TMDL PROGRAM MEETING BETWEEN

DEP & EPA

June 5, 1997

TMDL PROGRAM MEETING BETWEEN DEP AND EPA

JUNE 5, 1997

Information Package

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H. Monitoring, Assessment and Listing Report

I. Draft Guidance on List Prioritization and Readily and Available Existing Data

J. Draft Guidance on TMDL Submittal to EPA Region III

DEP/EPA June 5, 1997

TMDL Program Commitments

What's been completed so far

- Reviewed and approved 1996 303d list
- Evaluated reliability of land use/water quality correlation
- Drafted EPA Region III guidance for list prioritization, readily available and existing data and TMDL submittal (final due 7/15/97)
- Listed significant lakes in PA
- EPA provided DEP with $100,000 for lake assessments

Monitoring and Assessment

- Draft report on PA's monitoring and assessment program/303d listing process DUE 10/1/97

- Final report on PA's monitoring and assessment program/303d listing process DUE 12/1/97

Continuing Planning Process

- Define PA continuing planning process; EPA to publish notice of its availability in the Federal Register
  DUE January 31, 1998

- EPA preliminary CPP evaluation completed
  DUE June 1, 1998

- Final CPP evaluation completed by EPA
  DUE August 1, 1998

Unassessed Waters

- Perform comprehensive assessment of PA wadeable rivers and streams

  ONGOING until April 9, 2007

- Establish and gain DEP/EPA consensus on monitoring protocol for wadeable rivers and streams
  DUE: June 15, 1997

Administrative/Reporting

- Develop workplan for TMDL development. Will serve as a guide for both EPA and DEP. DUE September 30, 1997

- EPA's annual consent decree/settlement agreement compliance report due to Plaintiffs and DEP
  DUE December 31, 1997

LAKES

- EPA will provide $200,000 to DEP to assess significant lakes
  First $100,000 already provided

- DEP will monitor 100 significant lakes
  DUE in 10 years

- In 10 years, EPA will monitor up to 100 significant lakes above DEP's 100 lakes for 303d listing purposes

  First 5% due April 9, 1998

TMDL development

- TMDL establishment for the first year of the consent decree: DEP shall establish TMDLs for at least 8 non-AMD water quality limited segments on the 1996 303d list which receive EPA approval.

  DUE April 9, 1998

1998 303d list development

- DEP submits 1998 303d list
  DUE April 1, 1998

- EPA reviews PA 303d list; EPA evaluates whether the list contains all readily available and existing data; review prioritization of waters for endangered species
  DUE May 1, 1998

- If PA fails to submit a 303d list by 4/1/98, EPA will establish one by 9/1/98

B

TABLE 1
1996 303(d) List

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:						**DELAWARE ESTUARY**			
2-E, 3-J	High	2	Delaware River Estuary	DRBC Tox Prg	Industrial Point Sources	Metals	21		E
3-F, 3-G					Municipal Point Sources	Priority Organics	21		E
					Nonpoint Sources	Metals	21	X	E
				Fish Consump. Advisory	Other Nonpoint Sources	PCB, Chlordane	58 5	X	M
3-F		833	Schuylkill River Estuary	CSO Studies	Combined Sewer Overflows	Metals, DO/BOD	1		E
STATE WATER PLAN (SWP) SUBBASIN:						**1-UPPER DELAWARE RIVER**			
1-A	Low	2	Delaware River	Fish Consump. Advisory	Undetermined	Chlordane	2	-	M
1-C	H	5519	Lake Wallenpaupack	Phase I & II	Agriculture	Nutrients	5,700	X	M
						Suspended Solids		X	M
					Other Nonpoint Sources	Nutrients		X	M
						Suspended Solids		X	M
				Fish Consump. Advisory	Atmospheric Deposition	Mercury		X	M
1-E	L	4750	Brodhead Creek	305(b) Report	Other Non-Point Sources	Suspended Solids	0 6	X	M
1-F	H	63243	Waltz Creek	305(b) Report	Other Non-Point Sources	Other	0 5	X	M
STATE WATER PLAN (SWP) SUBBASIN:						**2-CENTRAL DELAWARE RIVER**			
2-C	H	3364	South Branch Saucon Creek (Unt)	305(b) Report	Other Non-Point Sources	Priority Organics	2 1	X	M
2-C	H	3570	Little Cedar Creek	305(b) Report	Urban Runoff/Storm Sewers	Suspended Solids	0 6	X	M
2-D	Low		Levittown Lake	Fish Consump. Advisory	Undetermined	Chlordane	20	-	M
2-F	High	2484	Neshaminy Creek	305(b) Report	Municipal Point Sources	Nutrients	15 1		M
						Organic Enrichment/DO	10		M
						pH	4		M
					Other Non-Point Sources	Cause Unknown	4	X	M
2-F	H	2490	Unt Neshaminy Creek	305(b) Report	Agriculture	Nutrients	0 5	X	M
2-F	High	2638	Little Neshaminy Creek	305(b) Report	Municipal Point Sources	Organic Enrichment/DO	2 4		M
						Nutrients	2 4		M

* See Narrative for Description of Priority for TMDL Development.
Nonpoint Source Priorities are L for Low, M for Medium , H for High.

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Entire Area of Lake in Acres is Shown.
NPS - Indicates Nonpoint Source Impact.

\96PSNSR5
Revised 2/12/97

TABLE 1
1996 303(d) List

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
2-F	Medium	2661	Park Creek	305(b) Report	Municipal Point Sources	DO/BOD	0 5		M
						Bac/Pathogens	0 5		M
					Other Point Sources	DO/BOD	0 5		M
						Bac/Pathogens	0 5		M
2-F	High	2701	UNT Neshaminy Creek	305(b) Report	Municipal Point Sources	Other Organics	0 2		M
						Turb/Suspended Sol	0 1		M
2-F	High	2776	Cooks Run	305(b) Report	Municipal Point Sources	Nutrients	1 9		M
					Urban Runoff/Storm Sewers	Nutrients	1	X	M
						Other	1 8	X	M
2-F	High	2868	West Branch Neshaminy Branch	305(b) Report	Municipal Point Sources	Nutrients	2 5		M
						Organic Enrichment/DO	1		M
2-F	High	2889	UNT West Branch Neshaminy Branch	305(b) Report	Municipal Point Sources	Nutrients	0 1		M
						Bac./Pathogens	0 1		M
STATE WATER PLAN (SWP) SUBBASIN:						**3-LOWER DELAWARE RIVER**			
3-A	Low	833	Schuylkill River	Fish Consump. Advisory	Industrial Point Sources	PCB, Chlordane	73 5		M
						Organic Enrichment	8 3		M
3-B	High	2177	Schuylkill River Unnamed Trib.	305(b) Report	Industrial Point Sources	Metals	0 1		M
3-B	High	2179	Schuylkill River Unnamed Trib.	305(b) Report	Industrial Point Sources	Metals	0 3		M
3-B	High	2197	Schuylkill River Unnamed Trib.	305(b) Report	Industrial Point Sources	Metals	0 1		M
3-B	H	1985	Lake Ontelaunee	Phase I Rept	Agriculture	Nutrients	1,100	X	M
					Urban Runoff/Storm Sewers	Suspended Solids		X	M
					Onsite Wastewater Systems	Nutrients		X	M
					Municipal Point Sources	Nutrients			M
3-C	L	1833	Wyomissing Creek	305(b) Report	Urban Runoff	Cause Unknown	0 1	X	M
3-C	H	1848	Unt Tulpehocken Creek	305(b) Report	Agriculture	Nutrients	0 2	X	M
3-C	L	1853	Little Cacoosing Creek	305(b) Report	Agriculture	Nutrients	4 4	X	M
3-C	L	1889	Hospital Creek	305(b) Report	Agriculture	Nutrients	3.2	X	M
3-C	L	1902	Northkill Creek	305(b) Report	Atmospheric Deposition	pH	5	X	M
3-C	H	1938	Mill Creek	305(b) Report	Agriculture	Pathogens	0 5	X	M
						Organic Enrichment/DO	1 7	X	M
						Nutrients	2.5	X	M
						Suspended Solids	3 1	X	M
3-C	H	1958	Unt Mill Creek	305(b) Report	Other Non-Point Sources	Nutrients	0 5	X	M
3-C	H	1999	Owl Creek	305(b) Report	Agriculture	Nutrients	2	X	M
						Suspended Solids	2	X	M

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TABLE 1
1996 303(d) List

SWP	Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
3-C	High	1978	Bernhart Creek	TMDL Model	Industrial Point Sources	Dissolved Solids	0 4		M
						Metals	0 4		M
3-C	H	1981	Laurel Run	305(b) Report	Agriculture	Organic Enrichment/DO	2 7	X	M
3-D	H	3110	Lake Nockamixon	Phase I & II Report	Agriculture	Nutrients	1,450	X	M
						Suspended Sediments		X	M
					Municipal Point Sources	Nutrients			M
					Onsite Wastewater Systems	Nutrients		X	M
3-D	H	1548	French Creek	305(b) Report	Agriculture	Nutrients	7 6	X	M
3-D	H	1550	Unt French Creek	305(b) Report	Urban Runoff/Storm Sewers	Other	1	X	M
3-D	H	1622	Unt Schuylkill River	305(b) Report	Agriculture	Nutrients	4 3	X	M
3-D	L	1655	Manatawny Creek	305(b) Report	Agriculture	Nutrients	6 6	X	M
					Agriculture	Organic Enrichment/DO	3	X	M
3-E	M	1017	Perkiomen Creek	305(b) Report	Municipal Point Sources	Nutrients/DO	6 8		M
3-E	M	1017	Green Lane Reservoir	Phase I Rept	not yet done	Organic Enrichment/DO	814	X	M
3-E	M	1024	Stuppack Creek	305(b) Report	Other Non-Point Sources	Nutrients	3 9	X	M
3-E	Medium	1181	Indian Creek	305(b) Report	Municipal Point Sources	Dissolved Solids	0 6		M
						Other	0 5		M
3-F	H	2789	Lake Galena	Phase I Rept	Agriculture	Nutrients	365	X	M
						Suspended Solids		X	M
					Urban Runoff	Nutrients		X	M
						Suspended Solids		X	M
					Onsite Wastewater Systems	Nutrients		X	M
					Other Nonpoint Sources	Suspended Solids		X	M
						Nutrients		X	M
3-F	H	90975	Lake Luxembourg	Phase I Rept	Agriculture	Suspended Solids	156	X	M
						Nutrients		X	M
					Urban Runoff/Storm Sewers	Suspended Solids		X	M
3-F	Medium	860	Unnamed Trib. Sandy Run	305(b) Report	Industrial Point Sources	Nutrients	0 2		M
					Municipal Point Sources	Turb/Suspended Solids	0 3		M
					Other Non-Point Sources	Cause Unknown	0 2	X	M
3-F	Medium	859	Sandy Run	305(b) Report	Municipal Point Sources	Nutrients	1 8		M
						Bac/pathogens	0 3		M
						BOD/DO	0 3	X	M
3-F	M	901	Glenmallen Creek	305(b) Report	Other Non-Point Sources	Metals	0 2	X	M
						Suspended Solids	0 1	X	M
3-F	Medium	980	Trout Run	305(b) Report	Municipal Point Sources	Other	0 2		M
3-F	M	895	Little Valley Creek	305(b) Report	Undetermined	Metals	1 4	X	M
						Turb/Susp Solids	1 4	X	M
3-G	Medium	520	Chester Creek	305(b) Report	Municipal Point Sources	Other	0 4		M
					Undetermined	Other organics	0 44		M
3-G	Medium	528	Unnamed Trib. Chester Creek	305(b) Report	Municipal Point Sources	Other	0 1		M

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3-G	Medium	570	Unnamed Trib W Br Chester Creek	305(b) Report	Municipal Point Sources	Other	1		M
3-G	Medium	604	E.Br.Chester Creek	305(b) Report	Municipal Point Sources	Other	0 2		M
3-G	M	753	Hermeaprota Creek	305(b) Report	Other Non-Point Sources	Metals	0 1	X	M
						Other	0 1	X	M
3-H	L	4	Brandywine Creek	Fish Consump Advisory	Other Nonpoint Sources	Chlordane	2 0	X	M
3-H	High	26	Un. Trib. Brandywine Creek	305(b) Report	Other Point Sources	Nutrients	1 2		M
3-H	L	85	West Branch Brandywine Creek	305(b) Report	Municipal Point Sources	Nutrients	4 0		M
					Agriculture	Nutrients	2	X	M
				Fish Consump Advisory	Undetermined	PCB, Chlordane	2 9	-	M
3-H	High	181	Buck Run (Unt) (Little Buck Run)	305(b) Report	Municipal Point Sources	Nutrients	0 5		M
						Organic Enrichment/DO	0 4		M
3-H	L	229	East Branch Brandywine Creek	305(b) Report	Agriculture	Nutrients	2	X	M
3-H	High	354	Culbertson Run	305(b) Report	Other Point Sources	Turb/Suspended Solids	0 2		M
						Nutrients	0 2		M
3-H	H	360	Indian Run	305(b) Report	Agriculture	Organic Enrichment/DO	0 5	X	M
						Other	0 5	X	M
						Nutrients	0 5	X	M
3-H	Low	991	Valley Creek	Fish Consump Advisory	Industrial Point Sources	PCB	16 7		M
3-I	L	374	Red Clay Creek Basin including East and West Branches Red Clay Crk, South Brook and Buck Toe Creek	Fish Consump. Advisory	Industrial Point Sources Agricultural Other Nonpoint Sources	PCB, Chlordane Pathogens	1 1 0 5	X X	M M
3-I	H	396	Unt W.Br. Red Clay (Toughkenamon Trib)	305(b) Report	Other Non-Point Sources	Nutrients	1	X	M
3-I	H	400	Unt West Br Red Clay Crk. (NW Trib)	305(b) Report	Other Non-Point Sources	Metals	0 1	X	M
						Priority Organics	0 1	X	M
3-I	L	413	East Branch Red Clay Creek	305(b) Report	Agriculture	Nutrients	2	X	M
3-I	High	432	East Branch White Clay Creek	305(b) Report	Municipal Point Sources	Nutrients	2		M
						Organic Enrichment/DO	2		M
					Other Non-Point Sources	Pesticides	2	X	M
3-I	High	448	UNT East Branch White Clay Creek	305(b) Report	Municipal Point Sources	Metals	0 1		M
						Bac/ pathogens	0 1		M
					Undetermined	Metals	0.2	X	M
3-I	High	462	Middle Branch White Clay Creek	305(b) Report	Municipal Point Sources	Nutrients	1		M
					Agriculture	Suspended Solids	6 7	X	M
						Nutrients	6.7	X	M
3-I	L	466	West Branch White Clay Creek	305(b) Report	Agriculture	Suspended Solids	3 5	X	M
						Nutrients	4	X	M
3-I	H	490	South Branch Naaman Creek	305(b) Report	Agriculture	Nutrients	0 3	X	M
3-I	High	562	Unt Green Creek	305(b) Report	Other Point Sources	Other	0 1		M
3-J	High	2409	Pennypack Creek	305(b) Report	Industrial Point Sources	Priority Organics	1 1		M
					Municipal Point Sources	Pathogens	2 5		M
						Organic Enrichment/DO	2 4		M

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1996 303(d) List

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
3-J	Low	2453	UNT Southampton Creek	305(b) Report	Industrial Point Sources	Metals	0.2		M
						Turb/Sus Solids	0.2		M
					Municipal Point Sources	Nutrients	0.2		M
						Bac/Pathogens	0.1		M
STATE WATER PLAN (SWP) SUBBASIN:					**4-UPPER SUSQUEHANNA RIVER**				
4-A	H	31111	North Fork Cowanesque River	305(b) Report	Agriculture	Nutrients	3.8	X	M
						Suspended Solids	4.0	X	M
4-C	H		Stephen Foster Lake	Phase I Rept	Agriculture	Nutrients	75	X	M
						Suspended Solids		X	M
4-D	H	29838	So. Branch Wyalusing Creek	305(b) Report	Agriculture	Nutrients	3	X	M
						Turb/Sus Sol	3	X	M
						Other	3	X	M
4-F	H	28797	Lake Carey	305(b) Report	Agriculture	Nutrients	262	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**5-UPPER CENTRAL SUSQUEHANNA RIVER**				
5-B	H	28317	Harveys Lake	Phase I Rept	Onsite Wastewater Systems	Nutrients	650	X	M
					Other Nonpoint Sources	Suspended Solids		X	M
5-B	H	28109	Black Creek	305(b) Report	Combined Sewer Overflow	Suspended Solids	4	X	M
5-B	L	6685	Susquehanna River	Fish Consump. Advisory	Undetermined	PCB	31.9	-	M
5-C	H		Lake Jean	Phase I Rept	Atmospheric Deposition	pH	245	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**6-LOWER CENTRAL SUSQUEHANNA RIVER**				
6-C	H	17370	North Branch Mahantango Creek	305(b) Report	Agriculture	Organic Enrichment/DO	1	X	M

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1996 303(d) List

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STATE WATER PLAN (SWP) SUBBASIN:						**7-LOWER SUSQUEHANNA RIVER**			
7-B	L	10194	Conodoguinet Creek	305(b) Report	Agriculture	Nutrients	28 8	X	M
7-B	H	10261	Letort Spring Run	305(b) Report	Other Non-Point Sources	Priority Organics	2	X	M
					Urban Runoff/Storm Sewers	Metals	0 4	X	M
						Pesticides	0 4	X	M
7-B	H	10319	Mount Rock Spring Creek	305(b) Report	Agriculture	Nutrients	1 4	X	M
7-B	H	10361	Mount Rock Spring Creek	305(b) Report	Agriculture	Nutrients	1 4	X	M
7-B	H	10430	Green Spring Creek	305(b) Report	Agriculture	Nutrients	4	X	M
7-B	L	10568	Clippingers Run	305(b) Report	Agriculture	Nutrients,DO/BOD	0 4	X	M
7-B	H	10602	Middle Spring Creek	305(b) Report	Agriculture	Suspended Solids	4	X	M
					Urban Runoff/Storm Sewers	Suspended Solids	2 4	X	M
7-C	L	10139	Paxton Creek	305(b) Report/	Combined Sewer Overflow	DO/BOD	0 9	X	M
				Storm Water Mgt. Study	Urban Runoff	Nutrients	4 0	X	M
7-D	L	9655	Bow Creek UNT	305(b) Report	Agriculture	Nutrients	0 7	X	M
7-D	L	9705	Killinger Creek	305(b) Report	Agriculture	Nutrients	5 5	X	M
7-D	L	9724	Bachman Run	305(b) Report	Agriculture	Nutrients	4 7	X	M
7-D	L	9728	Beck Creek	305(b) Report	Agriculture	Nutrients	7 5	X	M
7-D	L	9729	Snitz Creek	305(b) Report	Agriculture	Nutrients	6	X	M
7-D	L	9749	Swatara Creek UNT	305(b) Report	Agriculture	DO/BOD	2	X	M
7-D	L	9909	Deep Run	305(b) Report	Agriculture	Nutrients	2 2	X	M
7-D	L	9912	Earlskill Run	305(b) Report	Agriculture	Nutrients	3 8	X	M
7-D	L	9920	Croskill Creek UNT t UNT	305(b) Report	Agriculture	Tub/Sus Solids	0 6	X	M
						Bac/Pathogens	0 6	X	M
					Other Point Sources	DO/BOD	0 1		M
7-D	High	9991	Elizabeth Run	305(b) Report	Industrial Point Sources	Turb/Suspended Solids	0 3		M
					Municipal Point Sources	Nutrients	0 4		M
7-D	High	9998	Deep Run	305(b) Report	Municipal Point Sources	Nutrients	0 2		M
					Industrial Point Sources	Other	0.3		M
						Turb/Suspended Solids	0 1		M
					Agriculture	Turb/Suspended Solids	0 2	X	M
						Nutrients	4 7	X	M
7-E	L	9217	Conewago Creek	305(b) Report	Agriculture	Nutrients	10	X	M
7-F	H	8519	Pinchot Lake	Phase I Rept	not yet done	Organic Enrichment/DO	340	X	M
7-G	L	7919	Chiques Creek	305(b) Report	Agriculture	Nutrients	10	X	M
7-G	H	7920	Donegal Creek	305(b) Report	Agriculture	Suspended Solids	1 8	X	M
						Organic Enrichment/DO	0 5	X	M
						Nutrients	2 1	X	M
7-G	H	7922	Donegal Creek Unt	305(b) Report	Agriculture	Suspended Solids	1 7	X	M
						Organic Enrichment/DO	0 4	X	M

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7-G	H	7922	Donegal Creek Unt	305(b) Report	Agriculture	Nutrients	0 1	X	M
7-G	High	9243	Conewago Creek	305(b) Report	Point Sources	DO/BOD	0 6		M
7-H	High	8032	Codorus Creek	305(b) Report	Industrial Point Sources	Turb/Suspended Solids	3 4		M
						DO/BOD	3 4		M
						Temperature	3 0		M
7-H	L	8093	South Branch Codorus Creek	305(b) Report	Agriculture	Suspended Solids	5	X	M
						Nutrients	5	X	M
7-H	H	8213	Oil Creek	305(b) Report	Urban Runoff/Storm Sewers	Other	1 2	X	M
7-I	M	6761	Deer Creek	305(b) Report	Agriculture	Suspended Solids	3 5	X	M
						Nutrients	3 7	X	M
7-I	M	6762	Falling Branch Deer Creek	305(b) Report	Agriculture	Suspended Solids	1 3	X	M
7-J	H	7506	Pequea Creek, Unt.	305(b) Report	Agriculture	Suspended Solids	0 3	X	M
						Nutrients	2 1	X	M
7-J	H	7548	Conestoga River	305(b) Report	Agriculture/other NPS	Nutrients	0 8	X	M
						Organic enrichment/DO	0 4	X	M
7-J	High	7612	Mill Creek (Unt)	305(b) Report	Industrial Point Sources	Salinity /TDS/Chlorides	0 9		M
					Agriculture	Suspended Solids	0 2	X	M
7-J	H	7613	Muddy Run	305(b) Report	Agriculture	Suspended Solids	2	X	M
						Nutrients	1 2	X	M
7-J	H	7646	Lititz Run	305(b) Report	Urban Runoff/Storm Sewers	Turb/Sus Sol	1 7	X	M
7-K	H	7026	Tweed Creek	305(b) Report	Agriculture	Cause Unknown	0 8	X	M
7-K	H	7162	Conowingo Creek	305(b) Report	Agriculture	Nutrients	7 6	X	M
						Turb/Sus Sol	8 6	X	M
7-K	H	7045	Pequea/Mill Creek Watershed	Pilot Study	Agriculture	Nutrients/Pesticides	-	X	E
7-K	L	7450	Pequea Creek	305(b) Report	Agriculture	Suspended Solids	2 5	X	M
						Nutrients	2 5	X	M
STATE WATER PLAN (SWP) SUBBASIN:						**8-UPPER WEST BRANCH SUSQUEHANNA RIVER**			
8-C	M	28374	Kibler Run	305(b) Report	Other Non-Point Sources	Suspended Solids	0 3	X	M
STATE WATER PLAN (SWP) SUBBASIN:						**9-CENTRAL WEST BRANCH SUSQUEHANNA RIVER**			
9-C	Low	22988	Spring Creek and Slab Cabin Run	Fish Consump Advisory	Industrial Point Sources	Mirex	19.4		M

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TABLE 1
1996 303(d) List

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:					**10-LOWER WEST BRANCH SUSQUEHANNA RIVER**				
10-A	M	20942	Fox Hollow	305(b) Report	Urban Runoff/Storm Sewers	Cause Unknown	0 6	X	M
10-C	M	18920	Buffalo Creek	305(b) Report	Agriculture	Other	0 5	X	M
					Atmospheric Deposition	pH	2 8	X	M
10-D	H	19792	Tules Run	305(b) Report	Other Non-Point Sources	Suspended Solids	0 5	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**11-UPPER JUNIATA RIVER**				
11-A	High	15664	Little Juniata River	305(b) Report	Municipal Point Sources	Organic Enrichment/DO	1 2		M
					Urban Runoff/Storm Sewers	Other	1 2	X	M
11-A	High	15835	Bald Eagle Creek	305(b) Report	Industrial Point Sources	Thermal	1		M
11-A	High	16061	Frankstown Branch Juniata River	305(b) Report	Industrial Point Sources	Priority Organics	1 6		M
						Nonpriority Organics	2 4		M
11-A	H	16317	Beaver Dam Branch	305(b) Report	Combined Sewer Overflow	Organic Enrichment/DO	2	X	M
					Urban Runoff/Storm Sewers	Other	1 4	X	M
11-A	H	16403	Mill Run	305(b) Report	Combined Sewer Overflow	Other	1 1	X	M
					Urban Runoff/Storm Sewers	Other	4	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**15- LAKE ERIE**				
15-A	L	62245	Lake Erie and Presque Isle Bay	Fish Consump. Advisory	Other Nonpoint Sources	PCB	753 Square Miles	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**16-UPPER ALLEGHENY RIVER**				
16-A	Medium	51591	French Creek	305(b) Report	Municipal Point Sources	Nutrients	3 5		M
16-A	M	53478	Trout Run	305(b) Report	Agriculture	Suspended Solids	10 8	X	M

