0	0
LoP-S02 - Mouth of Paint Creek						

Parameter (lbs/day)	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Identified* (%)
Aluminum	3025.6	206.5	0.0	206.5	724.9	78
Iron	2793.6	432.3	0.0	432.3	568.4	57
Manganese	2405.2	313.0	0.0	313.0	161.9	34
Acidity	21855.8	986.3	0.0	986.3	5366.8	84

ND = not detected
NA = not applicable, meets water quality standards, no TMDL necessary
* Percent reduction after upstream reductions are made

PADEP allocated to both point and nonpoint sources, as there is currently one mining operation in the watershed. Where there are active mining operations, Federal regulations require that point source permitted effluent limitations be water quality-based subsequent to TMDL development and approval.[3] In addition, PA Title 25, Chapter 96, Section 96.4d requires that WLAs serve as the basis for determination of permit limits for point source discharges regulated under Chapter 92 (relating to NPDES permitting, monitoring, and compliance). Therefore, no new mining may be permitted within the watershed without reallocation of the TMDL.

Table 4. Wasteload Allocations

Outfall	Parameter	WLA (lbs/day)
Cooney Brother Coal Co., NPDES No. PAD0121533		
J	Aluminum	1.08
	Iron	1.62
	Manganese	1.08
034	Aluminum	0.75
	Iron	1.12
	Manganese	0.75
045	Aluminum	1.92
	Iron	2.88
	Manganese	1.92
046	Aluminum	2.01
	Iron	3.01
	Manganese	2.01
Outfall 025	Aluminum	1.16
	Iron	1.74

[3]It should be noted that technology-based permit limits may be converted to water quality-based limits according to EPA's *Technical Support Document For Water Quality-based Toxics Control,* March 1991, recommendations.

Outfall	Parameter	WLA (lbs/day)
	Manganese	1.16
Rosebud Mining Co., NPDES No. PAD0033677		
001	Aluminum	17.35
	Iron	26.02
	Manganese	17.35
Hoffman Mining Inc. No. 10, NPDES PAD0248851		
Pit D	Aluminum	0.11
	Iron	0.16
	Manganese	0.11
Pit B	Aluminum	0.06
	Iron	0.09
	Manganese	0.06
Hoffman Mining Inc. No. 10 West, NPDES PAD0262242		
001	Aluminum	0.05
	Iron	0.07
	Manganese	0.05
Heritage Mining Inc. Allison Mine, NPDES PAD0249831		
001	Aluminum	0.08
	Iron	0.12
	Manganese	0.08

3. The TMDLs consider the impacts of background pollutant contributions.

The TMDLs were developed using instream data, which account for existing background conditions.

4. The TMDLs consider critical environmental conditions.

The reductions specified in these TMDLs apply at all flow conditions. A critical flow condition was not identified from the available data.

5. The TMDLs consider seasonal environmental variations.

The data set included data points from all seasons, thereby accounting for seasonal variation implicitly.

6. The TMDLs include a MOS.

The CWA and Federal regulations require TMDLs to include a MOS to take into account any lack of knowledge concerning the relationship between effluent limitations and water quality. EPA guidance suggests two approaches to satisfy the MOS requirement. First, it can be met implicitly by using conservative model assumptions to develop the allocations. Alternately, it can be met explicitly by allocating a portion of the allowable load to the MOS.

PADEP used an implicit MOS in these TMDLs by assuming that the treated instream concentration variability was the same as the untreated stream's concentration variability. This is a more conservative assumption than the general assumption that a treated discharge has less variability than an untreated discharge. By retaining variability in the treated discharge, a lower average concentration is required to meet water quality criteria 99% of the time than if the variability of the treated discharge is reduced.

Additionally, calculations were performed using a daily average for iron rather than the 30-day average, thereby, incorporating a MOS.

7. There is reasonable assurance that the proposed TMDLs can be met.

The *Recommendations* section of the TMDL Report highlights what can be done in the Paint Creek, UNT Paint Creek, and Babcock Creek Watersheds to eliminate or treat pollutant sources. Aside from PADEP's primary efforts to improve water quality in the Paint Creek Watersheds through reclamation of abandoned mine lands and through the NPDES permit program, additional opportunities for reasonable assurance exist. PADEP expects that activities such as research conducted by its Bureau of Abandoned Mine Reclamation, funding from EPA's §319 grant program, and Pennsylvania's Growing Greener program will help remedy abandoned mine drainage impacts. PADEP also has in place an initiative that aims to maximize reclamation of Pennsylvania's abandoned mineral extraction lands. Through Reclaim PA, Pennsylvania's goal is to accomplish complete reclamation of abandoned mine lands and plugging of orphaned wells. Pennsylvania strives to achieve this objective through legislative and policy land management efforts and activities described in the TMDL Report.

The Paint Creek Regional Watershed Association is actively trying to improve the quality of Paint Creek. They are actively in the process of eliminating discharges and in the design phase for treatment systems to remedy discharges on Weaver Run and Little Paint Creek through PA DEP Growing Greener Projects. The Paint Creek Regional Watershed Association is very active and in the early stages of accomplishing major stream improvements.

