INFORMATION SHEET

Proposed Total Maximum Daily Load (TMDL) for Plum Creek, located in Penn Hills, Verona, and Oakmont Townships and Plum Borough, Allegheny County, Pennsylvania

What is being proposed?
A TMDL is a report that documents the pollution loads in the stream and the amount of pollution that must be removed for the stream to be healthy again.

Who is proposing the TMDL? To whom and why?
The Pennsylvania Department of Environmental Protection (DEP) has collected water quality and quantity data for the stream and the written the TMDL report. The report will be provided to the U.S. Environmental Protection Agency (EPA) for review and approval as required by federal regulation.

In 1995, EPA was sued for not developing TMDLs when Pennsylvania failed to do so. DEP has entered into an agreement with EPA to develop TMDLs for certain specified waters over the next several years. This TMDL has been developed in compliance with the state/EPA agreement.

What is a TMDL?
A Total Maximum Daily Load (TMDL) sets a limit on the pollutant loads that can enter a water body so the water body will meet water quality standards. The Clean Water Act requires states to assess streams and water bodies and compile a list of all waters that do not meet their water quality standards even after pollution controls required by law are in place. For these waters, the state must calculate how much of a substance can be put in the water without violating the water quality standard and distribute that quantity to all the sources of the pollutant on that water body. A TMDL plan may include load allocations for sources of pollution being discharged from treatment ponds on active mining operations, pollution load allocations for sources of abandoned mine drainage, and a margin of safety.

The Clean Water Act requires states to submit their TMDLs to EPA for approval. If a state does not develop the TMDL, the Clean Water Act states that EPA must do so.

What is a water quality standard?
The Clean Water Act sets a national minimum goal that all waters be "fishable" and "swimable." To support this goal, states must adopt water quality standards.

Water quality standards are state regulations that have two components. The first component is a designated use, such as "warm water fishes" or "recreation." States must assign a use, or several uses, to each of their waters. The second component relates to the in-stream conditions necessary to protect the designated use(s). These conditions or

"criteria" are physical, chemical, or biological characteristics, such as temperature and minimum levels of dissolved oxygen, and maximum concentrations of toxic pollutants.

It is the combination of the "designated use" and the "criteria" to support that use that make up a water quality standard. If any criteria are being exceeded, then the use is not being met and the water is said to be impaired.

What is the purpose of the plan?
Plum Creek is impaired by high concentrations of metals, specifically iron, manganese, and aluminum and in some areas depressed pH. The plan includes a calculation for the loading of iron, manganese, aluminum, and acidity, a surrogate for pH, which will meet Pennsylvania water quality objectives.

Why did we choose Plum Creek?
In 1996, 1998, and 2002, DEP listed Plum Creek under Section 303(d) of the Clean Water Act as being impaired due to acid mine drainage.

What pollutants does this TMDL address?
The proposed plan provides calculations of Plum Creek's total capacity to accept acidity and metals to meet Pennsylvania water quality objectives.

Where do the pollutants come from?
The pollutants come primarily from abandoned mine workings. The Plum Creek Watershed was mined for coal throughout the 19th century. The effects of this mining are still present.

How was the TMDL developed?
Quarterly samples of the stream quality and its flow were collected at numerous places in the watershed. Monte Carlo simulation techniques were used to determine the long-term average daily loads that a stream segment could accept and still meet water quality criteria 99% of the time. Monte Carlo simulation allows for the expansion of a data set based on its statistical makeup. Since there was no one critical flow condition where criteria were exceeded, the 50th percentile flow value was used to weight the pollutant concentrations. All analyses were started at the headwaters of each stream segment where a pollution load is mathematically taken away from each of the stream segments in order to determine conditions where the stream will meet water quality standards.

How much pollution is too much?
The allowable amount of pollution in a stream varies depending on several conditions. TMDLs are set to meet water quality standards at the defined critical flow condition. If there is more than one critical flow condition, the TMDL must be constructed to meet water quality criteria at all flow conditions. This is the case in Plum Creek. For this reason, the long-term average daily load values that will meet water quality criteria 99% of the time were used as the basis for the TMDL.

The applicable water quality criteria for pH are dependent on the alkalinity present in-stream. A balance between the in-stream acidity and alkalinity is necessary so that a minimum net alkalinity of zero is maintained in-stream 99% of the time. For a given stream segment, the in-stream alkalinity was used as the water quality standard for pH; because different segments had different amounts of in-stream alkalinity, the water quality standard for pH varied from segment to segment.

The applicable water quality criteria for metals are a daily average of 1.5 mg/l total iron, a one hour maximum of 0.75 mg/l total aluminum, and a maximum of 1.0 mg/l total manganese.

What is the TMDL for Plum Creek?