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16-D	H	52232	Conneaut Lake	Phase I Rept	Urban Runoff/Storm Sewers	Suspended Solids	929	X	M
						Nutrients		X	M
					Other Nonpoint Sources	Suspended Solids		X	M
						Nutrients		X	M
16-E	Medium	54128	Oil Creek	305(b) Report	Industrial Point Sources	Priority Organics	3 5		M
16-E	Medium	54551	Coon Run	305(b) Report	Industrial Point Sources	Organic Enrichment/DO	0 6		M
						Pathogens	0 6		M
						Metals	0 7		M
STATE WATER PLAN (SWP) SUBBASIN:						**17-CENTRAL ALLEGHENY RIVER**			
17-C	M	49014	Unt Huling Run	305(b) Report	Agriculture	Nutrients	0 7	X	M
17-C	Medium	49141	South Branch Bear Creek	305(b) Report	Industrial Point Sources	Priority Organics	2 4		M
STATE WATER PLAN (SWP) SUBBASIN:						**18-LOWER ALLEGHENY RIVER**			
18-A	L	42122	Allegheny River	Fish Consump Advisory	Undetermined	PCB, Chlordane	14 5	X	M
18-C	H	43487	Nine Mile Run	305(b) Report	Municipal Point Sources	Nutrients/Other	2		M
18-D	H	44230	McCarthy Run	305(b) Report	Urban Runoff/Storm Sewers	Thermal Modifications	4 4	X	M
						Suspended Solids	4 4	X	M
18-D	H	44241	Marsh Crk.	305(b) Report	Urban Runoff/Storm Sewers	Thermal Modifications	2	X	M
18-D	H	44481	Clarke Run	305(b) Report	Agriculture	Nutrients	1	X	M
						Suspended Solids	1	X	M
18-D	H	44769	Unt Conemaugh River	305(b) Report	Agriculture	Suspended Solids	0 3	X	M
						Nutrients	0 1	X	M
					Urban Runoff/Storm Sewers	Nutrients	0 1	X	M
						Suspended Solids	0 3	X	M
18-E	H	45084	Stony Creek	305(b) Report	Agriculture	Nutrients/Suspended Solids	2 5	X	M
						Nutrients	2 5	X	M
18-E	H	45678	Unt Quemahoning Crk	305(b) Report	Agriculture	Nutrients	0 6	X	M
18-E	H	45675	Wells Creek	305(b) Report	Agriculture	Nutrients	0 6	X	M
18-E	H	45722	Buck Run	305(b) Report	Agriculture	Nutrients	1 5	X	M
18-E	H	45777	Glades Creek	305(b) Report	Agriculture	Suspended Solids	3	X	M

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STATE WATER PLAN (SWP) SUBBASIN:						**19-MONONGAHELA RIVER**			
19-A	L	18025	Monongahela River	Fish Consump Advisory	Undetermined	PCB, Chlordane	4	-	M
19-F	L	-	Cheat River	Fish Consump Advisory	Undetermined	Chlordane	2	-	M
19-D	H	38036	Virgin Run Lake	305(b) Report	Agriculture	Nutrients	32	X	M
STATE WATER PLAN (SWP) SUBBASIN:						**20-OHIO RIVER**			
20-A	H	35482	Shenango River	305(b) Report	Agriculture	Nutrients /Pesticides	16 6	X	M
20-A	L	35482	Shenango River	Fish Consump. Advisory	Industrial Point Sources	PCB, Chlordane	33 2	X	M
20-B	L	33953	Beaver River	Fish Consump Advisory	Other Nonpoint Sources	PCB, Chlordane	3	X	M
20-C	High	34787	Brush Creek	305(b) Report	Municipal Point Sources	DO/BOD	5 5		M
20-C	M	34025	Connoquenessing Creek	305(b) Report	Onsite Wastewater Systems	Pathogens	9	X	M
20-E	M	32317	Ohio River	305(b) Report	Combined Sewer Overflow	Priority Organics	9 4	X	M
					Other Non-Point Sources	Pesticides	10 3	X	M
20-E	M	32838	Dutch Fork Lake	305(b) Report	Agricultural	Nutrients	91	X	M
20-E	L		Ohio River (Upper Basin - Allegheny River, Monongahela River, Ohio River)	Fish Consump. Advisory	Other Nonpoint Sources	PCB, Chlordane	56 7	X	M
20-F	H	36777	Chartiers Creek	305(b) Report	Other Non-Point Sources	Pesticides	5	X	M
				Fish Consump. Advisory	Other Nonpoint Sources	PCB, Chlordane	17	X	M
20-F	H	36873	Brush Run	305(b) Report	Urban Runoff/Storm Sewers	Nutrients	0 4	X	M
						Suspended Solids	0 5	X	M
20-F	H	36936	Brush Run (Unt)	305(b) Report	Urban Runoff/Storm Sewers	Nutrients	0 3	X	M
						Suspended Solids	0 1	X	M
20-F	H	36943	Canonsburg Lake	305(b) Report	Agricultural	Nutrients	76	X	M
20-F	L	36943	Little Chartiers Creek	Fish Consump. Advisory	Other Nonpoint Sources	PCB, Chlordane	2	X	M
20-F	H	37044	Plum Run	305(b) Report	Agriculture	Nutrients	2 1	X	M
						Suspended Solids	2 1	X	M
20-F	High	37164	Sawmill Run	305(b) Report	Point Sources	Nutrients/DO/BOD	10		M

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SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:					**2-CENTRAL DELAWARE RIVER**				
2-A	Low	4214	Sandy Run	305(b) Report	Resource Extraction	Metals	0 1	X	E
2-A	Low	4216	Pond Creek	305(b) Report	Resource Extraction	pH	7	X	E
2-A	Low	4226	Sandy Run (Unt)	305(b) Report	Resource Extraction	Metals	0 3	X	E
					Resource Extraction	Other Inorganics	0 1	X	E
2-B	Low	4100	Nesquehoning Creek	305(b) Report	Resource Extraction	pH	1 7	X	E
					Resource Extraction	Metals	4 3	X	M
2-B	Low	4139	Black Creek	305(b) Report	Resource Extraction	Metals	4 7	X	E
2-B	Low	4153	Hazle Creek	305(b) Report	Resource Extraction	Metals	1 5	X	M
					Resource Extraction	pH	3 4	X	M
2-B	Low	4171	Buck Mountain Creek	305(b) Report	Resource Extraction	Metals	2 2	X	E
					Resource Extraction	pH	2 2	X	E
2-C	Low	3335	Lehigh River	305(b) Report	Resource Extraction	Metals	30 2	X	E
2-C	Low	3345	Saucon Creek	305(b) Report	Resource Extraction	Suspended Solids	2	X	E
2-C	Low	3345	Saucon Creek (South Branch)	305(b) Report	Resource Extraction	Other	1	X	E
STATE WATER PLAN (SWP) SUBBASIN:					**3-LOWER DELAWARE RIVER**				
3-A	Low	833	Schuylkill River	305(b) Report	Resource Extraction	Metals	31 7	X	E
3-A	Low	2202	Little Schuylkill River	305(b) Report	Resource Extraction	Metals	2 5	X	M
					Resource Extraction	Suspended Solids	3 2	X	M
					Resource Extraction	pH	2 4	X	M
3-A	Low	2251	Wabash Creek	305(b) Report	Resource Extraction	Metals	2 2	X	M
3-A	Low	2252	Panther Creek	305(b) Report	Resource Extraction	Metals	4 7	X	M
3-A	Low	2329	West Branch Schuylkill River	305(b) Report	Resource Extraction	Metals	9	X	E
3-A	Low	2331	Panther Creek	305(b) Report	Resource Extraction	Metals	5 6	X	M
3-A	Low	2336	Muddy Branch Creek	305(b) Report	Resource Extraction	Metals	3 5	X	M
3-A	Low	2353	Mill Creek	305(b) Report	Resource Extraction	Metals	5 5	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**4-UPPER SUSQUEHANNA RIVER**				
4-A	Low	30990	Tioga River	305(b) Report	Resource Extraction	Metals	3	X	M
4-A	Low	31480	Morris Run	305(b) Report	Resource Extraction	Metals	1	X	M
4-A	Low	31506	Fall Brook	305(b) Report	Resource Extraction	Metals	2	X	M
4-C	Low	30360	Long Valley Run	305(b) Report	Resource Extraction	Metals	1 6	X	E

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STATE WATER PLAN (SWP) SUBBASIN:					**5-UPPER CENTRAL SUSQUEHANNA RIVER**				
5-A	Low	28374	Lackawanna River	305(b) Report	Resource Extraction	Metals	2 6	X	E
5-A	Low	28452	Roaring Brook	305(b) Report	Resource Extraction	Metals	4	X	M
5-A	Low	28566	Aylesworth Ck	305(b) Report	Resource Extraction	pH	0 5	X	M
					Resource Extraction	Metals	0 5	X	M
5-A	Low	28576	Powderly Creek	305(b) Report	Resource Extraction	Metals	1 9	X	E
5-A	Low	28594	Coal Brook	305(b) Report	Resource Extraction	Metals	1 9	X	E
5-A	Low	28595	Wilson Creek	305(b) Report	Resource Extraction	Metals	0 6	X	E
5-B	Low	6685	Susquehanna River	305(b) Report	Resource Extraction	Metals	20	X	E
5-B	Low	28343	Newport Creek	305(b) Report	Resource Extraction	pH	4 8	X	E
5-B	Low	28352	Solomon Creek	305(b) Report	Resource Extraction	pH	2 4	X	E
					Resource Extraction	Suspended Solids	2 4	X	E
5-D	Low	28109	Black Creek	305(b) Report	Resource Extraction	Metals	4 3	X	M
5-D	Low	28140	Little Nescopeck Creek	305(b) Report	Resource Extraction	pH	9 1	X	M
5-D	Low	28205	Little Nescopeck Ck (Unt)	305(b) Report	Resource Extraction	Metals	0 2	X	E
					Resource Extraction	Other Inorganics	0 1	X	E
5-E	Low	27529	Catawissa Creek	305(b) Report	Resource Extraction	Metals	27 5	X	M
					Resource Extraction	Metals	14	X	E
5-E	Low	27567	Tomhicken Creek	305(b) Report	Resource Extraction	pH	10 6	X	E
5-E	Low	27571	Sugarloaf Creek	305(b) Report	Resource Extraction	pH	5 5	X	E
STATE WATER PLAN (SWP) SUBBASIN:					**6-LOWER CENTRAL SUSQUEHANNA RIVER**				
6-B	Low	17556	Mahanoy Creek	305(b) Report	Resource Extraction	Metals	52 2	X	E
6-B	Low	17639	Zerbe Run	305(b) Report	Resource Extraction	Metals	5 8	X	E
6-B	Low	17670	Crab Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
6-B	Low	17683	Shenandoah Creek	305(b) Report	Resource Extraction	Metals	5	X	E
6-B	Low	18489	Shamokin Creek	305(b) Report	Resource Extraction	Metals	34 7	X	E
6-B	Low	18647	Carbon Run	305(b) Report	Resource Extraction	Metals	3 7	X	E
6-B	Low	18651	Coal Run	305(b) Report	Resource Extraction	Metals	3	X	E
6-B	Low	18652	Quaker Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
6-B	Low	18655	Locust Creek	305(b) Report	Resource Extraction	Metals	1 6	X	E
6-B	Low	18657	North Branch Shamokin Creek	305(b) Report	Resource Extraction	Metals	4 6	X	E
6-C	Low	16895	Wiconisco Creek	305(b) Report	Resource Extraction	Suspended Solids	3 2	X	E
					Resource Extraction	Metals	13 2	X	E
					Resource Extraction	pH	16 2	X	E

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6-C	Low	17015	Rattling Creek	305(b) Report	Resource Extraction	Metals	2 2	X	E
6-C	Low	17016	West Branch Rattling Creek	305(b) Report	Resource Extraction	Metals	5 2	X	E
6-C	Low	17019	Doc Smith Run	305(b) Report	Resource Extraction	Metals	1 5	X	E
6-C	Low	17023	Shale Run	305(b) Report	Resource Extraction	Metals	0 8	X	E
6-C	Low	17030	East Branch Rattling Creek	305(b) Report	Resource Extraction	Metals	3 8	X	E
6-C	Low	17031	Stone Cabin Run	305(b) Report	Resource Extraction	Metals	1 8	X	E
6-C	Low	17037	Nine O'Clock Run	305(b) Report	Resource Extraction	Metals	0 6	X	E
6-C	Low	17041	Bear Creek	305(b) Report	Resource Extraction	Metals	4 4	X	E
6-C	Low	17208	Pine Creek	305(b) Report	Resource Extraction	Metals	6	X	M
6-C	Low	17236	Deep Creek	305(b) Report	Resource Extraction	Suspended Solids	4 5	X	E
6-C	Low	17259	Hans Yost Creek	305(b) Report	Resource Extraction	pH	1	X	E
6-C	Low	17266	Rausch Creek	305(b) Report	Resource Extraction	Metals	1 7	X	E
6-C	Low	17267	West Branch Rausch Creek	305(b) Report	Resource Extraction	Metals	3 5	X	E
6-C	Low	17268	East Branch Rausch Creek	305(b) Report	Resource Extraction	Metals	1 9	X	E
STATE WATER PLAN (SWP) SUBBASIN:					**7-LOWER SUSQUEHANNA RIVER**				
7-D	Low	9361	Swatara Creek	305(b) Report	Resource Extraction	Metals	21 3	X	M
7-D	Low	10021	Baird Run	305(b) Report	Resource Extraction	Metals	1 4	X	E
7-D	Low	10022	West Branch Fishing Creek	305(b) Report	Resource Extraction	Metals	3 6	X	E
7-D	Low	10074	Lower Rausch Creek	305(b) Report	Resource Extraction	Metals	6 8	X	M
7-D	Low	10075	Lorberry Creek	305(b) Report	Resource Extraction	Suspended Solids	0 7	X	M
					Resource Extraction	Metals	1	X	M
7-D	Low	10076	Stumps Run	305(b) Report	Resource Extraction	Suspended Solids	0 4	X	M
					Resource Extraction	Metals	0 2	X	M
7-D	Low	10078	Middle Creek	305(b) Report	Resource Extraction	Metals	17 5	X	M
7-D	Low	10079	Good Spring Creek	305(b) Report	Resource Extraction	Metals	5 8	X	M
7-D	Low	10080	Poplar Creek	305(b) Report	Resource Extraction	Metals	0 9	X	E
7-D	Low	10083	Coal Run	305(b) Report	Resource Extraction	Metals	1 6	X	M
7-D	Low	10084	Gebhard Run	305(b) Report	Resource Extraction	Metals	1 9	X	M
7-D	Low	10086	Panther Creek	305(b) Report	Resource Extraction	Metals	1 7	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**8-UPPER WEST BRANCH SUSQUEHANNA RIVER**				
8-A	Low	24008	Sinnemahoning Creek	305(b) Report	Resource Extraction	Metals	15 8	X	E
8-A	Low	24508	Bennett Branch Sinnemahoning Creek	305(b) Report	Resource Extraction	Metals	66 6	X	E
8-A	Low	24612	Dents Run	305(b) Report	Resource Extraction	pH	6 5	X	E
8-A	Low	24679	Trout Run (Unt)	305(b) Report	Resource Extraction	pH	1	X	E
					Resource Extraction	Metals	0 2	X	E

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8-A	Low	24685	Spring Run	305(b) Report	Resource Extraction	Metals	6	X	E
					Resource Extraction	Other Inorganics	1 7	X	E
8-A	Low	25222	West Creek	305(b) Report	Resource Extraction	Metals	12	X	E
8-B	Low	2633	Montgomert Creek (Unt)	305(b) Report	Resource Extraction	Metals	1 3	X	E
8-B	Low	18668	West Branch Susquehanna River	305(b) Report	Resource Extraction	Metals	79 7	X	E
8-B	Low	26119	Laurel Run	305(b) Report	Resource Extraction	Metals	1	X	M
8-B	Low	26613	Woods Run	305(b) Report	Resource Extraction	Metals	3	X	E
8-B	Low	26623	Montgomery Creek	305(b) Report	Resource Extraction	Metals	2 6	X	E
8-B	Low	26626	Montgomery Creek (Unt)	305(b) Report	Resource Extraction	Metals	1 7	X	E
					Resource Extraction	pH	0 5	X	E
8-B	Low	26634	North Branch Montgomery Creek (Unt)	305(b) Report	Resource Extraction	pH	0 9	X	E
8-B	Low	26639	Tinker Run (Unt)	305(b) Report	Resource Extraction	pH	0 7	X	E
8-B	Low	26641	Montgomery Creek (Unt)	305(b) Report	Resource Extraction	pH	1 5	X	E
8-B	Low	26652	Hartshorn Run	305(b) Report	Resource Extraction	Metals	1	X	E
					Resource Extraction	Other Inorganics	1	X	E
8-B	Low	26652	Hartshorn Run	305(b) Report	Resource Extraction	pH	1	X	E
8-B	Low	26657	Anderson Creek	305(b) Report	Resource Extraction	Metals	10 3	X	E
8-B	Low	26659	Kratzer Run	305(b) Report	Resource Extraction	Metals	5 1	X	E
8-B	Low	26678	Irvin Branch	305(b) Report	Resource Extraction	Metals	1 5	X	M
8-B	Low	26687	Little Anderson Creek	305(b) Report	Resource Extraction	Metals	5 7	X	E
8-B	Low	26814	Wilson Run	305(b) Report	Resource Extraction	Metals	1	X	M
8-B	Low	26816	Wilson Run (Unt)	305(b) Report	Resource Extraction	pH	1 8	X	E
8-B	Low	26821	Wilson Run (Unt)	305(b) Report	Resource Extraction	Metals	0 8	X	E
8-B	Low	26830	North Camp Run	305(b) Report	Resource Extraction	Other Inorganics	1 4	X	E
					Resource Extraction	Metals	1 4	X	E
8-B	Low	26872	Rock Run	305(b) Report	Resource Extraction	Metals	3	X	E
8-B	Low	27032	Bear Run	305(b) Report	Resource Extraction	Metals	2 9	X	E
8-B	Low	27038	South Branch Bear Run	305(b) Report	Resource Extraction	Metals	2	X	E
					Resource Extraction	pH	3 3	X	E
8-C	Low	25924	Alder Run	305(b) Report	Resource Extraction	Metals	10 7	X	E
8-C	Low	25948	Sandy Creek	305(b) Report	Resource Extraction	Metals	2 8	X	E
					Resource Extraction	Other Inorganics	1 4	X	E
8-C	Low	25971	Big Run	305(b) Report	Resource Extraction	pH	1	X	E
8-C	Low	25978	Deer Creek	305(b) Report	Resource Extraction	Metals	5	X	E
8-C	Low	26030	Surveyor Run	305(b) Report	Resource Extraction	Metals	4	X	E
8-C	Low	26031	Little Surveyor Run	305(b) Report	Resource Extraction	Metals	2	X	E
8-C	Low	26041	Trout Run	305(b) Report	Resource Extraction	pH	5	X	E
8-C	Low	26051	Taylor Springs Run	305(b) Report	Resource Extraction	Metals	0 4	X	E
8-C	Low	26052	Pine Run	305(b) Report	Resource Extraction	pH	2 2	X	E
8-C	Low	26082	Lick Run	305(b) Report	Resource Extraction	Metals	3 7	X	E
8-C	Low	26088	Fork Run	305(b) Report	Resource Extraction	Metals	3 8	X	E
8-C	Low	26107	Clearfield Creek	305(b) Report	Resource Extraction	Metals	71 9	X	E
8-C	Low	26184	Sanbourn Run	305(b) Report	Resource Extraction	Metals	2 2	X	E
					Resource Extraction	Other Inorganics	1 1	X	E
8-C	Low	26216	North Branch Upper Morgan Run	305(b) Report	Resource Extraction	Metals	2 7	X	E

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Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
8-C	Low	26246	Little Muddy Run	305(b) Report	Resource Extraction	pH	4 5	X	E
8-C	Low	26373	Dutch Run	305(b) Report	Resource Extraction	Metals	1 3	X	M
8-C	Low	26489	Brubaker Run	305(b) Report	Resource Extraction	Other Inorganics	0 8	X	E
					Resource Extraction	Metals	2	X	E
8-D	Low	25529	Birch Island Run	305(b) Report	Resource Extraction	Metals	6 2	X	E
8-D	Low	25530	Little Birch Island Run	305(b) Report	Resource Extraction	Metals	4 3	X	E
8-D	Low	25544	Amos Branch	305(b) Report	Resource Extraction	Metals	1 6	X	E
8-D	Low	25573	Sterling Run	305(b) Report	Resource Extraction	Metals	9 7	X	E
8-D	Low	25626	Mosquito Creek	305(b) Report	Resource Extraction	Metals	6	X	E
8-D	Low	25628	Curleys Run	305(b) Report	Resource Extraction	Metals	1 2	X	E
8-D	Low	25635	Grimes Run	305(b) Report	Resource Extraction	Metals	2	X	E
					Resource Extraction	Metals	1	X	E
8-D	Low	25695	Moshannon Creek	305(b) Report	Resource Extraction	Metals	26 2	X	E
8-D	Low	25703	Black Moshannon Creek	305(b) Report	Resource Extraction	Metals	1	X	E
8-D	Low	25831	Cold Stream	305(b) Report	Resource Extraction	Metals	1	X	E
8-D	Low	25853	Laurel Run	305(b) Report	Resource Extraction	Metals	5 4	X	E
8-D	Low	25883	Goss Run	305(b) Report	Resource Extraction	pH	0 5	X	M
STATE WATER PLAN (SWP) SUBBASIN:					**9-CENTRAL WEST BRANCH SUSQUEHANNA RIVER**				
9-A	Low	21166	Pine Creek	305(b) Report	Resource Extraction	Metals	4	X	M
9-A	Low	21249	Otter Run	305(b) Report	Resource Extraction	Metals	3 8	X	E
9-A	Low	21262	Left Fork Otter Run	305(b) Report	Resource Extraction	Metals	1 5	X	E
9-A	Low	21263	Right Fork Otter Run	305(b) Report	Resource Extraction	Metals	0 4	X	E
9-A	Low	21681	Babb Creek	305(b) Report	Resource Extraction	Metals	23	X	M
9-A	Low	21730	Mason Creek	305(b) Report	Resource Extraction	Metals	2 3	X	E
9-B	Low	18668	West Branch Susquehanna River	305(b) Report	Resource Extraction	Metals	50 6	X	E
9-B	Low	23284	Lick Run	305(b) Report	Resource Extraction	pH	3 7	X	E
9-B	Low	23332	Tangascootack Creek	305(b) Report	Resource Extraction	Metals	8 4	X	E
9-B	Low	23620	Drury Run (Basin)	305(b) Report	Resource Extraction	pH	7 3	X	M
9-B	Low	23621	Stony Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
9-B	Low	23625	Woodley Draft Run	305(b) Report	Resource Extraction	Metals	1 7	X	E
9-B	Low	23626	Sandy Run	305(b) Report	Resource Extraction	Metals	1	X	E
9-B	Low	23661	Kettle Creek	305(b) Report	Resource Extraction	Metals	3	X	E
9-B	Low	23663	Two Mile Run	305(b) Report	Resource Extraction	Metals	1 9	X	E
9-B	Low	23670	Middle Branch Two Mile Run	305(b) Report	Resource Extraction	Metals	2 1	X	E
9-B	Low	23966	Cooks Run (Basin)	305(b) Report	Resource Extraction	Metals	6 8	X	E
9-B	Low	23968	Cooks Run	305(b) Report	Resource Extraction	Metals	3 3	X	E
9-B	Low	23969	Crowley Hollow	305(b) Report	Resource Extraction	Metals	3 1	X	E
9-B	Low	23992	Camp Run	305(b) Report	Resource Extraction	Metals	2	X	E
9-B	Low	23994	Rock Run	305(b) Report	Resource Extraction	Metals	1 2	X	E
9-C	Low	22596	Beech Creek (Basin)	305(b) Report	Resource Extraction	Metals	28	X	E