8. The TMDLs have been subject to public participation.

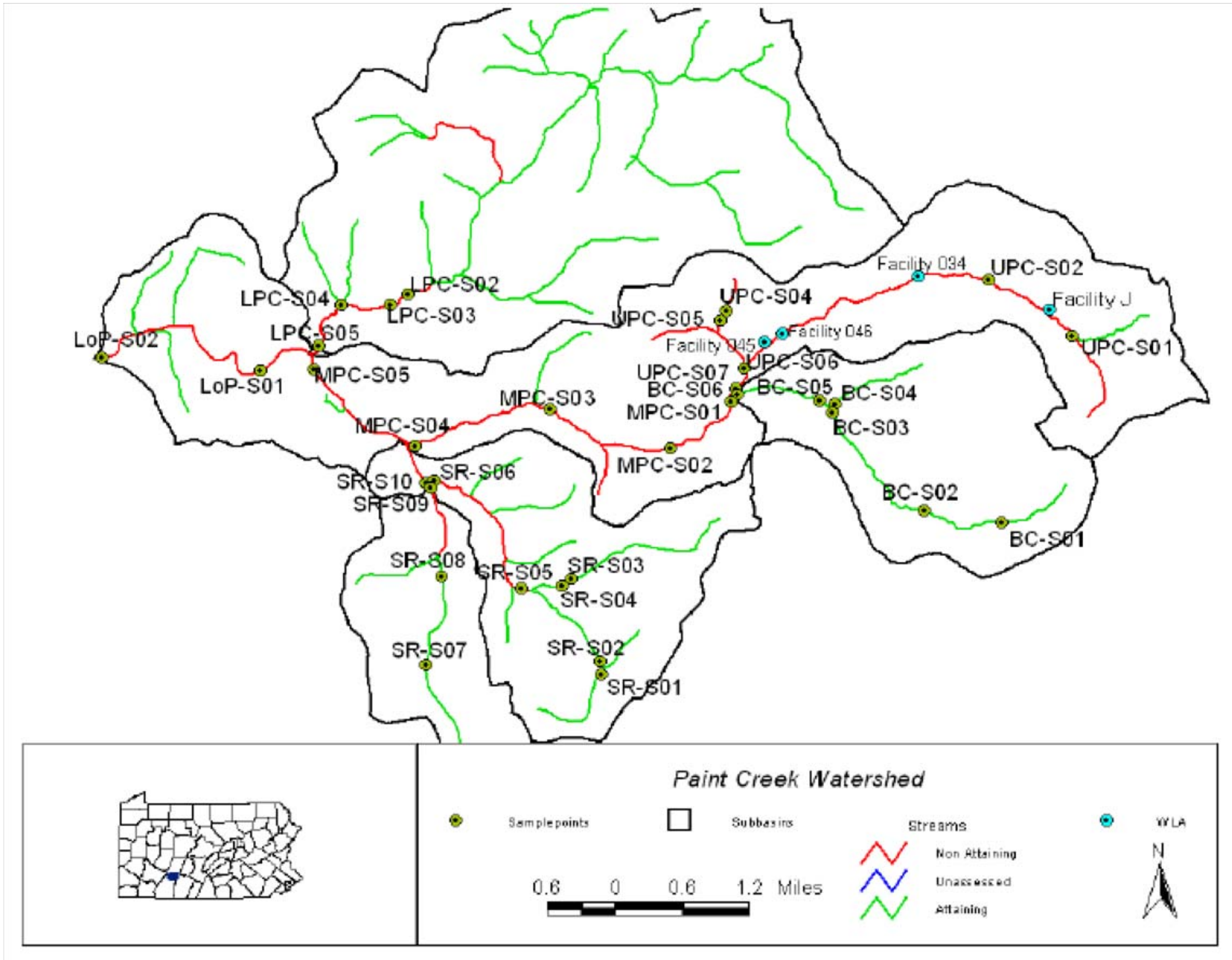
Public notice of the draft TMDL was published in the *Pennsylvania Bulletin* on November 4, 2006, and the *Tribune Democrate* on October 30, 2006, to foster public comment on the calculated allowable loads. The public comment period was open from November 4, 2006 through January 4, 2007. A public meeting was held on November 8, 2006, at the Cambria District Mining Office in Ebensburg, PA, to discuss the proposed TMDL.

One set of written comments was submitted to PADEP. The commentor noted that there were more active permits in the watershed than the one identified in the public notice version of this TMDL Report. The additional permits, with WLAs, were added to the TMDL Report. Other comments were addressed as appropriate.

Although not specifically stated in the TMDL Report, PADEP routinely posts the approved TMDL Reports on their web site: www.dep.state.pa.us/watermanagement_apps/tmdl/.

Attachment A

Paint Creek, UNT Paint Creek, and Babcock Creek Watershed Maps



Paint Creek Watershed
Sample points
Subbasins
Streams
Non Attaining
Unassessed
Attaining
WLA
N
0.6 0 0.6 1.2 Miles
LoP-S02
LoP-S01
LPC-S04
LPC-S02
LPC-S03
LPC-S05
MPC-S05
MPC-S04
MPC-S03
MPC-S02
MPC-S01
UPC-S05
UPC-S04
UPC-S07
UPC-S06
UPC-S02
UPC-S01
Facility 034
Facility J
Facility 045
Facility 046
BC-S06
BC-S05
BC-S04
BC-S03
BC-S02
BC-S01
SR-S10
SR-S09
SR-S06
SR-S08
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