A TMDL consists of a load allocation (LA) for non-point sources, a wasteload allocation (WLA) for point sources, and a Margin of Safety. LA's are calculated for a stream segment at the most downstream station of the segment. In terms of the TMDL, a segment is defined as a section of the stream measured from a downstream station to the next upstream station(s). WLA's are assigned to the NPDES permitted discharges within the stream segment. For these TMDLs the Margin of Safety is included in the results calculated from the modeling through conservative assumptions. Following is a table containing the calculated TMDLs. TMDLs were not necessary at all stations for all parameters because Water Quality Standards are met under the current conditions. Only necessary TMDLs are included in the table below. A diagram of the station locations is included at the end of this document.

$$TMDL = WLA + LA + MOS$$

TMDL Component Summary for the Plum Creek Watershed

Station	Parameter	WLA	LA	MOS	TMDL
		lbs/day	lbs/day		lbs/day
PLUM17	Fe	0.0	0.9	*	0.9
	Mn	0.0	0.8	*	0.8
	Al	0.0	0.3	*	0.3
	Acidity	0.0	1.4	*	1.4
PLUM15	Fe	0.0	0.2	*	0.2
	Mn	0.0	0.3	*	0.3
	Al	0.0	0.3	*	0.3
	Acidity	0.0	2.8	*	2.8
PLUM13	Fe	0.0	1.5	*	1.5
	Mn	0.0	1.3	*	1.3
	Al	0.0	1.0	*	1.0
	Acidity	0.0	40.6	*	40.6
PLUM10	Fe	0.0	1.1	*	1.1
	Al	0.0	0.8	*	0.8
PLUM09	Fe	0.0	0.5	*	0.5
	Mn	0.0	0.3	*	0.3
	Al	0.0	0.2	*	0.2

Station	Parameter	WLA	LA	MOS	TMDL
		lbs/day	lbs/day		lbs/day
PLUM08	Mn	0.0	4.9	*	4.9
	Al	0.0	6.9	*	6.9
LPLM08	Fe	0.0	3.6	*	3.6
	Mn	0.0	1.5	*	1.5
	Al	0.0	1.7	*	1.7
	Acidity	0.0	23.0	*	23.0
LPLM07	Fe	0.0	0.6	*	0.6
	Mn	0.0	0.5	*	0.5
	Al	0.0	0.5	*	0.5
	Acidity	0.0	0.0	*	0.0
LPLM05	Fe	0.0	2.1	*	2.1
	Mn	0.0	1.9	*	1.9
	Al	0.0	1.2	*	1.2
	Acidity	0.0	33.0	*	33.0
LPLM04	Fe	0.0	9.3	*	9.3
	Mn	0.0	6.5	*	6.5
	Al	0.0	2.3	*	2.3
LPLM03	Fe	18.0	1.8	*	19.8
	Mn	12.0	8.7	*	20.7
	Al	6.0	0.4	*	6.4
LPLM02	Fe	0.0	21.2	*	21.2
	Mn	0.0	8.6	*	8.6
	Al	0.0	16.4	*	16.4
LPLM01	Fe	0.0	29.0	*	29.0
	Mn	0.0	12.4	*	12.4
	Al	0.0	10.5	*	10.5
PLUM05	Mn	0.0	17.1	*	17.1
	Al	0.0	19.6	*	19.6

How will these limits be met?
A remediation plan will need to be developed for Plum Creek in order to meet the water quality objectives outlined in this report.

How can I get more information on the TMDL?
The TMDL can be accessed through the DEP Website (http://www.dep.state.pa.us) by typing "TMDL" in the DEP Keyword field, and clicking GO. The data and all supporting information used to develop the proposed TMDL are available from the Department.

To request a copy of the proposed TMDL contact;

Ron Horansky, Dept. of Environmental Protection
Greensburg District Mining Office

RD#2, Box 603C, Armbrust Professional Center
Greensburg, PA 15601,
phone: (724)-925-5500, email: rhoransky@state.pa.us

Persons with a disability may use the AT&T Relay Service by calling 1-800-654-5984 (TDD users) or 1-800-654-5988 (voice users) and request that the call be relayed.

How can I comment on the proposal?

A public comment period on this TMDL will be open from November 6, 2004 until January 5, 2005. A public meeting will be held December 2, 2004 at 7:00 pm at the Plum Borough Municipal Building to discuss the draft TMDL. The Department will respond to questions at the meeting. Written comments will also be accepted and must be received no later than the closing date of the comment period to the above address. Directions to the meeting location can also be obtained by contacting this address. Comments will not be accepted by facsimile or voice mail.

Plum Creek Sampling Station Diagram
Arrows indicate direction of flow.
Diagram not to scale.