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TABLE 1
1996 303(d) Sub-List
Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
9-C	Low	22662	Middle Branch Big Run	305(b) Report	Resource Extraction	Metals	5 5	X	E
					Resource Extraction	pH	0 5	X	E
9-C	Low	22670	East Branch Big Run	305(b) Report	Resource Extraction	pH	2 3	X	E
					Resource Extraction	Metals	2 4	X	E
9-C	Low	22701	Logway Run	305(b) Report	Resource Extraction	Metals	0 8	X	E
9-C	Low	22781	North Fork Beech Creek	305(b) Report	Resource Extraction	Metals	5 9	X	E
STATE WATER PLAN (SWP) SUBBASIN:						**10-LOWER WEST BRANCH SUSQUEHANNA RIVER**			
10-A	Low	20768	Red Run	305(b) Report	Resource Extraction	Metals	3 9	X	E
10-B	Low	19804	Loyalsock Creek	305(b) Report	Resource Extraction	Metals	13 4	X	E
10-D	Low	18668	West Branch Susquehanna River	305(b) Report	Resource Extraction	Metals	3	X	M
STATE WATER PLAN (SWP) SUBBASIN:						**11-UPPER JUNIATA RIVERx**			
11-A	Low	15978	Bear Loop Run	305(b) Report	Resource Extraction	Other Inorganics	0 4	X	E
					Resource Extraction	Metals	0 8	X	E
11-A	Low	16317	Beaver Dam Branch	305(b) Report	Resource Extraction	Metals	2 3	X	M
11-A	Low	16389	Sugar Run	305(b) Report	Resource Extraction	Metals	6 3	X	E
11-A	Low	16416	Burgoon Run	305(b) Report	Resource Extraction	Metals	3	X	E
11-A	Low	16423	Kittanning Run	305(b) Report	Resource Extraction	Metals	4 2	X	E
11-A	Low	16428	Glenwhite Run	305(b) Report	Resource Extraction	Metals	3 2	X	E
11-D	Low	13717	Shoup Run	305(b) Report	Resource Extraction	Metals	3	X	E
					Resource Extraction	pH	4 7	X	E
11-D	Low	13728	Miller Run	305(b) Report	Resource Extraction	pH	1 4	X	E
	Low				Resource Extraction	Metals	1	X	E
11-D	Low	13737	Hartman Run	305(b) Report	Resource Extraction	pH	0 6	X	E
					Resource Extraction	Metals	0 5	X	E
11-D	Low	13791	Six Mile Run	305(b) Report	Resource Extraction	pH	3 5	X	E
	Low				Resource Extraction	Metals	2	X	E
11-D	Low	14030	Sandy Run	305(b) Report	Resource Extraction	pH	2 9	X	E
					Resource Extraction	Metals	2 9	X	E
11-D	Low	14031	Longs Run	305(b) Report	Resource Extraction	pH	2 5	X	E
					Resource Extraction	Metals	2 4	X	E
11-D	Low	14044	Kimber Run	305(b) Report	Resource Extraction	pH	2 7	X	E

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SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:						**13-POTOMAC RIVER**			
13-A	Low	61931	Gladdens Run	305(b) Report	Resource Extraction	Metals	11 8	X	E
STATE WATER PLAN (SWP) SUBBASIN:						**16-UPPER ALLEGHENY RIVER**			
16-B	Low	56711	Kinzua Creek (Unt)	305(b) Report	Resource Extraction	Other	2	X	E
16-C	Low	56990	West Branch Tunungwant Creek	305(b) Report	Resource Extraction	Other	0 2	X	E
16-C	Low	57031	East Branch Tunungwant Creek	305(b) Report	Resource Extraction	Other	0 1	X	E
16-C	Low	57105	East Branch Tunungwant Creek (Unt)	305(b) Report	Resource Extraction	Other	0 9	X	E
16-C	Low	57663	Cole Creek	305(b) Report	Resource Extraction	Other	1 7	X	E
16-E	Low	54745	Pithole Creek	305(b) Report	Resource Extraction	Other	7 7	X	E
16-E	Low	55252	West Branch Blue Jay Creek	305(b) Report	Resource Extraction	Metals	7	X	E
16-F	Low	54960	Walley Run	305(b) Report	Resource Extraction	Metals	1 9	X	E
16-F	Low	54963	Walley Run (Unt)	305(b) Report	Resource Extraction	Metals	0 9	X	E
16-G	Low	51144	Richey Run	305(b) Report	Resource Extraction	Salinity/TDS/Chlorides	3 6	X	E
16-G	Low	51196	Little Scrubgrass Creek	305(b) Report	Resource Extraction	Metals	3 8	X	E
					Resource Extraction	Other Inorganics	3 7	X	E
16-G	Low	51197	Lockard Run	305(b) Report	Resource Extraction	Metals	2 3	X	E
16-G	Low	51202	South Fork Little Scrubgrass Creek	305(b) Report	Resource Extraction	Metals	3 6	X	E
16-G	Low	51243	Scrubgrass Creek	305(b) Report	Resource Extraction	Other Inorganics	4 2	X	E
					Resource Extraction	Metals	6 6	X	E
STATE WATER PLAN (SWP) SUBBASIN:						**17-CENTRAL ALLEGHENY RIVERx**			
17-A	Low	50229	Little Toby Creek	305(b) Report	Resource Extraction	Metals	4	X	E
					Resource Extraction	Suspended Solids	3	X	E
					Resource Extraction	pH	4	X	E
17-A	Low	50285	Curry Run	305(b) Report	Resource Extraction	Metals	1 8	X	E
17-A	Low	50364	Johnson Run	305(b) Report	Resource Extraction	Other Inorganics	2	X	E
					Resource Extraction	Metals	1 9	X	E
17-A	Low	50459	Elk Creek (North Branch)	305(b) Report	Resource Extraction	Metals	0 8	X	E
17-A	Low	50459	Elk Creek	305(b) Report	Resource Extraction	Metals	16 3	X	E
17-A	Low	50473	Daguscahonda Run	305(b) Report	Resource Extraction	Metals	6	X	E

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Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
17-A	Low	50513	Iron Run	305(b) Report	Resource Extraction	Metals	1	X	E
17-A	Low	50518	Elk Creek-South Br (Unt)	305(b) Report	Resource Extraction	Metals	3 6	X	E
17-B	Low	49224	Clarion River	305(b) Report	Resource Extraction	Metals	4 3	X	E
					Resource Extraction	Metals	4 3	X	M
17-B	Low	49231	Turkey Run	305(b) Report	Resource Extraction	Metals	7 1	X	E
17-B	Low	49269	Licking Creek	305(b) Report	Resource Extraction	Metals	4	X	E
					Resource Extraction	Other Inorganics	1 5	X	E
17-B	Low	49269	Licking Creek	305(b) Report	Resource Extraction	Metals	6 3	X	M
17-B	Low	49270	Cherry Run	305(b) Report	Resource Extraction	Metals	3 7	X	E
					Resource Extraction	Other Inorganics	3 7	X	E
17-B	Low	49305	Anderson Run	305(b) Report	Resource Extraction	Metals	1	X	E
					Resource Extraction	Other Inorganics	1	X	E
17-B	Low	49310	Little Licking Creek	305(b) Report	Resource Extraction	Other Inorganics	1 4	X	E
					Resource Extraction	Metals	1 5	X	E
17-B	Low	49407	Deer Creek	305(b) Report	Resource Extraction	Metals	9 4	X	E
					Resource Extraction	Metals	10 6	X	E
17-B	Low	49494	Piney Creek	305(b) Report	Resource Extraction	Other Inorganics	4	X	E
17-B	Low	49502	Brush Run	305(b) Report	Resource Extraction	Other Inorganics	2 6	X	E
					Resource Extraction	pH	2 5	X	E
					Resource Extraction	Metals	2 5	X	E
17-B	Low	49508	Brush Run (Unt)	305(b) Report	Resource Extraction	pH	1 1	X	E
17-B	Low	49624	Gathers Run	305(b) Report	Resource Extraction	Metals	1	X	E
					Resource Extraction	Other Inorganics	0 8	X	E
17-B	Low	49530	Reeds Run	305(b) Report	Resource Extraction	Metals	3 4	X	E
17-B	Low	49706	Mill Creek	305(b) Report	Resource Extraction	Metals	6 1	X	E
					Resource Extraction	Cause Unknown	3 8	X	E
17-B	Low	49707	Whites Run	305(b) Report	Resource Extraction	Metals	2	X	E
17-B	Low	49719	Douglas Run	305(b) Report	Resource Extraction	Metals	4 5	X	E
17-B	Low	49720	Jones Run	305(b) Report	Resource Extraction	Metals	2	X	E
					Resource Extraction	pH	1 5	X	E
17-B	Low	49727	Little Mill Creek	305(b) Report	Resource Extraction	Metals	20	X	E
17-B	Low	49789	Parks Run	305(b) Report	Resource Extraction	pH	1	X	E
17-B	Low	49798	Mogourvey Run	305(b) Report	Resource Extraction	Other Inorganics	0 7	X	E
					Resource Extraction	pH	0 6	X	E
					Resource Extraction	Metals	0 6	X	E
17-C	Low	48084	Redbank Creek	305(b) Report	Resource Extraction	Other Inorganics	0 6	X	E
					Resource Extraction	Metals	1 4	X	E
17-C	Low	48138	Leatherwood Creek	305(b) Report	Resource Extraction	Other Inorganics	2 9	X	E
	Low				Resource Extraction	Metals	3	X	E
17-C	Low	48165	West Fork Leatherwood Creek	305(b) Report	Resource Extraction	Other Inorganics	1 5	X	E
					Resource Extraction	Metals	1 5	X	E
17-C	Low	48171	West Fork (Unt) (02)	305(b) Report	Resource Extraction	Metals	0 6	X	E
17-C	Low	48172	West Fork (Unt)	305(b) Report	Resource Extraction	Metals	0 7	X	E
17-C	Low	48199	Long Run	305(b) Report	Resource Extraction	Other Inorganics	1 6	X	E
					Resource Extraction	Metals	1 5	X	E

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1996 303(d) Sub-List
Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
17-C	Low	48208	Leisure Run	305(b) Report	Resource Extraction	Other Inorganics	2 6	X	E
					Resource Extraction	Metals	2 5	X	E
17-C	Low	48226	Town Run	305(b) Report	Resource Extraction	Metals	5 5	X	E
17-C	Low	48264	Pine Creek	305(b) Report	Resource Extraction	Metals	3 2	X	E
17-C	Low	48289	Little Sandy Creek	305(b) Report	Resource Extraction	pH	2	X	E
17-C	Low	48396	Clutch Run	305(b) Report	Resource Extraction	Metals	3 6	X	E
17-C	Low	48397	Hadden Run	305(b) Report	Resource Extraction	Metals	1 9	X	E
17-C	Low	48447	Beaver Run	305(b) Report	Resource Extraction	Other Inorganics	3	X	E
					Resource Extraction	Metals	3	X	E
17-C	Low	48486	Welch Run	305(b) Report	Resource Extraction	pH	1 2	X	E
					Resource Extraction	Metals	1 2	X	E
17-C	Low	48734	Beaverdam Run	305(b) Report	Resource Extraction	Suspended Solids	3 2	X	E
17-C	Low	48745	Kyle Run (Unt)	305(b) Report	Resource Extraction	Metals	1 4	X	E
17-C	Low	48746	Kyle Run	305(b) Report	Resource Extraction	Metals	0 4	X	E
17-C	Low	48803	Laborde Branch	305(b) Report	Resource Extraction	Metals	3 8	X	M
17-C	Low	48807	Luthersburg Branch	305(b) Report	Resource Extraction	Other Inorganics	1 3	X	E
					Resource Extraction	Metals	2 5	X	E
17-C	Low	48834	Narrows Creek	305(b) Report	Resource Extraction	Metals	5 5	X	E
17-C	Low	49118	North Branch Bear Creek	305(b) Report	Resource Extraction	Metals	2	X	E
					Resource Extraction	Other Inorganics	4	X	E
17-C	Low	49141	South Branch Bear Creek	305(b) Report	Resource Extraction	Metals	2 4	X	E
17-C	Low	51125	Fowler Run	305(b) Report	Resource Extraction	Metals	0 7	X	E
					Resource Extraction	pH	0 7	X	E
					Resource Extraction	Other Inorganics	0 8	X	E
17-D	Low	47327	Pine Run	305(b) Report	Resource Extraction	Other Inorganics	0 5	X	E
					Resource Extraction	Metals	4 8	X	E
					Resource Extraction	Metals	2 4	X	M
17-D	Low	47352	Nye Branch	305(b) Report	Resource Extraction	Metals	3 7	X	E
17-D	Low	47377	Caylor Run	305(b) Report	Resource Extraction	Metals	0.9	X	M
17-D	Low	47438	Foundry Run	305(b) Report	Resource Extraction	pH	1 1	X	E
17-D	Low	47591	Brewer Run	305(b) Report	Resource Extraction	Metals	1 7	X	E
17-D	Low	47595	Beech Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
17-D	Low	47600	North Branch Little Mahoning Creek	305(b) Report	Resource Extraction	Metals	3 7	X	E
17-D	Low	47658	East Run	305(b) Report	Resource Extraction	Metals	3 3	X	E
17-D	Low	47748	Nicely Run	305(b) Report	Resource Extraction	Metals	1 4	X	E
17-D	Low	47822	Stump Creek	305(b) Report	Resource Extraction	Metals	3 6	X	E
					Resource Extraction	Suspended Solids	0.7	X	E
					Resource Extraction	Other Inorganics	0 7	X	E
17-D	Low	47974	East Branch Mahoning Creek	305(b) Report	Resource Extraction	Metals	8	X	M
17-D	Low	48023	Laurel Branch Run	305(b) Report	Resource Extraction	pH	1 4	X	E
					Resource Extraction	Metals	1 4	X	E
17-E	Low	46218	Crooked Creek	305(b) Report	Resource Extraction	Suspended Solids	6 2	X	E
					Resource Extraction	Metals	1 6	X	E
					Resource Extraction	pH	1 1	X	E
17-E	Low	46221	Campbell Run	305(b) Report	Resource Extraction	Suspended Solids	1 2	X	E

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17-E	Low	46245	Elbow Run	305(b) Report	Resource Extraction	Suspended Solids	0 8	X	E
17-E	Low	46263	Coal Bank Run	305(b) Report	Resource Extraction	pH	0 5	X	E
17-E	Low	46295	North Branch Cherry Run	305(b) Report	Resource Extraction	Suspended Solids	0 8	X	E
17-E	Low	46390	Long Run	305(b) Report	Resource Extraction	Suspended Solids	0 5	X	E
17-E	Low	46402	Sugar Run	305(b) Report	Resource Extraction	Suspended Solids	2 4	X	E
					Resource Extraction	pH	0 6	X	E
17-E	Low	46415	Craig Run	305(b) Report	Resource Extraction	Other Inorganics	1	X	E
17-E	Low	46524	North Branch Plum Creek	305(b) Report	Resource Extraction	pH	1 1	X	E
17-E	Low	46577	South Branch Plum Creek	305(b) Report	Resource Extraction	Suspended Solids	0 5	X	E
17-E	Low	46785	Mckee Run	305(b) Report	Resource Extraction	Metals	1 5	X	E
					Resource Extraction	Suspended Solids	0 6	X	E
17-E	Low	47018	Huskins Run	305(b) Report	Resource Extraction	Other Inorganics	2 6	X	E
17-E	Low	47105	Limestone Run	305(b) Report	Resource Extraction	Other Inorganics	5 2	X	E
17-E	Low	47197	South Branch South Fork Pine Creek	305(b) Report	Resource Extraction	Metals	2 5	X	E
STATE WATER PLAN (SWP) SUBBASIN:					**18-LOWER ALLEGHENY RIVERx**				
18-A	Low	42122	Allegheny River	305(b) Report	Resource Extraction	Metals	1 5	X	E
18-A	Low	42246	Plum Creek	305(b) Report	Resource Extraction	Metals	3 1	X	E
18-A	Low	42256	Little Plum Creek	305(b) Report	Resource Extraction	Metals	4	X	E
18-A	Low	42269	Little Deer Creek	305(b) Report	Resource Extraction	Metals	5 1	X	E
18-B	Low	42816	Kiskiminetas River	305(b) Report	Resource Extraction	Metals	13 5	X	E
					Resource Extraction	Suspended Solids	13 5	X	E
18-B	Low	42931	Beaver Run	305(b) Report	Resource Extraction	Suspended Solids	2 5	X	E
					Resource Extraction	Metals	2 5	X	E
18-B	Low	42977	Thorn Run	305(b) Report	Resource Extraction	Metals	0 7	X	E
18-B	Low	42991	Unt Thorn Run	305(b) Report	Resource Extraction	Metals	0 9	X	E
18-C	Low	43256	Loyalhanna Creek	305(b) Report	Resource Extraction	Suspended Solids	11 5	X	E
					Resource Extraction	Metals	11 5	X	E
18-C	Low	43267	Getty Run	305(b) Report	Resource Extraction	Metals	1	X	E
18-C	Low	43397	Mc Cune Run	305(b) Report	Resource Extraction	Metals	1 4	X	E
18-C	Low	43417	Union Run	305(b) Report	Resource Extraction	Metals	3 2	X	E
18-C	Low	43448	Saxman Run	305(b) Report	Resource Extraction	Metals	4.7	X	E
18-C	Low	43457	Monastery Run	305(b) Report	Resource Extraction	Metals	0 8	X	E
18-C	Low	43495	Indian Camp Run	305(b) Report	Resource Extraction	Suspended Solids	0 6	X	E
18-C	Low	43542	Fourmile Run	305(b) Report	Resource Extraction	Other Inorganics	1	X	E
					Resource Extraction	Metals	1	X	E
18-C	Low	43832	Conemaugh River	305(b) Report	Resource Extraction	Metals	12 5	X	M
					Resource Extraction	Metals	114 5	X	E
					Resource Extraction	Suspended Solids	114	X	E
18-D	Low	43902	Roaring Run	305(b) Report	Resource Extraction	Metals	2 4	X	E
18-D	Low	43950	Reeds Run	305(b) Report	Resource Extraction	Metals	3 4	X	E

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18-D	Low	44073	Two Lick Creek	305(b) Report	Resource Extraction	Metals	5 7	X	M
18-D	Low	44112	Tearing Run	305(b) Report	Resource Extraction	Metals	2	X	E
18-D	Low	44118	Yellow Creek	305(b) Report	Resource Extraction	Metals	3	X	E
18-D	Low	44125	Ferrier Run	305(b) Report	Resource Extraction	Metals	1 4	X	E
18-D	Low	44276	Penn Run	305(b) Report	Resource Extraction	Metals	2 4	X	E
					Resource Extraction	Other Inorganics	1 4	X	E
18-D	Low	44523	Elk Creek	305(b) Report	Resource Extraction	Metals	4 6	X	E
18-D	Low	44523	Elk Creek	305(b) Report	Resource Extraction	Other Inorganics	2 4	X	E
18-D	Low	44618	South Branch Blacklick Creek	305(b) Report	Resource Extraction	Metals	1 5	X	M
					Resource Extraction	Metals	3	X	E
18-D	Low	44728	Harbridge Run	305(b) Report	Resource Extraction	Suspended Solids	0 3	X	E
18-D	Low	44799	Freeman Run	305(b) Report	Resource Extraction	Metals	0 9	X	E
18-D	Low	44924	Richards Run	305(b) Report	Resource Extraction	Metals	0 5	X	M
18-E	Low	45084	Stony Creek	305(b) Report	Resource Extraction	Metals	22 7	X	M
	Low				Resource Extraction	pH	2 1	X	M
					Resource Extraction	Metals	2 2	X	M
18-E	Low	45101	Bens Creek	305(b) Report	Resource Extraction	Metals	1 3	X	E
18-E	Low	45132	South Fork Bens Creek	305(b) Report	Resource Extraction	Metals	4 7	X	E
18-E	Low	45223	Paint Creek	305(b) Report	Resource Extraction	Metals	0 7	X	M
18-E	Low	45259	Unt Paint Creek	305(b) Report	Resource Extraction	Metals	0 5	X	M
18-E	Low	45260	Babcock Creek (Basin)	305(b) Report	Resource Extraction	Metals	3 5	X	E
18-E	Low	45270	Shade Creek	305(b) Report	Resource Extraction	Metals	2 7	X	M
					Resource Extraction	Metals	7 7	X	E
18-E	Low	45330	Dark Shade Creek	305(b) Report	Resource Extraction	Metals	2 7	X	M
18-E	Low	45354	Unt Dark Shade Creek	305(b) Report	Resource Extraction	Metals	0 6	X	M
18-E	Low	45371	Quemahoning Creek	305(b) Report	Resource Extraction	Metals	1 9	X	M
18-E	Low	45603	Unt Stoney Creek	305(b) Report	Resource Extraction	Metals	2 1	X	M
18-E	Low	45604	Fallen Timber Run	305(b) Report	Resource Extraction	Metals	1	X	M
18-E	Low	45621	Oven Run	305(b) Report	Resource Extraction	Metals	1 8	X	M
18-E	Low	45710	Lamberts Run	305(b) Report	Resource Extraction	Metals	3 1	X	M
18-E	Low	45742	Boone Run	305(b) Report	Resource Extraction	Other Inorganics	0 5	X	E
18-E	Low	45742	Boone Run	305(b) Report	Resource Extraction	Metals	0 6	X	M
					Resource Extraction	Metals	1	X	E
18-E	Low	45767	Clear Run	305(b) Report	Resource Extraction	Metals	1 3	X	M
18-E	Low	45815	Little Conemaugh River	305(b) Report	Resource Extraction	Metals	0 6	X	M
					Resource Extraction	Metals	1 4	X	E
18-E	Low	45901	Otto Run	305(b) Report	Resource Extraction	Metals	1 5	X	M
18-E	Low	45902	Sulphur Creek	305(b) Report	Resource Extraction	Metals	1	X	M
18-E	Low	45917	Beaverdam Run	305(b) Report	Resource Extraction	Metals	2	X	E
18-E	Low	46070	Spring Run	305(b) Report	Resource Extraction	Metals	2 1	X	E
18-E	Low	46098	Bens Creek	305(b) Report	Resource Extraction	Metals	1	X	E
18-F	Low	42665	Buffalo Creek (Unt)	305(b) Report	Resource Extraction	Metals	0 2	X	M

* See Narrative for Description of Priority for TMDL Development
@ Miles Degraded are Based on the Length of the Study Segment
NPS - Indicates Nonpoint Source Impact

TABLE 1
1996 303(d) Sub-List
Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:							**19-MONONGAHELA RIVER**		
19-A	Low	37189	Streets Run	305(b) Report	Resource Extraction	Metals	0 7	X	E
19-A	Low	37204	Turtle Creek	305(b) Report	Resource Extraction	Metals	2	X	M
					Resource Extraction	Metals	14 5	X	E
19-A	Low	37246	Brush Creek	305(b) Report	Resource Extraction	Metals	0 5	X	M
19-A	Low	37449	Thompson Run	305(b) Report	Resource Extraction	Metals	3	X	E
19-B	Low	40285	Tenmile Creek	305(b) Report	Resource Extraction	pH	3 3	X	E
					Resource Extraction	Other Inorganics	2 4	X	E
19-B	Low	40293	South Fork Tenmile Creek	305(b) Report	Resource Extraction	Metals	2	X	E
19-B	Low	40966	Rush Run	305(b) Report	Resource Extraction	Other Inorganics	0 5	X	E
19-B	Low	40975	Pumpkin Run	305(b) Report	Resource Extraction	Metals	1 8	X	E
19-C	Low	39422	Unt Monongahela River	305(b) Report	Resource Extraction	Metals	0 5	X	M
19-C	Low	39425	Peters Creek	305(b) Report	Resource Extraction	Metals	22 3	X	M
19-C	Low	39537	Fallen Timber Run	305(b) Report	Resource Extraction	Metals	2 7	X	E
					Resource Extraction	Metals	1	X	M
19-C	Low	39637	Pigeon Creek	305(b) Report	Resource Extraction	Metals	3 1	X	E
					Resource Extraction	Other Inorganics	3 1	X	E
19-C	Low	39679	North Branch Pigeon Creek	305(b) Report	Resource Extraction	Metals	3 6	X	E
19-C	Low	39688	Pike Run	305(b) Report	Resource Extraction	Salinity/TDS/Chlorides	1	X	E
19-C	Low	39931	Redstone Creek	305(b) Report	Resource Extraction	Metals	10 2	X	E
					Resource Extraction	Suspended Solids	10 2	X	E
19-C	Low	40140	Dunlap Creek	305(b) Report	Resource Extraction	Metals	5	X	E
19-C	Low	40212	Unt Saltlick Run	305(b) Report	Resource Extraction	Metals	0 2	X	M
19-C	Low	40246	Rush Run	305(b) Report	Resource Extraction	Metals	1 6	X	E
	Low				Resource Extraction	Other Inorganics	0 8	X	E
19-C	Low	41088	Wallace Run	305(b) Report	Resource Extraction	Metals	0 8	X	E
					Resource Extraction	Other Inorganics	0 5	X	E
19-D	Low	37460	Long Run	305(b) Report	Resource Extraction	Metals	4 6	X	E
19-D	Low	37556	Sewickley Creek	305(b) Report	Resource Extraction	Metals	23 7	X	M
					Resource Extraction	Metals	14 3	X	E
19-D	Low	37557	Little Sewickley Creek	305(b) Report	Resource Extraction	Metals	1	X	E
19-D	Low	37682	Buffalo Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
19-D	Low	37702	Jacks Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
					Resource Extraction	Salinity/TDS/Chlorides	1 3	X	E
19-D	Low	37779	Welty Run	305(b) Report	Resource Extraction	pH	7 8	X	E
19-D	Low	37927	Stauffer Run	305(b) Report	Resource Extraction	Metals	1 4	X	M
19-D	Low	38171	Ferguson Run	305(b) Report	Resource Extraction	Other Inorganics	0 6	X	E
					Resource Extraction	Metals	1	X	E
19-D	Low	38205	Glade Run	305(b) Report	Resource Extraction	Metals	3 4	X	E

* See Narrative for Description of Priority for TMDL Development
@ Miles Degraded are Based on the Length of the Study Segment
NPS - Indicates Nonpoint Source Impact

TABLE 1
1996 303(d) Sub-List
Stream Segments Affected by Abandoned Mine Drainage

SWP	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
19-E	Low	38235	Indian Creek	305(b) Report	Resource Extraction	Suspended Solids	13 4	X	E
					Resource Extraction	Metals	2 9	X	E
19-E	Low	38241	Rasler Run	305(b) Report	Resource Extraction	Other Inorganics	1 2	X	E
					Resource Extraction	Metals	3 5	X	E
19-E	Low	38284	Buck Run	305(b) Report	Resource Extraction	Metals	1 7	X	E
19-E	Low	38307	Newmyer Run	305(b) Report	Resource Extraction	Metals	0 5	X	M
19-E	Low	38488	Meadow Run	305(b) Report	Resource Extraction	Metals	5 6	X	E
19-E	Low	38491	Laurel Run	305(b) Report	Resource Extraction	Other Inorganics	0 7	X	E
					Resource Extraction	Metals	2	X	E
19-F	Low	38579	Casselman River	305(b) Report	Resource Extraction	Metals	26	X	E
19-F	Low	38778	Whites Creek	305(b) Report	Resource Extraction	Metals	2	X	E
					Resource Extraction	Other Inorganics	2	X	E
19-F	Low	38817	Cucumber Run	305(b) Report	Resource Extraction	Metals	1 5	X	E
19-F	Low	38944	Coxes Creek	305(b) Report	Resource Extraction	Suspended Solids	1	X	M
19-F	Low	38947	Wilson Creek	305(b) Report	Resource Extraction	Metals	1	X	E
19-F	Low	38967	Laurel Run	305(b) Report	Resource Extraction	Metals	0 8	X	E
19-F	Low	39012	East Branch Coxes Creek	305(b) Report	Resource Extraction	Metals	1	X	E
19-F	Low	39055	Shafer Run	305(b) Report	Resource Extraction	Metals	2	X	E
19-F	Low	39058	Lick Run	305(b) Report	Resource Extraction	Metals	1 8	X	E
19-F	Low	39064	Piney Run	305(b) Report	Resource Extraction	Metals	2 1	X	E
19-F	Low	39068	Bigby Creek	305(b) Report	Resource Extraction	Other Inorganics	0 7	X	E
					Resource Extraction	Metals	0 7	X	E
19-F	Low	39075	Buffalo Creek	305(b) Report	Resource Extraction	Metals	7 5	X	E
19-F	Low	39185	Elklick Creek	305(b) Report	Resource Extraction	Metals	1 8	X	E
					Resource Extraction	Other Inorganics	0 9	X	E
19-F	Low	39283	Miller Run	305(b) Report	Resource Extraction	Metals	1 3	X	E
19-G	Low	41178	Whiteley Creek	305(b) Report	Resource Extraction	Metals	9	X	E
19-G	Low	41314	Cats Run	305(b) Report	Resource Extraction	pH	1.5	X	M
19-G	Low	41360	York Run	305(b) Report	Resource Extraction	Metals	1 3	X	M
19-G	Low	41381	Unt Georges Creek	305(b) Report	Resource Extraction	Metals	1 1	X	M
19-G	Low	41384	Mountain Creek	305(b) Report	Resource Extraction	Metals	4 1	X	E
19-G	Low	41420	Dunkard Creek	305(b) Report	Resource Extraction	Metals	8 5	X	M
					Resource Extraction	Other	6 5	X	E
19-G	Low	41485	Dooley Run	305(b) Report	Resource Extraction	Metals	2 2	X	E
19-G	Low	41913	Big Sandy Creek	305(b) Report	Resource Extraction	Metals	3 3	X	E
					Resource Extraction	Suspended Solids	10 4	X	E

* See Narrative for Description of Priority for TMDL Development
@ Miles Degraded are Based on the Length of the Study Segment
NPS - Indicates Nonpoint Source Impact

TABLE 1
1996 303(d) Sub-List
Stream Segments Affected by Abandoned Mine Drainage

	*Priority	DEP Stream Code	Stream Name	Data Source	EPA 305(b) Source Code	EPA 305(b) Cause Code	@Miles Degraded	NPS	Evaluated or Monitored
STATE WATER PLAN (SWP) SUBBASIN:						**20-OHIO RIVER**			
20-B	Low	33337	Brush Run	305(b) Report	Resource Extraction	Other Inorganics	4	X	E
					Resource Extraction	Metals	4.3	X	E
20-B	Low	34015	Clarks Run	305(b) Report	Resource Extraction	Metals	0.8	X	E
20-C	Low	34028	Duck Run	305(b) Report	Resource Extraction	Metals	4.3	X	E
20-C	Low	34348	East Branch Wolf Creek	305(b) Report	Resource Extraction	Metals	8	X	E
20-C	Low	34556	Long Run	305(b) Report	Resource Extraction	Metals	3.3	X	E
20-C	Low	34731	Blacks Creek	305(b) Report	Resource Extraction	Metals	4.8	X	E
20-C	Low	34751	Season Creek	305(b) Report	Resource Extraction	Metals	1.4	X	E
					Resource Extraction	Other Inorganics	1.3	X	E
					Resource Extraction	pH	1.3	X	E
20-C	Low	34918	Little Connoquenessing Creek (Basin)	305(b) Report	Resource Extraction	Cause Unknown	1.7	X	E
20-C	Low	34956	Connoquenessing Creek (Unt)	305(b) Report	Resource Extraction	Metals	0.6	X	E
20-C	Low	35314	Connoquenessing Creek (Unt)	305(b) Report	Resource Extraction	Suspended Solids	1.5	X	E
20-C	Low	35335	Connoquenessing Creek (Unt)	305(b) Report	Resource Extraction	Suspended Solids	1	X	E
20-D	Low	33112	Harmon Creek	305(b) Report	Resource Extraction	Suspended Solids	5	X	E
					Resource Extraction	Metals	5	X	E
20-D	Low	33584	Raccoon Creek	305(b) Report	Resource Extraction	Metals	22	X	E
					Resource Extraction	Suspended Solids	21	X	E
20-D	Low	33758	Potato Garden Run	305(b) Report	Resource Extraction	Metals	3.6	X	E
20-D	Low	33764	Unt Potato Garden Run	305(b) Report	Resource Extraction	Metals	0.8	X	M
20-D	Low	33848	Burgetts Fork(Raccon Creek)	305(b) Report	Resource Extraction	Suspended Solids	4.5	X	E
					Resource Extraction	Metals	6	X	E
20-E	Low	32317	Ohio River	305(b) Report	Resource Extraction	Metals	10.2	X	M
20-F	Low	36777	Charters Creek	305(b) Report	Resource Extraction	Metals	6.5	X	M
20-F	Low	36780	Campbells Run	305(b) Report	Resource Extraction	Metals	2	X	M
20-F	Low	36787	Unt Campbells Run	305(b) Report	Resource Extraction	Metals	0.8	X	M
20-F	Low	36827	Millers Run	305(b) Report	Resource Extraction	Suspended Solids	2.5	X	E
					Resource Extraction	Metals	2.5	X	E
20-F	Low	37164	Sawmill Run	305(b) Report	Resource Extraction	Metals	3	X	E
20-F	Low	63294	North Branch Robinson Run	305(b) Report	Resource Extraction	Other Inorganics	1.6	X	E
					Resource Extraction	Metals	2.8	X	M
					Resource Extraction	Metals	3.2	X	E
20-F	Low	63295	N. Br. Robinsons Run (Unt)	305(b) Report	Resource Extraction	Metals	4.2	X	M
20-F	Low	63300	Half Crown Run	305(b) Report	Resource Extraction	Metals	1	X	M
20-G	Low	36684	Montour Run	305(b) Report	Resource Extraction	Metals	0.5	X	M
20-G	Low	36730	Moon Run	305(b) Report	Resource Extraction	Suspended Solids	2.5	X	E
					Resource Extraction	Metals	1.1	X	M
					Resource Extraction	Metals	2.5	X	E

* See Narrative for Description of Priority for TMDL Development

@ Based on the Length of the Study Segment

of water quality-based treatment controls and strategies beyond the technology-based level of treatment required by sections 301(b) and 306 of the Act. States shall review and revise WQS in accordance with applicable regulations and, as appropriate, update their Water Quality Management (WQM) plans to reflect such revisions. Specific WQS requirements are found in 40 CFR part 131.

§ 130.4 *Water quality monitoring.*

(a) In accordance with section 106(e)(1), States must establish appropriate monitoring methods and procedures (including biological monitoring) necessary to compile and analyze data on the quality of waters of the United States and, to the extent practicable, ground-waters. This requirement need not be met by Indian Tribes. However, any monitoring and/or analysis activities undertaken by a Tribe must be performed in accordance with EPA's quality assurance/quality control guidance.

(b) The State's water monitoring program shall include collection and analysis of physical, chemical and biological data and quality assurance and control programs to assure scientifically valid data. The uses of these data include determining abatement and control priorities, developing and reviewing water quality standards, total maximum daily loads, wasteload allocations and load allocations, assessing compliance with National Pollutant Discharge Elimination System (NPDES) permits by dischargers; reporting information to the public through the section 305(b) report and reviewing site-specific monitoring efforts.

[50 FR 1779, Jan. 11, 1985, as amended at 54 FR 14359, Apr. 11, 1989]

§ 130.5 Continuing planning process.

(a) *General.* Each State shall establish and maintain a continuing planning process (CPP) as described under section 303(e)(3)(A) (ii) of the Act. Each State is responsible for managing its water quality program to implement the processes specified in the continuing planning process. EPA is responsible for periodically reviewing the adequacy of the State's CPP.

(b) *Content.* The State may determine the format of its CPP as long as the minimum requirements of the CWA and this regulation are met. The following processes must be described in each State CPP, and the State may include other processes at its discretion.

(1) The process for developing effluent limitations and schedules of compliance at least as stringent as those required by sections 301(b) (1) and (2), 306 and 307, and at least stringent as any requirements contained in applicable water quality standards in effect under authority of section 303 of the Act.

(2) The process for incorporating elements of any applicable areawide waste treatment plans under section 208, and applicable basin plans under section 209 of the Act.

(3) The process for developing total maximum daily loads (TMDLs) and individual water quality based effluent limitations for pollutants in accordance with section 303(d) of the Act and § 130.7(a) of this regulation.

(4) The process for updating and maintaining Water Quality Management (WQM) plans, including schedules for revision.

(5) The process for assuring adequate authority for intergovernmental cooperation in the implementation of the State WQM program.

(6) The process for establishing and assuring adequate implementation of new or revised water quality standards, including schedules of compliance, under section 303(c) of the Act.

(7) The process for assuring adequate controls over the disposition of all residual waste from any water treatment processing.

(8) The process for developing an inventory and ranking, in order of priority of needs for construction of waste treatment works required to meet the applicable requirements of sections 301 and 302 of the Act.

(9) The process for determining the priority of permit issuance.

(c) *Regional Administrator review.* The Regional Administrator shall review approved State CPP's from time to time to ensure that the planning processes are consistent with the Act and this regulation. The Regional Administrator shall not approve any permit program under Title IV of the Act for any State which does not have an approved continuing planning process.

§ 130.6 Water quality management plans.

(a) *Water quality management (WQM) plans.* WQM plans consist of initial plans produced in accordance with sections 208 and 303(e) of the Act and certified and approved updates to those plans. Continuing water quality planning shall be based upon WQM plans and water quality problems identified in the latest 305(b) reports. State water quality planning should focus annually on priority issues and geographic areas and on the development of water quality controls leading to implementation measures. Water quality planning directed at the removal of conditions placed on previously certified and approved WQM plans should focus on removal of conditions which will lead to control decisions.

(b) *Use of WQM plans.* WQM plans are used to direct implementation. WQM plans draw upon the water quality assessments to identify priority point and nonpoint water quality problems, consider alternative solutions and recommend control measures, including the financial and institutional measures necessary for implementing recommended solutions. State annual work programs shall be based upon the priority issues identified in the State WQM plan.

(c) *WQM plan elements.* Sections 205(j), 208 and 303 of the Act specify water quality planning requirements. The following plan elements shall be included in the WQM plan or referenced as part of the WQM plan if contained in separate documents when they are needed to address water quality problems.

(1) *Total maximum daily loads.* TMDLs in accordance with sections 303(d) and (e)(3)(C) of the Act and § 130.7 of this part.

(2) *Effluent limitations.* Effluent limitations including water quality based effluent limitations and schedules of compliance in accordance with section 303(e)(3)(A) of the Act and § 130.5 of this part.

(3) *Municipal and industrial waste treatment.* Identification of anticipated municipal and industrial waste treatment works, including facilities for treatment of stormwater induced combined sewer overflows, programs to provide necessary financial arrangements for such works; establishment of construction priorities and schedules for initiation and completion of such treatment works including an identification of open space and recreation opportunities from improved water quality in accordance with section 208(b)(2)(A) and (B) of the Act.

(4) *Nonpoint source management and control.* (i) The plan shall describe the regulatory and non-regulatory programs, activities and Best Management Practices (BMPs) which the agency has selected as the means to control nonpoint source pollution where necessary to protect or achieve approved water uses. Economic, institutional, and technical factors shall be considered in a continuing process of identifying control needs and evaluating and modifying the BMPs as necessary to achieve water quality goals.

(ii) Regulatory programs shall be identified where they are determined to be necessary by the State to attain or maintain an approved water use or where non-regulatory approaches are inappropriate in accomplishing that objective.

(iii) BMPs shall be identified for the nonpoint sources identified in section 208(b)(2)(F) (K) of the Act and other nonpoint sources as follows:

(A) *Residual waste.* Identification of a process to control the disposition of all residual waste in the area which could affect water quality in accordance with section 208(b)(2)(J) of the Act.

(B) *Land disposal.* Identification of a process to control the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality in accordance with section 208(b)(2)(K) of the Act.

(C) *Agricultural and silvicultural.* Identification of procedures to control agricultural and silvicultural sources of pollution in accordance with section 208(b)(2)(F) of the Act.

(D) *Mines.* Identification of procedures to control mine-related source of pollution in accordance with section 208(b)(2)(G) of the Act.

(E) *Construction.* Identification of procedures to control construction related sources of pollution in accordance with section 208(b)(2)(H) of the Act.

(F) *Saltwater intrusion.* Identification of procedures to control saltwater intrusion in accordance with section 208(b)(2)(I) of the Act.

(G) *Urban stormwater.* Identification of BMPs for urban stormwater control to achieve water quality goals and fiscal analysis of the necessary capital and operations and maintenance expenditures in accordance with section 208(b)(2)(A) of the Act.

(iv) The nonpoint source plan elements outlined in §130.6(c)(4)(iii)(A)(G) of this regulation shall be the basis of water quality activities implemented through agreements or memoranda of understanding between EPA and other departments, agencies or instrumentalities of the United States in accordance with section 304(k) of the Act.

(5) *Management agencies.* Identification of agencies necessary to carry out the plan and provision for adequate authority for intergovernmental cooperation in accordance with sections 208(b)(2)(D) and 303(e)(3)(E) of the Act. Management agencies must demonstrate the legal, institutional, managerial and financial capability and specific activities necessary to carry out their responsibilities in accordance with section 208(c)(2)(A) through (I) of the Act.

(6) *Implementation measures.* Identification of implementation measures necessary to carry out the plan, including financing, the time needed to carry out the plan, and the economic, social and environmental impact of carrying out the plan in accordance with section 208(b)(2)(E).

(7) *Dredge or fill program.* Identification and development of programs for the control of dredge or fill material in accordance with section 208(b)(4)(B) of the Act.

(8) *Basin plans.* Identification of any relationship to applicable basin plans developed under section 209 of the Act.

(9) *Ground water.* Identification and development of programs for control of ground-water pollution including the provisions of section 208(b)(2)(K) of the Act. States are not required to develop ground water WQM plan elements beyond the requirements of section 208(b)(2)(K) of the Act, but may develop a ground-water plan element if they determine it is necessary to address a ground-water quality problem. If a State chooses to develop a ground-water plan element, it should describe the essentials of a State program and should include, but is not limited to:

(i) Overall goals, policies and legislative authorities for protection of ground water.

(ii) Monitoring and resource assessment programs in accordance with section 106(e)(1) of the Act.

(iii) Programs to control sources of contamination of ground-water including Federal programs delegated to the State and additional programs authorized in State statutes.

(iv) Procedures for coordination of ground-water protection programs among State agencies and with local and Federal agencies.

(v) Procedures for program management and administration including provision of program financing, training and technical assistance, public participation, and emergency management.

(d) *Indian Tribes.* An Indian Tribe is eligible for the purposes of this rule and the Clean Water Act assistance programs under 40 CFR part 35, subparts A and H if:

(1) The Indian Tribe has a governing body carrying out substantial governmental duties and powers;

(2) The functions to be exercised by the Indian Tribe pertain to the management and protection of water resources which are held by an Indian Tribe, held by the United States in trust for Indians, held by a member of an Indian Tribe if such property interest is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation; and

(3) The Indian Tribe is reasonably expected to be capable, in the Regional Administrator's judgment, of carrying out the functions to be exercised in a manner consistent with the terms and purposes of the Clean Water Act and applicable regulations.

(e) *Update and certification.* State and/or areawide agency WQM plans shall be updated as needed to reflect changing water quality conditions, results of implementation actions, new requirements or to remove conditions in prior conditional or partial plan approvals. Regional Administrators may require that State WQM plans be updated as needed. State Continuing Planning Processes (CPP's) shall specify the process and schedule used to revise WQM plans. The State shall ensure that State and areawide WQM plans together include all necessary plan elements and that such plans are consistent with one another. The Governor or the Governor's designee shall certify by letter to the Regional Administrator for EPA approval that WQM plan updates are consistent with all other parts of the plan. The certification may be contained in the annual State work program.

(f) *Consistency.* Construction grant and permit decisions must be made in accordance with certified and approved WQM plans as described in §§130.12(a) and 130.12(b).

[50 FR 1779, Jan. 11, 1985, as amended at 54 FR 14360, Apr. 11, 1989, 59 FR 13818, Mar. 23, 1994]

§130.7 Total maximum daily loads (TMDL) and individual water quality-based effluent limitations.

(a) *General.* The process for identifying water quality limited segments still requiring wasteload allocations, load allocations and total maximum daily loads (WLAs/LAs and TMDLs), setting priorities for developing these loads; establishing these loads for segments identified, including water quality monitoring, modeling, data analysis, calculation methods, and list of pollutants to be regulated; submitting the State's list of segments identified, priority ranking, and loads established (WLAs/LAs/TMDLs) to EPA for approval; incorporating the approved loads into the State's WQM plans and NPDES permits, and involving the public, affected dischargers, designated areawide agencies, and local governments in this process; shall be clearly described in the State Continuing Planning Process (CPP).

(b) Identification and priority setting for water quality-limited segments still requiring TMDLs.

(1) Each State shall identify those water quality-limited segments still requiring TMDLs within its boundaries for which:

(i) Technology-based effluent limitations required by sections 301(b), 306, 307, or other sections of the Act;

(ii) More stringent effluent limitations (including prohibitions) required by either State or local authority preserved by section 510 of the Act, or Federal authority (law, regulation, or treaty); and

(iii) Other pollution control requirements (e.g., best management practices) required by local, State, or Federal authority are not stringent enough to implement any water quality standards (WQS) applicable to such waters.

(2) Each State shall also identify on the same list developed under paragraph (b)(1) of this section those water quality-limited segments still requiring TMDLs or parts thereof within its boundaries for which controls on thermal discharges under section 301 or State or local requirements are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish and wildlife.

(3) For the purposes of listing waters under §130.7(b), the term "water quality standard applicable to such waters" and "applicable water quality standards" refer to those water quality standards established under section 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements.

(4) The list required under §§130.7(b)(1) and 130.7(b)(2) of this section shall include a priority ranking for all listed water quality-limited segments still requiring TMDLs, taking into account the severity of the pollution and the uses to be made of such waters and shall identify the pollutants causing or expected to cause violations of the applicable water quality standards. The priority ranking shall specifically include the identification of waters targeted for TMDL development in the next two years.

(5) Each State shall assemble and evaluate all existing and readily available water quality-related data and information to develop the list required

by §§130.7(b)(1) and 130.7(b)(2). At a minimum "all existing and readily available water quality-related data and information" includes but is not limited to all of the existing and readily available data and information about the following categories of waters:

(i) Waters identified by the State in its most recent section 305(b) report as "partially meeting" or "not meeting" designated uses or as "threatened";

(ii) Waters for which dilution calculations or predictive models indicate nonattainment of applicable water quality standards;

(iii) Waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions. These organizations and groups should be actively solicited for research they may be conducting or reporting. For example, university researchers, the United States Department of Agriculture, the National Oceanic and Atmospheric Administration, the United States Geological Survey, and the United States Fish and Wildlife Service are good sources of field data; and

(iv) Waters identified by the State as impaired or threatened in a nonpoint assessment submitted to EPA under section 319 of the CWA or in any updates of the assessment.

(6) Each State shall provide documentation to the Regional Administrator to support the State's determination to list or not to list its waters as required by §§130.7(b)(1) and 130.7(b)(2). This documentation shall be submitted to the Regional Administrator together with the list required by §§130.7(b)(1) and 130.7(b)(2) and shall include at a minimum:

(i) A description of the methodology used to develop the list; and

(ii) A description of the data and information used to identify waters, including a description of the data and information used by the State as required by §130.7(b)(5); and

(iii) A rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in §130.7(b)(5); and

(iv) Any other reasonable information requested by the Regional Administrator. Upon request by the Regional Administrator, each State must demonstrate good cause for not including a water or waters on the list. Good cause includes, but is not limited to, more recent or accurate data; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed in the categories in §130.7(b)(5); or changes in conditions, e.g., new control equipment, or elimination of discharges.

(c) *Development of TMDLs and individual water quality based effluent limitations.*

(1) Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section, and in accordance with the priority ranking. For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters.

(i) TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach. In many cases both techniques may be needed. Site-specific information should be used wherever possible.

(ii) TMDLs shall be established for all pollutants preventing or expected to prevent attainment of water quality standards as identified pursuant to paragraph (b)(1) of this section. Calculations to establish TMDLs shall be subject to public review as defined in the State CPP.

(2) Each State shall estimate for the water quality limited segments still requiring TMDLs identified in paragraph (b)(2) of this section, the total maximum daily thermal load which cannot be exceeded in order to assure protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife. Such estimates shall take into account the normal water temperatures, flow rates, seasonal variations, existing sources of heat input, and the dissipative capacity of the

identified waters or parts thereof. Such estimates shall include a calculation of the maximum heat input that can be made into each such part and shall include a margin of safety which takes into account any lack of knowledge concerning the development of thermal water quality criteria for protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in the identified waters or parts thereof.

(d) *Submission and EPA approval.* (1) Each State shall submit biennially to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section. For the 1992 biennial submission, these lists are due no later than October 22, 1992. Thereafter, each State shall submit to EPA lists required under paragraph (b) of this section on April 1 of every even-numbered year. The list of waters may be submitted as part of the State's biennial water quality report required by §130.8 of this part and section 305(b) of the CWA or submitted under separate cover. All WLAs/LAs and TMDLs established under paragraph (c) for water quality limited segments shall continue to be submitted to EPA for review and approval. Schedules for submission of TMDLs shall be determined by the Regional Administrator and the State.

(2) The Regional Administrator shall either approve or disapprove such listing and loadings not later than 30 days after the date of submission. The Regional Administrator shall approve a list developed under §130.7(b) that is submitted after the effective date of this rule only if it meets the requirements of §130.7(b). If the Regional Administrator approves such listing and loadings, the State shall incorporate them into its current WQM plan. If the Regional Administrator disapproves such listing and loadings, he shall, not later than 30 days after the date of such disapproval, identify such waters in such State and establish such loads for such waters as determined necessary to implement applicable WQS. The Regional Administrator shall promptly issue a public notice seeking comment on such listing and loadings. After considering public comment and making any revisions he deems appropriate, the Regional Administrator shall transmit the listing and loads to the State, which shall incorporate them into its current WQM plan.

(e) For the specific purpose of developing information and as resources allow, each State shall identify all segments within its boundaries which it has not identified under paragraph (b) of this section and estimate for such waters the TMDLs with seasonal variations and margins of safety, for those pollutants which the Regional Administrator identifies under section 304(a)(2) as suitable for such calculation and for thermal discharges, at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish and wildlife. However, there is no requirement for such loads to be submitted to EPA for approval, and establishing TMDLs for those waters identified in paragraph (b) of this section shall be given higher priority.

[50 FR 1779, Jan. 11, 1985, as amended at 57 FR 33049, July 24, 1992]

§ 130.8 Water quality report.

(a) Each State shall prepare and submit biennially to the Regional Administrator a water quality report in accordance with section 305(b) of the Act. The water quality report serves as the primary assessment of State water quality. Based upon the water quality data and problems identified in the 305(b) report, States develop water quality management (WQM) plan elements to help direct all subsequent control activities. Water quality problems identified in the 305(b) report should be analyzed through water quality management planning leading to the development of alternative controls and procedures for problems identified in the latest 305(b) report. States may also use the 305(b) report to describe ground-water quality and to guide development of ground-water plans and programs. Water quality problems identified in the 305(b) report should be emphasized and reflected in the State's WQM plan and annual work

program under sections 106 and 205(j) of the Clean Water Act.

(b) Each such report shall include but is not limited to the following:

(1) A description of the water quality of all waters of the United States and the extent to which the quality of waters provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water.

(2) An estimate of the extent to which CWA control programs have improved water quality or will improve water quality for the purposes of paragraph (b)(1) of this section, and recommendations for future actions necessary and identifications of waters needing action.

(3) An estimate of the environmental, economic and social costs and benefits needed to achieve the objectives of the CWA and an estimate of the date of such achievement.

(4) A description of the nature and extent of nonpoint source pollution and recommendations of programs needed to control each category of nonpoint sources, including an estimate of implementation costs.

(5) An assessment of the water quality of all publicly owned lakes, including the status and trends of such water quality as specified in section 314(a)(1) of the Clean Water Act.

(c) States may include a description of the nature and extent of groundwater pollution and recommendations of State plans or programs needed to maintain or improve ground-water quality.

(d) In the years in which it is prepared the biennial section 305(b) report satisfies the requirement for the annual water quality report under section 205(j). In years when the 305(b) report is not required, the State may satisfy the annual section 205(j) report requirement by certifying that the most recently submitted section 305(b) report is current or by supplying an update of the sections of the most recently submitted section 305(b) report which require updating.

[50 FR 1779, Jan.11, 1985, as amended at 57 FR 33050, July 24, 1992]

any monitoring and/or analysis activities undertaken by a Tribe must be performed in accordance with EPA's quality assurance/quality control guidance.

(b) The State's water monitoring program shall include collection and analysis of physical, chemical and biological data and quality assurance and control programs to assure scientifically valid data. The uses of these data include determining abatement and control priorities; developing and reviewing water quality standards, total maximum daily loads, wasteload allocations and load allocations; assessing compliance with National Pollutant Discharge Elimination System (NPDES) permits by dischargers; reporting information to the public through the section 305(b) report and reviewing site-specific monitoring efforts.

[50 FR 1779, Jan. 11, 1985, as amended at 54 FR 14359, Apr. 11, 1989]

§ 130.5 Continuing planning process.

(a) *General.* Each State shall establish and maintain a continuing planning process (CPP) as described under section 303(e)(3)(A)—(H) of the Act. Each State is responsible for managing its water quality program to implement the processes specified in the continuing planning process. EPA is responsible for periodically reviewing the adequacy of the State's CPP.

(b) *Content.* The State may determine the format of its CPP as long as the mininum requirements of the CWA and this regulation are met. The following processes must be described in each State CPP, and the State may include other processes at its discretion.

(1) The process for developing effluent limitations and schedules of compliance at least as stringent as those required by sections 301(b) (1) and (2), 306 and 307, and at least stringent as any requirements contained in applicable water quality standards in effect under authority of section 303 of the Act.

(2) The process for incorporating elements of any applicable areawide waste treatment plans under section 208, and applicable basin plans under section 209 of the Act.

(3) The process for developing total maximum daily loads (TMDLs) and individual water quality based effluent limitations for pollutants in accordance with section 303(d) of the Act and § 130.7(a) of this regulation.

(4) The process for updating and maintaining Water Quality Management (WQM) plans, including schedules for revision.

(5) The process for assuring adequate authority for intergovernmental cooperation in the implementation of the State WQM program.

(6) The process for establishing and assuring adequate implementation of new or revised water quality standards, including schedules of compliance, under section 303(c) of the Act.

(7) The process for assuring adequate controls over the disposition of all residual waste from any water treatment processing.

(8) The process for developing an inventory and ranking, in order of priority of needs for construction of waste treatment works required to meet the applicable requirements of sections 301 and 302 of the Act.

(9) The process for determining the priority of permit issuance.

(c) *Regional Administrator review.* The Regional Administrator shall review approved State CPPs from time to time to ensure that the planning processes are consistent with the Act and this regulation. The Regional Administrator shall not approve any permit program under Title IV of the Act for any State which does not have an approved continuing planning process.

§ 130.6 Water quality management plans.

(a) *Water quality management (WQM) plans.* WQM plans consist of initial plans produced in accordance with sections 208 and 303(e) of the Act and certified and approved updates to those plans. Continuing water quality planning shall be based upon WQM plans and water quality problems identified in the latest 305(b) reports. State water quality planning should focus annually on priority issues and geographic areas and on the development of water quality controls leading to implementation measures. Water

ministrator for EPA approval that WQM plan updates are consistent with all other parts of the plan. The certification may be contained in the annual State work program.

(f) *Consistency.* Construction grant and permit decisions must be made in accordance with certified and approved WQM plans as described in §§ 130.12(a) and 130.12(b).

[50 FR 1779, Jan. 11, 1985, as amended at 54 FR 14360, Apr. 11, 1989]

§ 130.7 Total maximum daily loads (TMDL) and individual water quality-based effluent limitations.

(a) *General.* The process for identifying water quality limited segments still requiring wasteload allocations, load allocations and total maximum daily loads (WLAs/LAs and TMDLs), setting priorities for developing these loads; establishing these loads for segments identified, including water quality monitoring, modeling, data analysis, calculation methods, and list of pollutants to be regulated; submitting the State's list of segments identified, priority ranking, and loads established (WLAs/LAs/TMDLs) to EPA for approval; incorporating the approved loads into the State's WQM plans and NPDES permits; and involving the public, affected dischargers, designated areawide agencies, and local governments in this process shall be clearly described in the State Continuing Planning Process (CPP).

(b) Identification and priority setting for water quality limited segments still requiring WLAs/LAs and TMDLs.

(1) Each State shall identify those water quality limited segments still requiring WLAs/LAs and TMDLs within its boundaries for which:

(i) Technology-based effluent limitations required by sections 301(b), 306, 307, or other sections of the Act;

(ii) More stringent effluent limitations (including prohibitions) required by either State or local authority preserved by section 510 of the Act, or Federal authority (e.g., law, regulation, or treaty); and

(iii) Other pollution control requirements (e.g., best management practices) required by local, State, or Federal authority are not stringent enough to implement any water quality standard (WQS) applicable to such waters. The State shall, establish a priority ranking for such water quality limited segments still requiring WLAs/LAs and TMDLs, taking into account the severity of the pollution and the uses to be made of such waters and shall identify the pollutants causing or expected to cause violations of the water quality standards.

(2) Each State shall identify those water quality limited segments still requiring WLAs/LAs and TMDLs or parts thereof within its boundaries for which controls on thermal discharges under section 301 or State or local requirements are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish and wildlife.

(c) Development of TMDLs and individual water quality based effluent limitations.

(1) Each State shall establish WLAs/LAs and TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section, and in accordance with the priority ranking. For pollutants other than heat, WLAs/LAs and TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of WLAs/LAs and TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters.

(i) TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach. In many cases both techniques may be needed. Site-specific information should be used wherever possible.

(ii) TMDLs shall be established for all pollutants preventing or expected to prevent attainment of water quality standards as identified pursuant to paragraph (b)(1) of this section. Calculations to establish WLAs/LAs and TMDLs shall be subject to public review as defined in the State CPP.

(2) Each State shall estimate for the water quality limited segments still requiring WLAs/LAs and TMDLs identi-

fied in paragraph (b)(2) of this section, the total maximum daily thermal load which cannot be exceeded in order to assure protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife. Such estimates shall take into account the normal water temperatures, flow rates, seasonal variations, existing sources of heat input, and the dissipative capacity of the identified waters or parts thereof. Such estimates shall include a calculation of the maximum heat input that can be made into each such part and shall include a margin of safety which takes into account any lack of knowledge concerning the development of thermal water quality criteria for protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in the identified waters or parts thereof.

(d) *Submission and EPA approval.* (1) Each State shall submit to the Regional Administrator from time to time for approval the listing of water quality limited segments requiring WLAs/LAs and TMDLs identified under paragraph (b) of this section. All WLAs/LAs and TMDLs established under paragraph (c) for water quality limited segments shall continue to be submitted to EPA for review and approval. Schedules for submission of WLAs/LAs and TMDLs shall be determined by the Regional Administrator and the State.

The Regional Administrator shall either approve or disapprove such listing and loadings not later than 30 days after the date of submission. If the Regional Administrator approves such listing and loadings, the State shall incorporate them into its current WQM plan. If the Regional Administrator disapproves such listing and loadings, he shall, not later than 30 days after the date of such disapproval, identify such waters in such State and establish such loads for such waters as determined necessary to implement applicable WQS. The Regional Administrator shall promptly issue a public notice seeking comment on such listing and loadings. After considering public comment and making any revisions he deems appropriate, the Regional Administrator shall transmit the listing and loads to the State, which shall incorporate them into its current WQM plan.

(e) For the specific purpose of developing information and as resources allow, each State shall identify all segments within its boundaries which it has not identified under paragraph (b) of this section and estimate for such waters the TMDLs with seasonal variations and margins of safety, for those pollutants which the Regional Administrator identifies under section 304(a)(2) as suitable for such calculation and for thermal discharges, at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish and wildlife. However, there is no requirement for such loads to be submitted to EPA for approval, and establishing WLAs/LAs and TMDLs for those waters identified in paragraph (b) of this section shall be given higher priority.

§ 130.8 Water quality report.

(a) Each State shall prepare and submit biennially to the Regional Administrator a water quality report in accordance with section 305(b) of the Act. The water quality report serves as the primary assessment of State water quality. Based upon the water quality data and problems identified in the 305(b) report, States develop water quality management (WQM) plan elements to help direct all subsequent control activities. Water quality problems identified in the 305(b) report should be analyzed through water quality management planning leading to the development of alternative controls and procedures for problems identified in the latest 305(b) report. States may also use the 305(b) report to describe ground-water quality and to guide development of ground-water plans and programs. Water quality problems identified in the 305(b) report should be emphasized and reflected in the State's WQM plan and annual work program under sections 106 and 205(j) of the Clean Water Act.

(b) Each such report shall include but is not limited to the following:

(1) A description of the water quality of all waters of the United States and the extent to which the quality of waters provides for the protection and

of that State. If the Administrator determines that any such revised or new standard is not consistent with the applicable requirements of this Act, he shall not later than the ninetieth day after the date of submission of such standard notify the State and specify the changes to meet such requirements. If such changes are not adopted by the State within ninety days after the date of notification, the Administrator shall promulgate such standard pursuant to paragraph (4) of this subsection.

(4) The Administrator shall promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved—

(A) if a revised or new water quality standard submitted by such State under paragraph (3) of this subsection for such waters is determined by the Administrator not to be consistent with the applicable requirements of this Act, or

(B) in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of this Act.

The Administrator shall promulgate any revised or new standard under this paragraph not later than ninety days after he publishes such proposed standards, unless prior to such promulgation, such State has adopted a revised or new water quality standard which the Administrator determines to be in accordance with this Act.

(d)(1)(A) Each State shall identify those waters within its boundaries for which the effluent limitations required by section 301(b)(1)(A) and section 301(b)(1)(B) are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

(B) Each State shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under section 301 are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

(C) Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 304(a)(2) as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

(D) Each State shall estimate for the waters identified in paragraph (1)(D) of this subsection the total maximum daily thermal load required to assure protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife. Such estimates shall take into account the normal water temperatures, flow rates, seasonal variations, existing sources of heat input, and the dissipative capacity of the identified waters or parts thereof. Such estimates shall include a calculation of the maximum heat input that can be made into each such part and shall include a margin of safety which takes into account any lack of knowledge concerning

the development of thermal water quality criteria for such protection and propagation in the identified waters or parts thereof.

(2) Each State shall submit to the Administrator from time to time, with the first such submission not later that one hundred and eighty days after the date of publication of the first identification of pollutants under section 304(a)(2)(D), for his approval the waters identified and the loads established under paragraphs (1)(A), (1)(B), (1)(C), and (1)(D) of this subsection. The Administrator shall either approve or disapprove such identification and load not later than thirty days after the date of submission. If the Administrator approves such identification and load, such State shall incorporate them into its current plan under subsection (e) of this section. If the Administrator disapproves such identification and load, he shall not later than thirty days after the date of such disapproval identify such waters in such State and establish such loads for such waters as he determines necessary to implement the water quality standards applicable to such waters and upon such identification and establishment the State shall incorporate them into its current plan under subsection (e) of this section.

(3) For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the total maximum daily load with seasonal variations and margins of safety, for those pollutants which the Administrator identifies under section 304(a)(2) as suitable for such calculation and for thermal discharges, at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish and wildlife.

(4) LIMITATIONS ON REVISION OF CERTAIN EFFLUENT LIMITATIONS.—

(A) STANDARD NOT ATTAINED.—For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section.

(B) STANDARD ATTAINED.—For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section, or any water quality standard established under this section, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section.

(e)(1) Each State shall have a continuing planning process approved under paragraph (2) of this subsection which is consistent with this Act.

G

MEMORANDUM OF UNDERSTANDING BETWEEN USEPA REGION III AND THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGARDING SECTIONS 303(d) AND 303(e) OF THE CLEAN WATER ACT

WHEREAS, Section 303(d) of the Clean Water Act ("CWA"), 33 U.S.C. Section 1313(d), provides for: (i) identification of water quality limited segments ("WQLSs") where applicable technology-based effluent limitations are not stringent enough to implement water quality standards; (ii) establishment of a priority ranking for such waters; and (iii) establishment of total maximum daily loads ("TMDLs") for pollutants for which those waters are not in attainment with water quality standards and TMDLs are still required;

WHEREAS, the U.S. Environmental Protection Agency, Region III ("EPA") and the Commonwealth of Pennsylvania, Department of Environmental Protection ("DEP") desire to restore the quality of impaired waters to achieve water quality standards pursuant to Section 303(d) of the CWA, thereby removing waters from the list of waters not meeting water quality standards;

WHEREAS, Section 303(e) of the CWA, 33 U.S.C. Section 1313(e), provides for EPA to review DEP's continuing planning process ("CPP") from time to time;

WHEREAS, under Section 303(d) of the CWA, DEP has the lead responsibility for the designation of WQLSs and the establishment of TMDLs;

NOW, THEREFORE, EPA AND DEP HAVE PREPARED THIS MOU AND EACH UNDERTAKE TO USE ITS BEST EFFORTS TO ACCOMPLISH THE FOLLOWING:

I. **Section 303(d) List** - DEP will use best efforts to submit approvable Section 303(d) lists that are developed and submitted in accordance with the then applicable EPA regulations.

II. **Assessment of Wadeable Streams**

A. DEP will use its best efforts, subject to available resources, to assess all currently unassessed wadeable streams in the Commonwealth within 10 years of the execution of this MOU.

B EPA and DEP understand that DEP intends to use a modified rapid bioassessment protocol or other appropriate methods to assess the wadeable streams. EPA and DEP will use best efforts to reach consensus on the protocol by June 15, 1997.

C EPA and DEP understand that waters found to be impaired using the modified rapid bioassessment protocol, which are determined to be WQLSs still requiring TMDLs, will appear on the first Section 303(d) list that follows the identification of impaired waters.

III. **Assessment of Significant Lakes**

A. EPA and DEP agree that "Significant lake", for purposes of this MOU, means a lake with public access and a hydraulic detention time of 14 days or more based on annual surface and ground water discharge. Detention time shall be determined at normal pool volume. In the absence of actual flow and rainfall records, an average annual daily discharge rate of 1.5 cubic feet per second per square mile of watershed area shall be used.

B. DEP will complete a study designed to identify all significant lakes in the Commonwealth and will then prioritize such lakes based upon the threat to water quality in such lakes, as identified by the Department, within 5 years of the date of execution of this MOU.

C EPA agrees to provide DEP with $200,000 to support DEP's efforts to assess significant lakes. EPA agrees to provide the $200,000 to DEP as follows: (1) $100,000 will be provided by EPA within 90 days

of the final execution of this MOU; (2) EPA will use its best efforts to provide the remaining $100,000 to DEP no later than 1 year after the final execution of the MOU. DEP will, subject to available resources, use its best efforts based on EPA funding assistance to assess 100 of the Commonwealth's significant lakes within 10 years of the receipt of the first $100,000 in full funding support; and (3) EPA agrees to complement the DEP program of lake monitoring and assessment described in this Section by monitoring and assessing up to 100 additional significant lakes that have not been previously monitored and assessed by DEP, pursuant to DEP lake assessment and monitoring protocols.

IV. TMDLs for WQLSs on the 1996 Section 303(d) List

A. EPA and DEP agree that the types of TMDLs to be developed for WQLSs still needing TMDLs are set forth in Attachment A of this MOU. EPA acknowledges that the types of activities described by DEP in Attachment A are acceptable as TMDLs for purposes of satisfying the provisions of this MOU.

B EPA and DEP understand that TMDLs need not be prepared for WQLSs which DEP justifies removing from the 1996 Section 303(d) list.

C. DEP, subject to available resources, will use its best efforts to work with EPA to establish required TMDLs for the WQLSs remaining on the 1996 Section 303(d) list: (i) within 10 years of the execution of this MOU for non-Abandoned Mine Drainage (AMD) WQLSs needing TMDLs on such list; and (ii) within 12 years of the execution of this MOU for AMD WQLSs needing TMDLs on such list.. EPA will support DEP efforts as needed.

D. EPA and DEP understand that EPA will use, and will provide training and technical assistance to DEP on the use of, water quality TMDL models, such as BASINS, to prepare TMDLs for WQLSs on the 1996 Section 303(d) list.

E. EPA and DEP understand that DEP's performance of Section IV.C. of this MOU is contingent on EPA providing DEP the necessary assistance to enable DEP to become technically proficient in and utilize water quality models, such as BASINS, to prepare TMDLs for WQLSs needing TMDLs on the 1996 Section 303(d) list.

F At the request of EPA, DEP will share any existing and readily available water quality related data with EPA to assist EPA in establishing TMDLs for WQLSs on the Section 303(d) list.

G. DEP and EPA will use best efforts to develop a joint workplan for TMDL development by September 30, 1997, and each year thereafter that the MOU is in effect. This joint workplan will be based on the best information currently available. The workplan will serve as a guideline for both agencies, and will be updated as necessary to reflect changing priorities, available resources, new data, and other circumstances. DEP and EPA may substitute for any TMDL listed on the workplan at any time, after notice to the other agency.

H. By September 30, 1997, and each year thereafter that the MOU is in effect, DEP will use best efforts to provide a summary of TMDLs developed subsequent to the final execution of the MOU. EPA agrees to provide DEP with a copy of its annual Consent Decree compliance report by December 31 of each year that the MOU is in effect.

V. TMDLs for Newly Listed WQLSs on Section 303(d) Lists Submitted After 1996

A. DEP, with assistance from EPA and subject to available resources, will use its best efforts to prepare TMDLs for newly listed waters within 3 years after EPA's approval of the list on which the waters appear.

B. DEP will give EPA sufficient notice if it does not believe it will be able to establish a TMDL for any newly listed WQLSs within 3 years of the date of EPA's approval of the list.

C At the request of EPA, DEP will share any existing and readily available water quality-related data with EPA to assist EPA in establishing TMDLs for newly listed WQLSs.

VI. CPP

A. EPA agrees that it received and approved a CPP from the Commonwealth in 1976, and has received and reviewed subsequent revisions to the CPP

B. DEP will consider EPA comments in preparing any future revisions or addenda to its CPP.

VII. Funding

A. EPA and DEP recognize that in order for DEP to do the work anticipated by this MOU, DEP must redirect available staff and grant resources to do so, within the confines allowed by law. EPA understands that it will exercise flexibility, to the extent allowed by law and EPA guidance, in oversight of DEP grant-related activities to accomodate needed shifts in work priorities to accomplish the tasks to be performed under the MOU.

B. EPA and DEP understand that in order for EPA to help assure that the work anticipated to be performed by DEP under this MOU is done, EPA will use best efforts to redirect grant money to the Commonwealth to the extent it is able to do so within the confines set by statutes, regulations, and budget constraints.

VIII. Legal Effect

A. This MOU is not intended to and does not create any contractual rights or obligations with respect to the signatory agencies or any other persons or entities, and creates no cause of action against EPA or the Commonwealth. In addition, the execution and implementation of this MOU does not constitute an explicit or implicit agreement by either EPA or DEP to subject itself to the jurisdiction of any federal or state court. Nor shall this MOU be construed as an admission by DEP or EPA that either has failed to implement the provisions of CWA Sections 303(d) and 303(e). Nor shall this MOU be construed as creating any right or benefit, substantive or procedural, enforceable in law or in equity, by any person or entity against EPA or DEP. This MOU shall not be construed or create any right to judicial review involving the compliance or noncompliance with this MOU.

B. Nothing in this MOU shall be construed to require actions by DEP or EPA that are inconsistent with local, state or federal laws, including the Anti Deficiency Act, 31 U.S.C. Section 1341 et seq., or regulations or any court order.

IX. Termination

This MOU shall terminate upon the completion of TMDLs for all WQLSs on the 1996 Section 303(d) list and the completion of assessments for wadeable streams and significant lakes, or in 12 years from the date of execution, whichever is sooner.

X. MOU Contingent On Full And Complete Settlement of Litigation

EPA and DEP agree that this MOU is not effective until DEP receives accurate notice from EPA, including all necessary documentation, that all claims in the matter of American Littoral Society, et al. v United States Environmental Protection Agency, et al., Civ. No. 96-0489 (E.D. Pa.) have been fully and completely resolved by the parties to that litigation, and approved and entered by the United States District Court for the Eastern District of Pennsylvania, in the case of a Consent Decree, and by all necessary signatories, in the case of a Settlement Agreement or any other settlement document.

XI. Modification

A. EPA and DEP recognize that any efforts made by DEP to implement this MOU are contingent on the availability of resources, and that any implementation of nonpoint source and AMD TMDLs may occur based on cost/benefit analysis, and the support of the affected parties.

B. EPA and DEP understand that, while the tasks contemplated by this MOU are based on the best available projections of future funding, such projections may prove to be inaccurate.

C. EPA and DEP understand that this MOU is based on the statutes and regulations currently in effect and that changes to such statutes or regulations, or the enactments of new laws or the promulgation of new regulations impacting its provisions may require that this MOU be modified accordingly.

D. If any of the factors described in B. and C. above result in a change to the conditions on which this MOU is based, EPA and DEP will negotiate appropriate modifications to this MOU.

DATED this 7th day of April, 1997

United States Environmental Protection Agency

By: _____
W Michael McCabe
Regional Administrator, Region III

_____
Christopher Day
Assistant Regional Counsel

Commonwealth of Pennsylvania
Department of Environmental Protection

By: _____
James M. Seif
Secretary

_____
William J. Gerlach
Assistant Counsel

_____
Eric L. Settle
Deputy General Counsel
Office of General Counsel

ATTACHMENT A

The Different Types Of TMDLs In Pennsylvania

The term "Total Maximum Daily Load" (TMDL) is defined at 40 CFR Section 130 2(i) as the sum of the individual Wasteload Allocations (WLAs) for point sources and Load Allocations (LA) for nonpoint sources and natural background. WLAs are defined at 40 CFR Section 130 2(h) as the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. The regulation at 40 CFR Section 130 2(h) provides that WLAs constitute a type of water quality-based effluent limitation, although in actual practice WLAs merely form the basis for water quality-based effluent limits. A LA is defined at 40 CFR Section 130.2(g) as the portion of a receiving water's loading capacity that is allocated to either one of its existing or future nonpoint sources of pollution or to natural background sources.

The regulations at 40 CFR Section 130.7(c) focus on what is required for the development of TMDLs. TMDLs are required to be established by each State based on its prioritized list of WQLS still requiring TMDLs, and must attain and maintain water quality standards with seasonal variations and a margin of safety. Id. at (c)(1). TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters. Id. TMDLs may be established by a "pollutant by pollutant" or "biomonitoring approach, (c)(1)(i), and shall be established for all pollutants preventing or expected to prevent the attainment of water quality standards, and shall be subject to public review, (c)(1)(ii). TMDLs will be developed in accordance with applicable federal regulations. Each TMDL developed in accordance with this attachment will include the best practical estimation based on readily available information on loading from sources and loading reduction from the proposed controls. The Department establishes four types of TMDLs, as described below:

i. **Single Discharge TMDLs** are TMDLs which are established on a pollutant by pollutant basis on stream segments where it is determined that at critical flow conditions, a point source is the major contributor of the pollutant to be evaluated; controls more stringent than technology-based effluent limitations are required to assure the attainment of water quality standards; and the impact of nonpoint sources is accounted for in the determination of background water quality. The Department routinely performs water quality assessments at critical flow conditions when it receives applications for new wastewater discharge permits, or for renewals of existing permits, to determine if limits more stringent than technology based effluent limits are needed. It is anticipated under the federal regulations at 40 CFR Section 130.2(h) that these TMDLs will take the form of water quality based effluent limitations (WQBELs) in NPDES permits, although in actual practice they merely form the basis for water quality based effluent limitations. Determinations on such permits are subject to public participation and meet the requirements of 40 CFR Section 130.7(c). The Department is currently finalizing a process for submitting such TMDLs for EPA review and approval when new or renewal wastewater discharge applications are processed The Department has submitted 2 Single

Discharge TMDLs to EPA for the renewal of the Upper Merion wastewater treatment plant discharge permit (NPDES PA 0026131) for zinc (totals) and phenols (total).[1]

ii. **Nonpoint Source TMDLs** can be developed in two different formats. A nonpoint source TMDL can be a numerical value expressed in units of mass per time, such as pounds per year, or a narrative remediation plan. Once the nonpoint source TMDL is developed and approved by EPA, the stream reach(es) for which the nonpoint source TMDL was developed will be removed from the Section 303(d) TMDL list.

Nonpoint Source TMDLs for stream reaches will be initiated using the Department's protocol for unassessed streams. In summary, this protocol starts with a detailed screening using Geographic Information System (GIS) technology. Each of the 104 State Water Plan watersheds will be prioritized according to their potential for nonpoint source impacted streams. Starting with the high priority state water plan watersheds, each watershed will be divided into assessment units. These assessment units will then be prioritized according to the potential of impairment from nonpoint source problems and the miles of stream already assessed. Regional Office biologists will then assess all the stream reaches within the high and medium priority assessment units, using a modification of the Rapid Bioassessment protocols. The low priority assessment units will be completed as resources become available. Impaired streams will be identified, and a determination made as to whether the impairment is caused by point sources, nonpoint sources, or a combination of the two. Appropriate TMDLs will then be developed as needed to address these impaired stream reaches. A similar process will be implemented for lakes. Using protocols developed by the Susquehanna River Basin Commission and the Bureau of Watershed Conservation, significant lakes will be identified. Those lakes that meet the public access and 14 day detention time criteria for significance will then be prioritized as to their potential for impairment due to nonpoint source impacts. Appropriate Trophic Status Index and dissolved oxygen profile data will then be collected on the high priority lakes according to procedures defined by the Division of Water Quality Assessment and Standards. A determination will be made if the lake is impaired as to whether the impairment is caused by point sources, nonpoint sources, or a combination of the two. Appropriate TMDLs will then be developed as needed to address these impaired lakes.

Numerical TMDLs for nonpoint source problems are extremely difficult to develop, since the sources of impairment cannot be easily identified and quantified. A phased approach is necessary. During the first phase, available data and literature values will be used to simulate and allocate the loadings from different land uses. Using computer modeling techniques these loadings will then be reduced to meet water quality standards and appropriate load reductions developed. This first phase will also identify all areas where additional data could supplement and refine existing data to result in a more accurate and detailed TMDL. Additional monitoring and data collection will then be

[1] Notice of the submission is set forth in the Pennsylvania Bulletin at 26 Pa.B 2342 (May 18. 1996).

performed as needed. Once this data is collected, a more complete analysis will be done using similar computer modeling techniques, and a more detailed TMDL will be developed. The more detailed TMDL will be very costly and time consuming to develop. Supplemental data collection will take at least a year to complete in most cases. The more detailed modeling needed in the second phase could take an additional one to four years to complete

Remediation plan Nonpoint Source TMDLs are a more cost effective alternative to address stream reaches needing a TMDL. A nonpoint source remediation plan is a narrative document developed with public participation and support, and will take between one to two years to develop. Based on existing information and best professional judgment (BPJ), the plan will be developed with the purpose of restoring and maintaining water quality standards. The remediation plans will have the following components:

1. An identification of the problem.
2 A detailed description of the management measures or best management practices
3 A public education program
4. An estimate of the technical and financial resources needed to implement the plan
5 A tentative schedule for implementation
6. A budget
7 Follow up monitoring will be conducted consistent with the Department's overall strategy for continuing assessment of water quality.

Examples of this type of TMDL include:

- Stormwater Management Plans
- Clean Lakes Phase 1 Feasibility Studies
- Nonpoint Source Watershed Plans and activities done as part of Section 319 of the Clean Water Act
- Abandoned Mine Drainage project designs and watershed restoration plans
- Local watershed restoration plans

iii. **Complex TMDLs** are TMDLs established for more complex water quality management situations such as water quality impaired segments where there are multiple point sources, combinations of multiple point and nonpoint sources, or multiple nonpoint sources. In these situations, the Department will utilize water quality computer modeling and biological assessments to ascertain the extent of impairment. Management measures will then be developed and implemented, including discharge limitations in NPDES permits, best management practices (BMPs) for nonpoint sources, and remediation plans, to address the water quality impairment. These types of TMDLs are more involved than single discharge or nonpoint source TMDLs because of the discharge interactions and complex evaluations required, and involve a much greater resource commitment. An example of a complex TMDL which the Department is involved in is the ***Christina River Basin Project.***

The Department has been involved in the Christina River Basin Project interstate effort for several years. Partners in this effort include the Environmental Protection Agency (EPA), the Delaware River Basin Commission (DRBC), the Delaware Natural Resources and Environmental Control (DNREC) agency, the Department of Environmental Protection (DEP), the US Geological Survey (USGS), the Natural Resources Conservation Service (NRCS) and Chester and New Castle Counties. This project is a five year strategy which was developed to address the point and nonpoint source impacts within this 565 square mile basin. The components of this program as developed so far can be summarized as follows:

Monitoring to address both point source an nonpoint source data needs. A monitoring plan to address the information needs to develop a point source model using WASP (Watershed Assessment Screening Protocol) is in its second year of implementation. A total of 33 stations are included in the plan. Monthly grab samples are being taken at these stations. The monitoring plan to address the information needs for nonpoint source has recently been finalized. This plan calls for 11 stations. Automatic samplers will be installed at all 11 stations. It is planned to sample six storm events, with 4 discrete samples and 1 composite sample taken during each event at all 11 stations. Additional base flow and grab samples are also planned.

Watershed Assessments and GIS Development. During this year, additional watershed information is being collected. This includes information on land use, soils, existing stormwater management programs and ordinances, and the definition of subwatersheds.

Computer Modeling. It has been proposed to use the WASP model to address the point source issues and to assess instream impacts from nonpoint sources. It has also been proposed to use the HSPF (Hydrologic Simulation Program Fortran) model to generate the loadings from nonpoint sources for input into WASP. A workplan for this modeling effort has recently been finalized.

Remediation Plan. At the end of the five years, the development of a comprehensive plan for the entire basin is planned.

iv. **Abandoned Mine Drainage TMDLs** are those TMDLs developed to address Abandoned Mine Drainage (AMD), Pennsylvania's largest water quality problem. AMD is difficult to address because much of it results from past mining practices, and continues to flow even in the absence of precipitation, depending on the hydraulic head and hydrogeology of the area.. In addition, because of the volume and chemical parameters of the discharge, many stream segments cannot be addressed with existing technology in a cost effective, feasible manner.

Two ongoing initiatives undertaken by the Department will result in TMDLs for certain AMD discharges: (1) ***The AMD Impacted Watershed Assessment Pilot Project***; and (2) ***The 10% Set-Aside Program***. It is hoped that these projects will yield information to better address AMD in the Commonwealth.

The AMD Impacted Watershed Assessment Pilot Project -The Department has estimated the time and resources needed to prepare an AMD Impacted Watershed Assessment TMDL for eight (8) pilot project watersheds (note: each watershed includes many impacted stream segments).

The 10% Set-Aside Program. - In addition to the eight pilot watershed projects, the Department's Bureau of Abandoned Mine Reclamation (BAMR) has been using 10% of all funds available for abandoned mine reclamation in the Commonwealth since 1990 to address AMD impacts, and develop remediation plans for these discharges. Each project will be developed as a TMDL for AMD. For each potential project, the BAMR completes a detailed analysis to see if the discharge can be addressed in an economic, feasible manner, develops a hydrologic plan, completes the design for remediation, and constructs the project. The Department is contributing significant resources to this project in addition to those provided by the the 10% Set-Aside grant.

H

ATTACHMENT A

Topics of Monitoring, Assessment and Listing Report

I. Evaluation of Existing Pennsylvania Water Quality Monitoring and Assessment Program
   - A. Identification of types and amount of waters in Pennsylvania
   - B. Identification of boundary delineation (e.g., watersheds)
   - C. Description of current monitoring activities (e.g., location of monitoring stations (GIS), frequency, form of data, and data storage)
     1. Pennsylvania monitoring stations
     2. Federal monitoring stations (USGS, etc.)
     3. Other monitoring stations and activities (universities, volunteers, etc.)
   - D. Pennsylvania's use of existing data to establish priorities in the Section 303(d) listing process
     1. Description of Pennsylvania's organizational structure and administrative process for decision-making
     2. Description of Pennsylvania's process for comparing data to numerical standards, narrative standards (such as sediment, nutrients, odor, etc.) and anti-degradation requirements, to determine whether standards are met or will be met, for all categories of waters, including those impacted by agriculture, abandoned mine drainage, and forestry
     3. Description of Pennsylvania's use of simple analyses and models to interpret and extrapolate data
     4. Description of how information regarding violations of water quality standards is used in the listing process, including use of Section 305(b), 314 and 319(a) assessments
   - E. Identification of existing major point sources discharging to:
     1. any unassessed water
     2. any water quality limited segment where no TMDL has been established
     3. any water quality limited segment where a TMDL has been established
   - F. Identification and description of any specific data needs and gaps
     1. Identification of major sources and/or causes of impairment with locational data
     2. Identification of data needs to determine appropriate programmatic management activities

3. Description of Pennsylvania's process for identifying water areas of special value or special protection
4. Description of Pennsylvania's process for identifying biological reference conditions/areas
5. Identification of any data gaps as to particular flow/quantity issues
6. Identification of type(s) of data needed to fill any gaps
7. Ranking of any data gaps from high to low priority (acknowledging resource limitations)
8. Discussion of ability to use other agencies' data to fill any gaps

II. Recommendations for Monitoring and Assessment to Fill Any Data Gaps and Satisfy Any Data Needs
   A. Proposed approach for ambient monitoring and assessment program
      1. Definition of objectives
      2. Types/frequency of monitoring activities
      3. Selection of environmental indicators to meet monitoring and assessment objectives
   B. Options for integration of ambient and program-specific monitoring
      1. Locational comparison (use GIS tool)
      2. Methods for integration
      3. Availability of information
      4. Consideration of whether integration supports water quality goals and monitoring objectives
      5. Identification of data duplications, gaps and needs
      6. Selection of environmental indicators
   C. Implementation
      1. Cooperation with other agencies, local groups and watershed associations
      2. Integration of data from various agencies
         a. QA/QC procedures
         b. Adoption of standard terminology
      3. Data Collection
         a. Discussion of who will collect data
         b. QA/QC procedures
      4. Estimated costs and possible sources of funding

III. Recommendations to Improve Pennsylvania's Program for Identifying Waters that Should be Listed on the Section 303(d) List

I

REGION III GUIDANCE

- PART I -

LISTING WATERS UNDER SECTION 303(d) OF THE CLEAN WATER ACT
(May 20, 1997)

Section 303(d) of the Clean Water Act (CWA) requires the States to identify all waters within the State that still require the development of TMDLs. Specifically, the Section 303(d) requirements include;

1. Identify waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards, using existing and readily available water quality-related data and information,

2. Rank the waters considering uses and severity of the pollution problem,

3. Target those waters where TMDLs will be developed over the next two years, and

4. Develop TMDLs and control requirements for contributing point and nonpoint sources.

Two aspects of the listing process include the ranking system that the States use for the waters and the types and extent of data used to make the listing determination. In order to provide consistent direction to the States in EPA Region III, the Region has developed guidance for ranking of waters and the consideration of existing and readily available water quality-related data.

This guidance is not intended to be prescriptive in nature. It will provide options for consideration by the States and will not identify one option as the preferred. EPA firmly believes that it is the States' responsibility to develop and adopt an appropriate ranking system as well as to decide what data is appropriate to use for listing decisions.

While this guidance is not intended to be prescriptive and is designed to provide the States with options and other considerations that may be used by the States in the development of a ranking system or the selection of data to be used for listing purposes, there are a few '**musts**' with respect to ranking and data selection. First, the States, when developing their ranking and targeting approach, **must** include the consideration of water uses and the severity of the pollution problem in any approach adopted. Secondly, the States **must** fully consider the existing and readily available water quality-related data and information about the categories of waters listed at 40 CFR §130.7(b)(5). The States **must** provide a rationale for any decision to not use any existing and readily available data and information for any one of these categories.

This paper represents Regional guidance that should be considered by the States in Region III in

the fulfilment of the requirements at 40 CFR §130.7 and the CWA section 303(d). This guidance may be superseded by any additional guidance developed by EPA Headquarters for the National TMDL program. All reasonable care has been taken to assure that this Regional guidance is not in conflict with any national EPA guidance on this subject. However, if a situation is found where this Regional guidance does conflict with previously issued national directives, the national directives will control.

1. RANKING AND TARGETING WATERS

BACKGROUND:

One aspect of the development of the list of water quality-limited segments still requiring TMDLs ('list of waters') is the need to establish a priority ranking of those waters. The Clean Water Act (CWA), section 303(d)(1)(A), states that 'Each State shall identify those waters within its boundaries for which the effluent limitations required...are not stringent enough to implement any water quality standard... The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters'. Further requirements for the ranking and targeting of waters are found in the Federal Regulations at 40 CFR §130.7(b)(4) which states that 'The list required [the list of water quality-limited segments *still requiring TMDLs] ...shall include a priority ranking for all listed* water quality-limited segments still requiring TMDLs, taking into account the severity of the pollution and the uses to be made of such waters...The priority ranking shall specifically include the identification of waters targeted for TMDL development in the next two years.'

The ranking and targeting of waters is an important part of a State's water quality planning activities. The process allows the State to establish workloads, make efficient use of its available resources and met the objectives of the CWA. According to EPA's April 1991, "Guidance for Water Quality-based Decisions - The TMDL Process" (1991 Guidance), "Where all water quality problems cannot be addressed immediately, EPA and the States will, using multi-year approaches, set priorities and direct efforts and resources to maximize environmental benefits by dealing with the most serious water quality problems and the most valuable and threatened resources first."

It is the Region's position that it is the States' responsibility to develop and establish a priority setting system for those waters still needing TMDL development. Any system developed and used by the States however, must be consistent with Section 303(d)(1)(A) of the CWA and 40 CFR §130.7(b)(4). These provisions identify the relevant minimum factors the state must consider when establishing a priority system for those waters still needing the development of TMDLs. They are: 1) the uses of the specific waters, and 2) the severity of the pollution for each water.

DISCUSSION:

There are two separate but associated steps the States are required to take when listing waters for the development TMDLs. These two steps are 1) the priority ranking of all of their listed waters, and 2) the identification of those waters targeted for TMDL development over the next two years. For example, all of the waters identified on the section 303(d) list of waters are required to be priority ranked by some method developed by the States. The specific priority ranking method is not specified in the regulations or in subsequent EPA guidance. There are several acceptable methods for ranking and targeting waters.

Priority Ranking of Waters

First, waters may be ranked numerically such as "1", "2", "3" and so on. Using this approach the state would develop a numerical rank for each water based on the uses and severity (see below for approaches to this). The state would then target waters where TMDLs will be developed over the next two years.

Second, waters could be ranked as "high", "medium" or "low". Once all of the waters are ranked according to these categories, the States would target which of those waters will have TMDLs completed over the next two years. If there are more waters ranked as high priority than the state can do TMDLs for over a two year period, the state would target which of those high priority waters will be addressed in the specified time frame.

Third, waters could be ranked and targeted in a combined approach[1]. The list of waters would then be arranged in the order in which the state expects to develop the TMDLs. The list submitted to EPA, when using this approach, would identify the number of TMDLs to be developed over the next two years.

The above discussion does not preclude the States from devising their own method for ranking and targeting waters for the development of TMDLs. However, any priority ranking system MUST fully consider the uses of the waters and the severity of the pollution problem. In addition, any system for targeting the development of TMDLs should not exclude entirely particular sources or types of pollution simply because they are difficult to address.

In developing a priority ranking the waters[2], the state must consider the use of the water and the severity of the pollution problem. We believe that these two factors should form the basis for

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[1] Region III believes that the ranking and targeting can be combined in a single numerical system since statutory and regulatory reference to the uses and severity do not preclude the consideration of other factors.

[2] When 'the waters' are referenced in this paper, we are referring to the waters on the States' most recently approved section 303(d) list of waters still needing the development of TMDLs.

establishing the ranking of waters[3]. There are many aspects of these criteria that could be factored into a priority ranking decision. These factors[4] include, but are not limited to:

1. Which water bodies are most valuable from a functional perspective, for instance, for aquatic habitat, recreation and water supply
2. Which water bodies are impaired due to pollution, loss of habitat or riparian or terrestrial area destruction.
3. Which waters are threatened as opposed to those that are already impaired.
4. Which waters are more sensitive to change (pollutant impacts)
5. Which waters are known to or potentially could cause human health impacts(risk to human health)

These factors, and others that may be used by the States, should be evaluated with respect to their relative severity and/or importance. For instance, a human health impacted water may have higher priority 'points' assigned to it than one that is identified as having a medium loss of habitat. Likewise threatened waters may have a lower priority 'point' associated with them than a water that is shown to already be impaired. The individual state must establish its own comparative ranking system in order to adequately rank the listed waters.

Note that we do not consider it appropriate to consider certain resource items, such as resources necessary to develop a TMDL or the anticipated cost of controls, in the ranking of waters. Such considerations can be included during the targeting phase. Complex situations, such as presence of multiple discharges or the presence of nonpoint sources or a water listed for a particular type of pollutant that is particularly difficult to analyze, should not automatically be assigned a lower priority rank. (See the discussion on targeting below)

In addition to the analysis and weighing of the many aspects of severity of pollution and water uses, there are several approaches or techniques for 'calculating' the rank of a water in comparison to other waters. The document "Geographic Targeting: Selected State Examples" provides a detailed discussion of the various approaches to establishing rankings. As a summary, the document identifies several types of approaches including the numeric approach, the decision tree approach, the data layer overlay approach and the multi-agency selection process.

The numeric approach is the most common priority ranking technique. It applies a weighted numeric index to each water. Such an index combines multiple factors associated with a water's use and the severity of its water quality problems into an overall score. The score for each water is then used to establish a relative priority ranking of all waters. This type of an approach can be based on quantifiable criteria important to water quality, such as recreation use, human health

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[3] Other factors as discussed later can be considered in ranking/targeting when using the combined numerical rank/target approach.

[4] From "Geographic Targeting: Selected State Examples", EPA, February 1993.

factors and aquatic life support. The rankings can provide a single, integrated list of waters for all programs that set priorities. The results are standardized and reproducible.

A decision tree approach provides a clear overview of the ranking process and is based primarily on the best professional judgment of water resource managers. Available information on listed waters is assembled. Then, a series of questions[5] is posed to the water resource managers familiar with the water resources. Based on the answers to these questions, waters are placed into a number of priority categories. The decision tree ultimately results in a set of high priority waters. The main attraction of the decision tree approach is that it provides a clear understanding of the decision point in the ranking process.

The data overlay approach requires the mapping of many types of geographically distributed data. Successive overlays of the data types reveal the spatial correlations among different water quality problems. Overlaying several environmental features, such as land use, point sources, toxic hot spots, nutrient enriched areas and water supplies, can help to identify highly sensitive areas. To be effective, however, the data overlay approach must be used in conjunction with either the decision tree or numerical approach.

Multi-agency selection emphasizes broad participation by State, local, federal and/or public groups. The central feature of this approach is consensus. Multi agency committees review technical information from a water quality agency and move toward agreement on prioritization of waters. The advantage of this approach is the widespread acceptance of the results.

The Region is not recommending one of the above approaches to priority ranking over any of the others. The States should consider the feasibility, advantages and disadvantages of all of these with respect to the State's own programs, needs and organization. Other approaches not mentioned above may also be more appropriate for a particular state. However, as the state develops its own procedures, it must assure that any approach adopted by the state considers the waters' use and the severity of the pollution problem in establishing a priority ranking of the listed waters.

Targeting Waters for TMDL Development

It is recognized that in most, if not all, States it is not possible to complete the development of the TMDLs for all of the waters listed in the next two years. Some of these factors include the number of waters on the lists, the complexity of some situations, technical feasibility and resources. Because of these limitations and concerns, the States must develop a method for targeting certain waters for TMDL development over the next two years. The federal regulations

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[5] These questions can be as direct as 'Are data sufficient to evaluate the water?', 'Are standards violated frequently or seldom?', 'Is this a high value water?', 'Do management tools exist for this water?'. See the New Mexico example in "geographic Targeting: Selected State examples", EPA, 1993.

also require the States to target, as part of the priority ranking process, those waters where TMDLs will be developed over the next two years. 40 CFR §130.7(b)(4).

The number of waters identified as high priority may exceed the state's resources for doing TMDLs in a two year period. Therefore, once the rankings are set considering the severity of a water's pollution and its uses, the waters for TMDL development can be targeted. The Federal Regulations at 40 CFR §130.7(c)(1) state that 'Each State shall establish TMDLs for the water quality limited segments...in accordance with the priority ranking.'. The Region believes that this priority ranking includes the two step process of ranking and targeting. Therefore, if the State chooses to use a "high", "medium" and "low" priority system, the targeting of waters should take place in the high priority ranking group first and then the medium ranking group if additional TMDLs can be completed over the next two years. If waters are prioritized numerically, the waters targeted for TMDL development need not necessarily be sequentially the highest numbered waters[6]. There can be some discretion in selecting higher or lower numbered waters on the list based on other factors listed below. The state should fully document its targeting rationale and process in order to justify the selection of waters not in sequence.

Targeting waters for TMDL development can include considerations other than a water's uses and severity of pollution. In fact, there are a number of factors the States could include in their targeting considerations, including, but not limited to, the following:

1. Basin planning cycles,
2. Degree of public interest and support, recreational, economic and aesthetic importance,
3. Adequacy of existing data,
4. immediate programmatic needs such as need to develop waste load allocations for permits or a load allocation for BMPs,
5. Court orders and decisions relating to water quality,
6. National priorities and policies,
7. Adequacy of existing technical tools,
8. Cooperation of the affected public,
9. Backing of citizen groups and locals,
10. On-going activities in the watershed, and
11. Other programs' needs and activities

When considering the a water's uses and the severity of pollution in establishing numerical priority rankings and weighing other considerations for identifying TMDL development targets

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6 Unless of course the combined rank/target approach is used, in which case the TMDLs are developed in the order in which the waters appear on the list.

for the next two years, the state may elect to combine the priority ranking and TMDL targeting into one step. Using this approach would result in a list of waters that is arranged numerically so that the development of TMDLs would follow.

Public participation is an important aspect of the ranking and targeting of waters. The Region expects that any system used by the States to rank and target will be made available to the public. At a minimum, the process should be made available when the proposed list of waters is noticed. It is further recommended that, as the state's ranking and targeting process is developed, the state make it available to the public for review and comment before it is used by the state. The Region also expects the state to submit a full description of the ranking and targeting approach to EPA as part of the listing process under section 303(d) of the CWA.

SUMMARY:

The Federal Regulations at 40 CFR §130.7(b)(4) require all of the waters on a state's Section 303(d) list of waters to be priority ranked, considering uses of the water and severity of the pollution.

Waters targeted for TMDL development over the next two years must be identified on the list of waters.

The waters can be ranked and targeted by one of the following approaches:

1. First ranking the waters by the "high", "medium" and "low" approach using the uses and severity considerations and then targeting high priority waters for TMDL development over the next two years.

2. First ranking the waters numerically considering the uses and severity and then targeting the high ranking waters for TMDL development over the next two years.

3. Combining the ranking and targeting steps and listing the waters numerically according to the sequence in which the TMDLs will be developed.

4. A different state developed approach that fully considers water uses and the severity of the pollution problem, as well as a targeting approach that does not fully exclude waters impaired by a particular source or type of pollution simply because they are difficult to address

Any approach that the state uses should be fully available to the public for review. It is recommended that it be made available for public comment before it used by the state. Documentation of the approach used by the state must be submitted to EPA along with the proposed list of waters.

2. CONSIDERATION OF EXISTING and READILY AVAILABLE WATER QUALITY-RELATED DATA and INFORMATION

BACKGROUND:

One aspect of the development of the list of waters still needing the development of TMDLs[7] is the requirement to use "existing and readily available water quality-related data and information". Federal regulations at 40 CFR §130.7(b)(5) require the States to 'assemble and evaluate all existing and readily available water quality-related data and information to develop the list...'. This regulation goes on to identify four general categories of waters such data and information must be considered. Further explanation of the type of data to which this requirement refers has been addressed to some degree in previous EPA guidance or policy.

DISCUSSION:

State water quality standards provide the yardstick against which the States can assess a water's status and implement needed controls. These state water quality standards include four elements: numeric criteria[8], narrative criteria[9], designated uses and anti-degradation. In developing a list of waters still requiring the development of TMDLs under section 303(d) of the CWA, States need to identify those waters not meeting the state's applicable water quality standards (see 40 CFR §130.7(b)(3)).

Each state may have different methods for identifying and compiling information on the status of its waters depending on its specific programmatic or cross-programmatic needs and organizational arrangements. Typically, States utilize both existing (historic) information and new data collected from on-going monitoring programs to assess whether water quality standards are being met and to detect trends.

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7 See the CWA at section 303(d)(1)(A) for the requirement to identify the waters for which technology-based controls are not stringent enough to implement water quality standards and section 303(d)(1)(C) for the requirement to establish TMDLs for those waters.

8 A numeric criterion can consist of either one number or three separate numbers, one for acute considerations, one for chronic considerations and one for human health protection. They may also represent a never to exceed condition or include consideration of frequency and duration as well as magnitude.

9 A narrative criteria could be in the form of a 'free from toxic impacts", as an example.

Federal regulations at 40 CFR §130.7(b)(5) state that "At a minimum 'all existing and readily available water quality-related data and information' includes but is not limited to all of the existing and readily available data and information about..." the following four separate categories of waters:

1. Those waters in the 305(b) report[10] identified as partially meeting or not meeting designated uses, or as threatened.
2. Waters where dilution calculations or other predictive models indicate nonattainment of applicable water quality standards.
3. Waters where water quality problems have been reported by local, state, or federal agencies, the public, or academic institutions. The following specific agencies or organizations were identified as good examples:
    1. university researchers
    2. US Department of Agriculture
    3 National Oceanic and Atmospheric Administration (NOAA)
    4. US Geological Survey (USGS)
    5. US Fish and Wildlife Service (USFW)
4. Those waters identified as impaired or threatened in the CWA section 319[11] nonpoint source assessment.

This list of categories was condensed from the list of 16 categories included in the regulations for CWA section 304(l)[12] listing (see 40 CFR §130.10(d)(6)). The discussion in the preamble to the final regulations for the National Pollutant Discharge Elimination System; Surface Water Toxics Control Program (see Federal Register from June 2, 1989) describes the EPA's definition of existing and readily available data for the section 304(l) listing requirements. These are the categories, listed in Attachment III; as identifeid in the Appendix C of the 1991 EPA TMDL guidance[13] which appear at 40 CFR §130.10(d)(6)[14].

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10 Section 305(b) of the CWA requires States to prepare a water quality inventory every 2 years (this has been changed to every 5 years for a full report) to document the status of waters that have been assessed.

11 Section 319 of the CWA requires the States to develop State assessment reports identifying waters adversely affected by nonpoint sources.

12 Section 304(l) of the CWA requires the States to identified all surface waters adversely affected by toxic, conventional and nonconventional pollutants from both point and nonpoint sources.

13 "Guidance for Water Quality-based Decisiosn: The TMDL Process", EPA, 1991.

14 Note that not all waters identified under each of these 16 categories may need to be listed on the section 303(d) list. There are exceptions to the listing of some waters. As an example, some waters that are not designated as fishable/swimmable can, nonetheless meet State water quality standards. Waters that are not designated fishable/swimmable and that meet the designated uses

Appendix C of the 1991 TMDL guidance further states that "As stated in the 1991 guidance "These screening categories are based on categories promulgated as the minimum data set a State should consider when developing their list of impaired waters pursuant to section 304(l) of the CWA. When developing lists pursuant to this guidance and to meet the requirements of section 303(d), a State should, at a minimum, use these categories to identify their water quality-limited waters. States should also consider additional information, such as TRI data, streamflow information collected by USGS, locally available data, and public comments on the proposed 303(d) lists."

The 1989 preamble states that:

> "EPA considers the existing and readily available information and data about the categories of waters described in paragraph 130.10(d)(6) to be the minimum data and information that a state must assemble and evaluate when preparing lists in order for EPA to have an adequate basis to approve or disapprove the lists...
>
> " These categories reflect what EPA considers to be the minimum existing and readily available water quality data and information that a state and EPA can reasonably obtain...

Although this preamble was for the CWA section 304(l) listing requirements, it is significant in the 303(d) process since the final section 303(d) regulations, dated July 24, 1992, (see Federal Register, July 24, 1992, preamble to the final rule for Surface Water Toxics Control Program and Water Quality Planning and Management Program) describes the use of the 16 categories as the basis for establishing the 4 categories found in 40 CFR §130.7(b)(5) for the 303(d) listing requirements. The 1992 Preamble explains why the 16 categories of waters developed for the section 304(l) requirements were revised into the four general categories in section 130.7(b)(5) and that these 4 general categories embody all of the 16 categories found at 130.10(d)(6). Therefore, we hold that these 4 categories are what EPA considers to be the minimum existing and readily available water quality data and information that a state and EPA can reasonably obtain for listing decisions under both section 304(l) and 303(d).

Although the list of 4 categories is considered to be the minimum data and information that a state can reasonably obtain, it is not intended to exclude any information that is relevant to developing the section 303(d) list. States are required to use all existing and readily available data and information. As an example, States should consider their section 304(l) lists and also available Toxic Chemical Release Inventory (TRI) data reported under the Emergency Planning and Community Right-to-Know Act as existing and readily data.

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should not be listed. Refer to the 1991 listing guidance for those exceptions and the preamble to the final July 24, 1992, regulations for a discussion.

As noted in the 1994 listing guidance memorandum from Geoffrey Grubbs[15],

> "States are expected to use a combination of the most reliable databases, best professional judgement and the best available information to develop section 303(d) lists. In addition, in 1994 a greater use of predictive water quality modeling results should be made. EPA expects that this mix of databases, evidence and best professional judgement will vary from state to state.
>
> "There are a number of sources that can be used to help determine whether a particular waterbody belongs on the section 303(d) list. These include section 305(b) reports, Waterbody System information, toxics chemical release inventory (TRI), CWA section 319 and 314 assessments, USGS streamflow information, STORET data, fish consumption advisory information, anecdotal information and public reports, and other State and Federal databases. State should use the best available information in making the section 303(d) list determinations.

The guidance memorandum further provides examples of the type of data and information that should be considered:

> "Determining how much data and information are adequate to include a waterbody on the section 303(d) list is a deliberative process involving judgement. Appendix C of the 1991 TMDL guidance [see above for the list of 16 categories] provides a list of screening categories that States should use to identify water quality-limited waters. Examples of the type of data and information that should be used in making this determination are provided below:
>
> - "Evidence of numeric criterion violation. Example: Ambient monitoring data demonstrates exceedence of the State's ammonia criteria.
>
> - "Beneficial use impaired. Listing a waterbody due to beneficial use impairment requires information that shows the use is not being maintained and that this failure is due to degraded water quality. Example: A waterbody designated as cold water fishery has exhibited a documented decline in fish population. The population decline is tied to the existence of sediment deposits on the stream bottom which inhibit or preclude spawning.

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[15] See Memorandum from Geoffrey Grubbs, "Guidance for the 1994 Section 303(d) Lists", November 26, 1993

"● Evidence of a narrative criterion violation. Example: *Biological* assessment demonstrates that a loss of biological integrity has occurred, in violation of a state's biological criterion.

"● Technical analysis. Example: Predictive modeling or Rapid Bioassessement Protocol results that show criteria will be violated or beneficial uses will not be maintained.

"● Impairment demonstrated through other CWA mechanisms. example: If a waterbody is included on a section 319 or 314 assessment, or is determined to be impaired under section 305(b), it should be reviewed for possible inclusion on the section 303(d) list.

"● Other information sources. Other sources that support listing based on best professional judgement include information from the public participation process and information regarding the efficacy of existing control requirements to be implemented in the near future."

The guidance memorandum further discusses the need to include consideration of biological assessments in the development of the list of waters. The guidance states at page 5 that "biological data can be used to support listing . This is consistent with the use of biological assessment in EPA's 305(b) guidelines. These assessments can provide compelling evidence of water quality impairment because they directly measure the aquatic community's response to pollutants or stressors. Biological assessments and biological criteria address the cumulative impacts of all stressors, especially habitat degradation, loss of diversity and nonpoint sources. Biological information can help provide an ecologically based assessment of the status of a waterbody and as such can be used to decide which water need TMDLs.

EPA Region III believes that the use of biological data can be used alone (without corresponding chemical data) to make listing decisions under section 303(d). This type of data can be important in determining whether a water is meeting its designated use classification and/or the narrative criteria. It is also an important component in the determination as to whether a water meets the 'biological integrity' objective of the Clean Water Act.

The section 305(b) report preparation guidance for 1996 data information has been divided into 4 levels for chemical data and 4 different levels for the biological data (*Tables 5-2 and 5-3 in the* section 305(b) guidance) . These levels represent various levels of data reliability. In October 1995, The Region provided guidance to the States concerning which levels should be considered for listing decisions. The following is an excerpt from that Regional guidance:

"... we believe that it is appropriate to use levels four and three [as indicated in tables 5-2 and 5-3 of the section 305(b) guidance] for both chemical and biological data to justify including waters on the section 303(d) list. However... there are certain data types in both level two and level one that should also be used in any listing decision.

"For the biological/habitat data, we believe that level one data is not sufficient to make a decision for listing under section 303(d). However, we believe that most of the data included under level two should be sufficient to decide if a water should be listed. There are several issues that need clarification, as follows:

"1. The items marked as evaluated (E) are not sufficient for listing decisions. Since the 'E' marked items are both associated with 'M' (monitored) as well, we have defined the 'E' items the RBP-I and the item defined as 'Strong information about natural reproducing fishery' with an exception (see item 6 below).

"2. For any level two data, results showing the water to be severely impaired should be included on the list.

"3. For any level two data, any results showing the water to be moderately impaired should be included on the list, unless the State can show that some extenuating circumstances (such as high flow conditions during sampling) have made the representativeness of the data questionable.

"4. Where the State believes a water may be impaired based on Level two data or in situations described under the exception described in 3 above, the State should consider additional sampling before the next listing period to confirm the water's condition.

"5. We believe that 1 sampling event for level two data will integrate conditions over a period of time and is, therefore, sufficient to make a listing decision. However, the State may want to consider replicate samples for further verification.

"6. For level two data identified in the 305(b) guidance as 'strong information about natural reproducing fishery', we believe that, if this information includes actual fishery surveys where collections have taken place[16], it is sufficient for listing.

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[16] Fish collected, number of species determined, abundance, evidence of tumors or other abnormalities

"7. The State would probably want to use land use information, impairment cause, knowledge of the watershed and professional judgement to identify the length of stream impaired.

" The EPA 1994 guidance for section 303(d) lists discusses the importance of using biological data for the identification of impairments. Types of data that are mentioned include the Rapid Bioassessement Protocol and beneficial use evaluations. The guidance considers biological data as important information for listing purposes.

" We agree that levels three and four of the Physical/Chemical data are sufficient to make a listing decision under section 303(d). In addition, we believe that the State should consider most of the physical/chemical data under level two for listing and some of the level one data as well. The following describes the level two and one data that we believe are sufficient to make a listing decision:

"1. All of the level two data should be used with the exception of the volunteer monitoring data. This data may be used by the State if it is felt that the quality of data is sufficient.

"2. For level one data, we believe that most of the data types are not sufficient to make listing decisions. The exceptions include, a) fixed-station monitoring with limited period of record or parametric coverage, b) short-term surveys, and c) models that are not calibrated or verified.

"3. Exception 'a' noted in 2 above is limited. Where there is a good understanding of the problem or source, then limited data would be sufficient to list a water. An example would be quarterly monitoring below a point source discharge.

"4. Exception 'b' above is also limited. Situations where a short-term survey can be used in the listing decision process is where the State has conducted a short-term data collection program to obtain data for a water quality model. This would be similar to the past practice of the State of a quick data collection process for input into the toxics watershed model. This type of limited survey should also be used in situations where there is a reason to believe a severe source, such as acid mine drainage, is the cause and its obvious that it can be identified in a one day survey. As footnoted in Table 5-3, a single visit to a stream with severe acid mine

drainage impacts (high metals, low pH) cal result in high confidence of nonsupport. One grab sample is generally not sufficient to confirm a problem.

"5. For exception 'c' [above]..., W[w]e believe that any process that is used routinely to placed legally enforceable conditions on a permittee is certainly sufficient to make a listing decision. In addition, EPA regulations at 40 CFR §130.7(b)(5)(ii) identifies dilution or predictive modeling as one source of information for making listing decisions. EPA 1994 guidance for listing also addresses the need to include predicative modeling as well.

" We should keep in mind that there are minimum data requirements for listing under 40 CFR §130.7. This data must be used by the State for listing of waters under section 303(d) of the CWA. Data and data sources, such as fish kills or fishing or consumption advisories, should not be eliminated from consideration when listing waters because they do not fit into the two tables presented in the 305(b) guidance. In addition, when deciding to list a water or not, the feasibility of correcting a problem should not be considered."

As data sources are selected for listing considerations, States must keep in mind the need to use reliable data. The listing of a water on the section 303(d) list represents a potentially significant level of resource commitment by the state in the development of TMDLs. It is important that the decisions for listing waters on the list are based on reliable data that were collected under proper quality controls. As stated in the 1989 preamble:

"EPA expects the state to determine as much as possible the accuracy and validity of their existing and readily available data and information. EPA does not expect the states to rely on old or inaccurate data or information. If the state finds that much of its existing and readily available data is unreliable, EPA strongly encourages the states to obtain more current additional data whenever possible."

Determination of the level of quality assurance (QA) needed to accept data for listing purposes is a state decision. However, the level of quality control should not be at such a high level that little if any data, other than that data collected directly by the deciding agency, would not be accepted for listing decisions. The type of problem identified by the data or information will also dictate the level of QA necessary. For example, visual observations of a water may not be sufficient to list a water for dissolved oxygen or nutrient problems, but may be sufficient to list a water for impacts from acid mine drainage.

Volunteer monitoring is another area that needs to be considered by the States. In situations where citizen monitoring identifies a problem, there are two options a state could take in deciding how to use this data. If the citizen group can show that a minimum QA program was

followed that is acceptable to the state, the data should be used for listing decisions. If, on the other hand, the QA is not at a minimum acceptable level, then the state should use the data to identify areas in need of follow up monitoring by the state. In this case the water would not be listed but would be identified for future monitoring in order to confirm, or deny, the citizen sampling results.

There is also some question as to when data and information is readily available. The question often arises when data is from some source other than the state agency actually responsible for the listing process. The Region believes that the state should request entities[17] that may have appropriate water quality data to provide that data to the listing agency. This can be done by a request early on in the process, or by requesting comments from the other entities on a preliminary draft of the list. The listing agency should review and consider all new data provided. The listing agency is not expected, however, to be aware of and canvass all possible sources of water quality-related data and information during the list development[18] .

In addition to the above, the States must notice the draft list for public comment. A request for additional data relevant to a listing decision should be included in the notice. This would provide an opportunity for the state to obtain data from some additional sources. Although it is the States' responsibility to assure the list is as accurate and complete as possible, it is not realistic to expect the States to know of all of the possible data sources. The public notice could help in this identification.

SUMMARY:

The following is a summary list of water quality-related data types/sources that may be considered, if relevant, in the development of the section 303(d) list of waters. The limitations and conditions on the data as discussed above should be included in any decision by the States to use or not use the following information. Realistically, the States cannot be expected to be aware of all of the individual sources listed below (all university researchers, etc). The States may rely on the public comment process to request, and consider, additional significant data.

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17 Such entities may include not only other State agencies but relevant Federal agencies, environmental groups, private organizations and/or universities.

18 There are a large number of consultants, universities, private citizens, etc that MAY have some water quality data or information. It would be impossible, and unrealistic, for the state to be expected to contact all of these possibilities. The Region expects the States to contact those that they believe to be significant sources of information, however.

1. Various reports and assessments as required by the Clean Water Act, including the following:
   a. Section 305(b) report (40 CFR §1310.7(b)(5)(i)). This information will include many of the 16 categories of waters discussed in the 1991 TMDL guidance, such as waters with fishing or shellfishing bans or advisories, waters where there have been repeated fishkills or fish abnormalities have been reported or waters where there are restrictions on water sports. The associated Water Body System would be a source of the data for the 305(b) preparation.
   b. Section 319 nonpoint source assessment for waters impacted by nonpoint sources of pollution (40 CFR §130.7(b)(5)(iv)).
   c. Section 304(l) list of waters (see the 1991 TMDL guidance by EPA) . The 'long list' of waters is a comprehensive list of waters that are not meeting the fishable and swimmable goals of the CWA whether due to toxic pollutants, conventional pollutants, nonconventional pollutants, point sources or nonpoint sources[19].
   d. Section 314(a) assessments. This would give basic information on lake quality

2. Other federal and state agency data and information, including but not limited to:
   a. State and Federal Agricultural Departments (40 CFR §130.7(b)(5)(iii))
   b. National Oceanic and Atmospheric Administration (NOAA) (40 CFR §130.7(b)(5)(iii))
   c. United States Geological Survey (USGS) (40 CFR §130.7(b)(5)(iii))
   d. State and Federal Fish and Wildlife Services (40 CFR §130.7(b)(5)(iii))
   e. State and Federal Mining Agencies (40 CFR §130.7(b)(5)(iii))
   f. River Basin Commissions (SRBC, DRBC, ORSANCO, INCOPOT)

3. Various EPA CWA programs data storage and retrieval systems (see Attachment 1 for a list of known systems), such as:
   a. STORET - source of raw ambient data for water quality assessments.
   b. BIOS - biological data storage system
   c. PCS - Compliance status tracking system for major dischargers. Noncompliance data could be used to show a water need NOT be listed because of enforcement problems (one of the exceptions to listing if the resolution of the enforcement issue would resolve the water quality problem and not require a TMDL).

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[19] Not all of the 304(l) listed waters need to be included on the section 303(d)list of waters. As an example, a water body which meets its designated use criteria and does not meet the fishable/swimmable goals would be on the 304(l) long list but not the 303(d) list.

4. Data types that should be considered include:
   a. Ambient chemical data. This information should be part of the section 305(b) report data set. STORET and state databases would be a source of this information.
   b. Effluent toxicity test results. This information could be used in a dilution calculation (40 CFR §130.7(b)(5)(ii)) to determine potential in stream impacts.
   c. Biological and habitat data and information
   d. Predictive data (40 CFR §130.7(b)(5)(ii)). This could include dilution calculations or other predictive models based on estimates of discharge levels derived from effluent guidelines, NPDES permits or permit applications or DMRs If dilution calculations are completed for runoff critical conditions, land use information and/or GIS-based data could be used to project nonpoint contributions to water quality problems. The state must make a decision concerning the quality assurance issue when deciding whether to use this data source for listing decisions.

5. Sources of data other than federal or state agencies, for example:
   a. University researchers (general request for comment during the public comment period) (40 CFR §130.7(b)(5)(iii))
   b. Citizen monitoring activities (with proper QA/QC)
   c. Waters where ambient toxicity or adverse water quality conditions have been reported by others. This information could be obtained during the public comment period.

6. Other than CWA EPA program data sources, such as:
   a. National Priority List prepared under CERCLA
   b. Toxics Release Inventory (TRI)

7. Special regional studies and programs such as the Great Lakes Initiative, Delaware Estuary program and the Environmental Monitoring and Assessment Program can be a source of additional data.

3. DELISTING of WATERS on the SECTION 303(d) LIST

ATTACHMENT L - I

EPA DATA SOURCES

This Attachment is provided to identify various EPA data sources that maybe useful in the development of the section 303(d) list of waters. This information is taken, and condensed, from the EPA publication "Geographic Targeting: Selected State Examples", EPA-841-B-93-001, February 1993.

TABLE 1 - EPA DATA SOURCES

DATA SYSTEM	DESCRIPTION	PRIMARY USE	303(d) RELATED USE
Waterbody System	Database of assessment information on which the 305(b) report is based	Provides Waterbody specific information on pollution causes and sources and impairments	Major source for water quality data and identification of causes and sources of problems
Reach File	Hydrologic georeferencing and routing system	Integrates many databases having locational info on water quality conditions or pollutant causes	Hydrologic routing for estimating pollutant loadings
STORET	Data storage and analysis tool for chemical monitoring data from waters. Can store sediment and fish tissue data.	Major source of raw ambient data for water quality assessments.	Data analysis to document water quality problems, estimate loads, and rank impacts.
BIOS	Component of STORET for storing info on biological assessments	Simplifies storage and analysis of biological data, with links to other EPA data files.	Useful for direct access of biotic integrity to document ecological and habitat impairments or threats.
Ocean data Evaluation System (ODES)	Database and analysis system for marine and near coastal monitoring info	Permit tracking system for NPDES discharges to oceans and estuaries and ocean dumping.	Can assist in highlighting trends and spatial relationships
Current fish consumption advisories and bans	National database of fish/shellfish consumption advisories and bans from 305(b) reports and other sources	Identifies waters, species affected by advisories and bans and the problem pollutant.	Identifies waters, species affected by advisories and bans and the problem pollutant

DATA SYSTEM	DESCRIPTION	PRIMARY USE	303(d) RELATED USE
Clean Lakes System	Data analysis system for significant publicly owned lakes under section 314 program	provides data integration using number of EPA data files with mapping using the reach file.	Provides sophisticated integrated assessments for lakes. basic techniques could be extended for basin planning.
Permit Compliance System (PCS)	Locations and discharge characteristics for major and minor NPDES permittee	Compliance status tracking system for major dischargers	Estimating point source loadings and screening for areas with significant point source compliance problems.
Industrial Facilities Discharge File (IFD)	Information for over 120,000 NPDES dischargers, also Superfund sites	Locations, flows, and receiving waters for industrial discharges and POTWs	National-level screening for pollutant loadings associated with specific industrial categories. .May be outdated
Complex Effluent Toxicity Information System (CETIS)	Data on results of whole effluent toxicity	information on biologically oriented tool to spot toxics problems, with major uses in third round NPDES permitting.	Combination of STORET chemical data and BIOS and CETIS provide a balanced way to document severity of ecological impacts.

ATTACHMENT L - II

SUMMARY OF PERTINENT SECTIONS of the CLEAN WATER ACT, FEDERAL REGULATIONS POLICY and GUIDANCE

I - RANKING AND TARGETING OF WATERS

CWA Section 303(d)(1)(A) -

'Each State shall identify those waters within its boundaries for which the effluent limitations required...are not stringent enough to implement any water quality standard... The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters'.

40 CFR §130.7(b)(4) -

'The list required [the list of water quality-limited segments still requiring TMDLs] ...shall include a priority ranking for all listed water quality-limited segments requiring TMDLs, taking into account the severity of the pollution and the uses to be made of such waters...The priority ranking shall specifically include the identification of waters targeted for TMDL development in the next two years.'

40 CFR §130.7(c)(1) -

'Each State shall establish TMDLs for the water quality limited segments..., and in accordance with the priority ranking.'

Federal Register from Dec 28, 1978, preamble to final notice of TMDL regulations -

'Section 303(d)(1)(A) [of the CWA] is not exclusive of other factors. While States must consider the severity of pollution and uses to be made of the waters in establishing priority rankings, the statute does not preclude consideration of additional relevant factors such as timing, resource needs and level of technical detail.'

Federal Register from July 24, 1992, preamble to Surface Water Toxics control Program and Water Quality Planning and Management Program

Indicates that the reference to the consideration of uses and severity of the pollution does not preclude the use of other considerations when establishing a ranking system, "Section 303(d) of the CWA currently requires that when setting priorities, States must consider the uses of identified waters and the severity of the pollution. These are the

minimum, but not necessarily the only factors a State should consider in developing a priority ranking." This preamble also suggests additional considerations when targeting high priority waters for TMDL development. "...targeting of high priority waters for TMDL development should reflect an evaluation of the relative value and benefit of water bodies within the State and take into consideration the following: Risk to human health and aquatic life; degree of public interest and support, recreational, economic and aesthetic importance; vulnerability or fragility of a water as an aquatic habitat; immediate programmatic needs such as waste load allocations for permits or load allocations for best management practices (BMPs); water quality problems identified during the development of the section 304(l) 'long list;' and national priorities and policies..."

Federal Register from January 12, 1989, preamble to the proposed rules for National Pollutant Discharge Elimination System; Surface Water Toxics Control Program -

'When setting priorities, a state must consider uses of identified waters identified and the severity of the pollution. The State should also take into account such factors as :

1. The need to improve National Pollutant Discharge Elimination System (NPDES) permit limits,
2. The need for nonpoint source controls,
3. The priority Clean Lake projects, and
4. The pending State Revolving Load Fund decisions."

"Supplemental Guidance on Section 303(d) implementation" August 13, 1992

"The 303(d) list, including the priority ranking and identification of targeted waters, is dynamic. The priority ranking and waters identified as needing TMDLs may change during the succeeding two-year cycle. The waters targeted for TMDL development during the next two years should reflect the state's own priority ranking of its waters. The statute requires that the priority ranking and the list of waters targeted for TMDL development reflect the severity of use impairment and the type of uses being impaired. Particular sources or types of pollution should not be entirely excluded simply because they are difficult to address. For example, while nonpoint pollution is difficult to monitor and control it is widely recognized as the primary threat to water quality. The Agency objective and policy for review and approval of the identification of targeted waters is to ensure reasonable progress in addressing high priority waters with challenging water quality problems.

II - EXISTING and READILY AVAILABLE WATER QUALITY-RELATED DATA AND INFORMATION

40 CFR §130.7(b)(5) -

'Each State shall assemble and evaluate all listing and readily available water quality-related data and information to develop the list...At a minimum "all existing and readily available data and information" includes but is not limited to all of the existing and readily available data and information about the following categories of waters:'

40 CFR §130.7(b)(5)(i) -

Those waters in the 305(b) report identified as "partially meeting" or "not meeting" designated uses, or as "threatened".

40 CFR §130.7(b)(5)(ii) -

Waters where dilution calculations or other predictive models indicate nonattainment of applicable water quality standards.

40 CFR §130.7(b)(5)(iii) -

Waters where water quality problems have been reported by local, state, or federal agencies, the public, or academic institutions. The following specific agencies or organizations were identified as good examples:

1. university researchers
2. US Department of Agriculture
3 National Oceanic and Atmospheric Administration (NOAA)
4. US Geological Survey (USGS)
5. US Fish and Wildlife Service (USFW)

40 CFR §130.7(b)(5)(iv) -

Those waters identified as "impaired or threatened" in the CWA section 319 nonpoint source assessment.

40 CFR §130.7(b)(6) -

Requires the States to submit to EPA a description of the data used for listing purposes and a rationale for not using any existing and readily available data and information for any of the categories of waters listed above..

40 CFR §130.10(d)(6) -

list of sixteen categories of waters identified as existing and readily available data for their 304(l) listing process.

Federal Register from July 24, 1992, (pages 33046-33047) preamble to the final rule for

Surface Water Toxics Control Program and Water Quality Planning and Management Program - provides a discussion as to why the 16 categories of waters developed for the section 304(l) requirements were revised into the four general categories found above.

Federal Register from June 2, 1989, (pages 23884-23885) preamble to National Pollutant Discharge Elimination System; Surface Water Toxics Control Program; Final Rule - provides a discussion on existing and readily available data for the section 304(l) listing requirements. These are the data categories as identified in the Appendix C of the 1991 EPA TMDL guidance and appear at 40 CFR §130.10(d)(6).

Memorandum from Geoffrey Grubbs, "Guidance for the 1994 Section 303(d) Lists", November 26, 1993 - provides a discussion on the types of data that are appropriate for listing decisions.

Guidance for water Quality-based Decisions: The TMDL Process", EPA, 1991 - provides a discussion of the types of data and information that should be considered when making listing decisions and a list of screening categories of waters[20].

III. DELISTING of WATERS

[20] See discussion below for further information on these screening categories.

ATTACHMENT L - III

16 CATEGORIES of WATERS as IDENTIFIED at 40 CFR 130.10(d)(6)

1. Waters with fishing or shellfishing bans or advisories
2. Waters where there have been repeated fishkills or fish abnormalities have been reported
3. Waters where there are restrictions on water sports
4. Waters identified by the state in 305(b) as either partially achieving or not achieving designed uses
5. Waters listed under sections 319 or 304(l) of the CWA
6. Waters identified by the States as priority waters
7. Waters where ambient data indicate potential or actual exceedences of standards due to toxic pollutants from industry
8. Waters where effluent toxicity test results indicate possible or actual exceedences of standards including 'free froms'.
9. Waters with primary industrial dischargers where dilution analysis indicate exceedences of narrative or numeric criteria for toxic pollutants. These dilution analysis must be based on estimates of discharge levels derived from effluent guidelines, NPDES permits or permit applications or DMRs
10. Waters with POTW dischargers requiring pretreatment programs where dilution analysis shows exceedences of standards for toxic, ammonia or chlorine. These dilution analysis must be based on estimates of discharge levels derived from effluent guidelines, NPDES permits or permit applications or DMRs
11. Waters with dischargers not covered above with dilution analysis, as above.
12. Waters classified as not supporting fishable/swimmable
13. Waters where ambient toxicity or adverse water quality conditions have been reported by others
14. Waters identified as impaired under Section 314[21] of the CWA
15. Waters identified as impaired under the nonpoint source assessment
16. Waters impaired by pollutants from hazardous waste sites on the National Priority List prepared under CERCLA

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[21] Under Section 314(a) of the CWA, States identified a list of publicly owned lakes for which uses are known to be impaired by point and/or nonpoint sources.

REGION III GUIDANCE

- PART II -

TMDL DEVELOPMENT UNDER SECTION 303(d) OF THE CLEAN WATER ACT (May 20, 1997)

The Clean Water Act (CWA) at section 303(d) requires the States to develop and submit to EPA total maximum daily loads (TMDLs) for those waters that are not or will meet applicable water quality standards after application of basic treatment as defined in the Act[27].

1. TMDL SUBMITTALS TO EPA REGION III

INTRODUCTION:

The Clean Water Act (CWA)[28] requires each State to establish, for the waters identified as impaired and needing additional controls beyond minimum treatment as defined in the CWA, a total maximumm daily load (TMDL) for those pollutants which have been identified as causing or could potentially cause an impairment. These TMDLs must be completed for all pollutants, including thermal discharges. In addition, the States are required to submit the completed TMDLs to EPA for review and approval.

In order to assist the States in Region III in completing the requirements of submitting all TMDLs for EPA review, EPA Region III has developed this guidance which provides a description of the type of information that the States need to submit to EPA for review. Included as Attachment TMDL - I is a summary of the authorities for the development and submittal and EPA review of TMDLs. This Attachment provides in one location the federal laws and regulations pertaining to TMDLs and are provided for the convenience of the reader. In addtion, we have also included Attachment TMDL - II that presents a detailed discussion of the Region's views on TMDLs. This Attachment will give the States within Region III a common understanding of the Region's views on TMDLs.

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27 Basic treatment for municipalor industrial waste treatment facilities as defined at sections 301(b)(1)(A) (industrial) and 301(b)(1(B) (municipal) of the CWA.

28 See Appendix I for a more complete discussion of the TMDL development requirements of the Clean Water Act and the federal regulations pertaining to the development of TMDLs.

This guidance outlines a procedure which can be used by the States and EPA Region III that will satisfy the CWA and federal regulation requirements and allow for adequate review of TMDLs. Every effort has been made to make sure that the material in this paper is consistent with Agency rules, policies and guidance. There are certain situations where the Region's interpretation of some aspects of the TMDL program are not directly contained in Agency policy or guidance. In situations where there is a difference between material in this paper and official Agency policy or regulations, those Agency policies and\Vor regulations will take presidence over the Region III guidance paper. As National guidance becomes available, the Regional guidance will be adjusted, if necessary.

CHARACTERISTICS OF A TMDL:

TMDLs all have several common characteristics. These characteristics must be considered as the state develops a TMDL for a water and prepares to submit the TMDL to EPA for review and approval. Under some situations, the States may prefer to develop and submit remdiation plans instead of a 'traditional' TMDL. These remediation plans could include lake remediation plans developed under the Clean Lakes Program (section 314 of the CWA), nonpoint source remediaition plans developed under a State's nonpoint source control program or abandoned mine drainage plans. If a State intends to submit such a plan to EPA for review as a TMDL, the State should make certain that the plan contains all of the characteristics of a TMDL described below. These characteristics include the following:

1. An appropriate quantifiable end point must be identified for each TMDL. This end point could be an appropriate numeric water quality standard or may be based on the level of control necessary to prevent a violation of a narrative criterion or use classification of a water. In developing a TMDL to address nonattainment of a narrative criterion or a designated use, identifying an endpoint may be less forward than if a numeric criterion exists. For example, in a water where elvated sediment loadings prevent attainment of a use, a TMDL might recommend as a measurable endpoint thatonly a specific percent by weight of river bottom sediments are allwed as fine sediments.

2. A TMDL must be designed to meet the identified end point. In other words, any TMDL that is developed must be developed with the expectation that, when implemented, the appropriate water quality standard, i.e., the identified end point, will be attained.

3. A TMDL must include a pollutant reduction target. TMDLs can be expressed in terms of either mass per time, toxicity or other appropriate measure. TMDLs need not be expressed in loading per unit time or concentration. Other appropriate measures could include an estimate of reduction necessary in sediment or nutgrients needed to achieve water quality standards.

4. A TMDL must include an allocation of the allowable load to the significant sources, including point sources, nonpoint sources and existing, background stream loads.

5. A TMDL is scientific and uses the best available information.

6. There must be an assurance that the TMDL can be implemented. This does not imply that a specific plan and schedule for implementation is required to be submitted withthe TMDL, simply that the allocations made to the various sources of the pollutant/stressor are reasonable (both in terms of technology and politically) and could be expected to be achieved when implemented.

7. TMDLs must address all significant sources of the pollutant/stressor, including both point sources and nonpoint sources (including any background loading of the specific pollutant). A TMDL is defined as the sum of all point source loadings plus allof the nonpoint source loadings and a margin of safety. The TMDL development process should identify, to the maximum extent practicable, all pollutant sources that significantly contribute to the actual or threatened impairment. All sources of a stressor must be identified and considered in developing a TMDL to the maximum extent practicable, but it is permissible to allocate loads to a subset of these sources.

8. A TMDL can be developed for any TMDL or stressor. (see fed rgister 1978)

9. A TMDL must be submitted to EPA for review and approval.

10. A TMDL can be done in phases. If the Phased approach is used, the TMDL documentation must include a followup monitoring program to confirm or deny the success of Phase 1. The phased approach may be used in situations where there are not adequate data and predictive tools to characterize and analyze the pollution roblem with a lnownlevel of uncertainty.

11. TMDLs can be developed for waterbody segments, whole water bodies or watersheds. The correct geographic scale depends on the type, location and extent of all significant sources of the stressor and the geographic extent of the impairment

12. TMDLs can be established using a pollutant-by-pollutant or biomonitoring approach. A TMDL addresses a single pollutant or stressor. Each TMDL represents a specific stressor or property of a stressor. Some waters may need multiple TMDLs if more than one pollutant/stressor is causing impairment.

13. A TMDL contains a margin of safety (MOS). This MOS may be explicit or

implicit, but accounts for any uncertainty in the analysis.

14. A TMDL has a public participation component. Where a TMDL is limited in scope to point sources, it is acceptable to amend the public notice for the NPDES permits to meet the public participation requirement of a TMDL.

15. A TMDL must be established taking into account seasonal variations as well as critical conditions for stream flow, loading and water quality parameters.

SUBMITTALS to EPA:

The following information must be included with each TMDL submitted to EPA for review and approval. This information is necessary in order for EPA to properly review the TMDL and the basis for its determination. The form in which a TMDL and its associated information is packaged and submitted to EPA is a State decision. However, it is recommended that the minimum information described below be clearly identfid in any submittal. Attachment II provides a short checklist of information to assist the States in assuring that all required, basic informatiojn is included in the pacskage submitted to EPA.

1. Transmittal letter to EPA. This letter from the State should clearly identify the water for which the TMDL was developed and a specific request for EPA review and action. It is highly recommended that the State provide a draft of the TMDL and supporting documentation to EPA staff for preliminary review. This would allow the agencies to resolve any possible problems with the TMDL before EPA needs to take finalaction.

2. TMDL documentation

   a. identification of water for which TMDL has been developed
   b. identification of standards impaired and pollutant(s) to be allocated
   c. identification and documentation of the basis for the end points for TMDL development
   d. identification of significant sources of pollutant(s) of concern
   e. details of technical process used in the devlopment of the TMDL, including but not limited to.
      1. assumptions including background loading assumptions
      2. specific technical procedures
      3. A showing that standards are expected to be met with the TMDL in place
      3. margin of safety used
      4. data
   f. Calculated maximum loading plus the allocations to the significant sources, both point and nonpoint sources
   g. proposed controls necessary to achieve the TMDL.
   h. If a phased TMDL, a description of the followup monitoring program

3. Public participation documentation

ATTACHMENT T - I

LAW and REGULATIONS PERTAINING
to the
DEVLOPMENT of TMDLs

CLEAN WATER ACT

303(d)(1)(A) Each State shall identify those waters or parts thereof within its boundaries for which the effluent limoitations required by section 301(b)(1)(A) and section 301(b)(1)(B) are not stringent enough to implement any water quality standard applicabloe to such waters. The State shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

note: EPA's longstanding interpretation is that this section applies to waters impaired by point sources alone, nonpoint sources alone or a combination of sources. This interpretation is consistent with other subsections of the Clean Water Act (CWA). This subsection is interpreted in the federal regulations at 40 CFR 130.7(b) and is the listing of waters still needing TMDL development requirement.

303(d)(1)(B) Each State shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under section 301 are not stringent enough to assure protection and propagation of a balanced indigenoous population of shellfish, fish, and wildlife.

note: This subsection is interpreted at 40 CFR 130.7(b)(2).

303(d)(1)(C) Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and inaccordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 304(a)(2) as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

note: See the federal register cite from November 1978 for a discussion on which pollutants are suitable for TMDL development. See also the federal regulations at 40 CFR 130.7(c)(1)(ii) for a description of the pollutants that are appropriate for TMDL development.

303(d)(1)(D) Each State shall estimate for the waters identified in paragraph (1)(D) of this subsection the total maximum daily thermal load required to assure protection and propagation of a balanced, indigneous population of shellfish, fish and wildlife...

note: This subsection is interpreted at 40 CFR 130.7(c)(2)

303(d)(2) Each State shall submit to the Administrator from time to time, with the first submission not later than one hundred and eighty days after the date of publication of the first identification of pollutants under section 304(a)(2)(D), for his approval the waters identified and the loads establlished under paragrapghs (1)(A), (1)(B), (1)(C), and (1)(D) of this subsection. The Administrator shall either approve or disapprove such identification and load not later than thirty days after the date of submission. if the Administrator approves such identification and load, such State shall incorporate theminto oits current plan undewr subsection (e) of this section. If the Administrator disapproves such identification and load, he shall not later than thirty days after the date of such approval identify such waters in such State and establish such loads for such waters as he deterimnes necessary to impement the water quality standards applicable to such waters and upon such identification and establishment the State shall incorporate them into its current plan under subsection (e) of this seciton.

note: This subsectionof the CWA describes the need for EPA review and approval of any TMDL that is developed by the States. It also gives EPA the responsibility to develop a TMDL if the State's TMDL is disapproved.

FEDERAL REGULATIONS:

40 CFR 130.2(f) Loading capacity. The greatest amount of loading that a water can receive without violating wate quality standards.

40 CFR 130.2(g) Load allocation (LA). The portion of a receiving water's loading

capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimatess to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

40 CFR 130.2(h) Wasteload allocation (WLA). The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLA's constitute a type of water quality-based effluent limitation.

40 CFR 130.2(i) Total maximum daily load (TMDL). The sum of the individual WLAs for point sources and LAs for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.

40 CFR 130.5(b)(3) The process for developing total maximum daily loads (TMDLs) and individual water quality based effluent limitations for pollutants in accordance with section 303(d) of the Act and §130.7(a) of this regulation.

40 CFR 130.6(c)(1) Total maximum daily loads. TMDLs in accordance with sections 303(d) and (e)(3)(C) of the Act and §130.7 of this part.

40 CFR 130.6(c)(4) Nonpoint source management and control. (i) The plan shall describe the regulatory and non-regulatory programs, activities and Best Management Practices (BMPs) which the agency has selected as the means to control nonpoint source pollution where necessary to protect or achieve approved water uses. Economic, institutional, and technical factors shall be considered in a continuing process of identifying control needs and evaluating and modifying the BMPs as necessary to achieve water quality goals.
(ii) Regulatory programs shall be identified where they are determined to

be necessary by the State to attain or maintain an approved water use or where non-regulatory approaches are inappropriate in accomplishing that objective.

(iii) BMPs shall be identified for the nonpoint sources identified in section 208(b)(2)(F)-(K) of the Act and other nonpoint sources as follows:

(A) Residual waste. Identification of a process to control the disposition of all residual waste in the area which could affect water quality in accordance with section 208 (b)(2)(J) of the Act.

(B) Land disposal. Identification of a process to control the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality in accordance with section 208(b)(2)(K) of the Act.

(C)Agricultural and silvicultural. Identification of procedures to control agricultural and silvicultural sources of pollution in accordance with section 208(b)(2)(F) of the Act.

(D) Mines. Identification of procedures to control mine-related sources of pollution in accordance with section 208(b)(2)(G) of the Act.

(E) Construction. Identification of procedures to control construction related sources of pollution in accordance with section 208(b)(2)(I) of the Act.

(F) Saltwater intrusion. Identification of procedures to control saltwater intrusion in accordance with section 208(b)(2)(I) of the Act.

(G) Urban stormwater. Identification of BMPs for urban stormwater control to achieve water quality goals and fiscal analysis of the necessary capital and operations and maintenance expenditures in accordance with section 208(b)(2)(A) of the Act.

(iv) The nonpoint source plan elements outlined in §130.6(c)(4)(iii)(A)(G) of this regulation shall be the basis of water quality activities implemented through agreements or memoranda of understanding between EPA and other departments, agencies or instrumentalities of the United States in accordance with section 304(k) of the Act.

40 CFR 130.7(b)(1) Each State shall identify those water quality-limited segments still requiring TMDLs within its boundaries for which:

(i) Technology-based effluent limitations required by sections 301(b), 306, 307, or other sections of the Act;

(ii) More stringent effluent limitations (including prohibitions) required by either State or local authority preserved by section 510 of the Act, or Federal authority (law, regulation, or treaty); and

(iii) Other pollution control requirements (e.g., best management practices) required by local, State, of Federal authority are not stringent enough to implement any water quality standards (WQS) applicable to such waters.

40 CFR 130.7(b)(3) For the purposes of listing waters under §130.7(b), the term "water quality standard applicable to such waters" and "applicable water quality standards" refer to those water quality standards established under section 303 for the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegredation requirements.

40 CFR 130.7(c)(1) Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section, and in accordance with the priority ranking. For pollutants other than heat, TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters.
(i) TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach. In many cases both techniques may be needed. Site-specific information should be used wherever possible.
(ii) TMDLs shall be established for all pollutants preventing or expected to prevent attainment of water quality standards as identified pursuant to paragraph (b)(1) of this section. Calculations to establish TMDLs shall be subject to public review as defined in the State CPP.

40 CFR 130.7(c)(2) Each State shall estimate for the water quality limited segments still requiring TMDLs identified in paragraph (b)(2) of this section, the total maximum daily thermal load which cannot be exceeded in order to assure protection and propagation of a balance, indigenous population of shellfish, fish and wildlife. Such estimates shall take into account the normal water temperatures, flow rates, seasonal variations, existing sources of heat input, and the dissipative capacity of the identified waters or parts thereof. Such estimates shall include a calculation of the maximum heat input that can be made into each such part and shall include a margin of safety which takes into account any lack of knowledge concerning the development of thermal water quality criteria for protection and propagation of shellfish, fish and wildlife in the identified waters or parts thereof.

40 CFR 130.7(d)(1) Each State shall submit biennially to the Regional Administrator beginning in 1992 the list of waters, pollutants causing impairment, and the priority ranking including waters targeted for TMDL development within the next two years as required under paragraph (b) of this section. For the 1992 biennial submission, these lists are due no later than October 22, 1992. Thereafter, each State shall submit to EPA lists required under paragraph (b) of this section on April 1 of every even-numbered year. The list of waters may be submitted as part of the State's biennial water quality report required by §130.8 of this part and section 305(b) of the CWA or submitted under separate cover. All WLAs/LAs and TMDLs established under paragraph (c) for water quality limited segments shall continue to be submitted to EPA for review and approval. Schedules for submission of TMDLs shall be determined by the Regional Administrator and the State.

40 CFR 130.7(d)(2) The Regional Administrator shall either approve or disapprove such listing and loadings not later than 30 days after the date of submission. The Regional Administrator shall approve a list developed under §130.7(b) that is submitted after the effective date of this rule only if it meets the requirements of §130.7(b). If the Regional Administrator approves such listing and loadings, the State shall incorporate them into its current WQM plan. If the Regional Administrator disapproves such listing and loadings, he shall, not later than 30 days after the date of such disapproval, identify such waters in such State and establish such loads for such waters as determined necessary to implement applicable WQS. The Regional Administrator shall promptly issue a public notice seeking comment on such listing and loadings. After considering public comment and making any revisions he deems appropriate, the Regional Administrator shall transmit the listing and loads to the State, which shall incorporate them into its current WQM plan.

40 CFR 130.10(b)(3) The Act also requies that each State initially submit to EPA and revise as necessasry the following:
...(3) Total maximum daily loads (TMDLs)(303(d)); and...

40 CFR 130.10(c) The form and content of required State submittals to EPA may be tailored to reflect the organization and needs of the State, as long as the requirements and purposes of the Act, this part and, where applicable, 40 CFR parts 29, 30, 33 and 35, subparts A and J are met. The need for revision and schedule of submittals shall be agreed to annually with EPA as the States annual work program is

developed.

FEDERAL REGISTER:

vol 43, no 250
Dec 28, 1978

Total Maximum Daily Loads Under Clean Water Act - final notice of pollutants suitable for TMDL development:
(A) EPA's identification is as follows: All pollutants, under the proper technical conditions, are suitable for the calculation of total maximum daily loads. The Agency believes that under the proper technical conditions total maximum daily loads (TMDLs) and wasteload allocations can be developed for all pollutants. The requirements to perform TMDLs will be adjusted according to a priority ranking as envisioned by section 303(d) for the Clean Water Act (33 U.S.C. 1251 et seq.) To avoid over-loading either the States or EPA during the phased development of TMDLs.
(B) TMDLs can only be calculated for water bodies and pollutants with a specified numerical limit based upon approved or promulgated ambient water quality standards. Such numerical limits may be specified in the water quality standards or may be based upon the level of control necessary to prevent the violation of a quantitative or nonquantitative water quality criterion.

Vol 50, no 8,
January 11, 1985

Water Quality Planning and Management:
(A) It is preferable for States to establish WLAs/LAs and TMDLs for their waters in advance of NPDES permit or construction grant decisions. However, if a State has many water bodies where new WLAs/LAs and TMDLs are needed, it may have to submit WLAs/LAs to EPA with the permit or construction grant applications.
(B) If spike discharges are expected to present a water quality problem, permits should impose mass per day WLA limits and concentration limits on the discharger. EPA regulations, 40 CFR Part 122.63(f)(2), already provide for limiting effluents in terms of pollutant concentrations and this is a common practice in the NPDES permit process.

Vol 54, no 105,
June 2, 1989

National Pollutant Discharge Elimination System;
Surface Water Toxics Control Program:
(A) The second requirement in subparagraph (vii) for deriving water quality-based effluent limits, is that the water quality-based effluent limits must be consistent with wasteload allocations (WLAs) developed and approved in accordance with 40 CFR 130.7, if a WLA is available for the discharge. A wasteload allocation is defined at 40 CFR 130.2 and reflects

the portion of a receiving water's loading capacity that is allocated to a point source. The requirement to use approved wasteload allocations for water quality-based permit limits is implied in current §122.44(d) because paragraph (d) requires effluent limits to meet water quality standards. Today's language clarifies EPA's existing regulations by stating that when WLAs are available, they must be used to translate water quality standards into NPDES permit limits. Although subparagraph (vii) requires the permitting authority to use a wasteload allocation if one has been approved under Part 130, today's regulations do not allow the permitting authority to delay developing and issuing a permit if a wasteload allocation has not already been developed and approved.

Vol 57, no 143, July 24, 1992

Surface Water Toxics Control Program and Water Quality Planning and Management Program:
(A) EPA is today making non-substantive clarifying corrections to its regulations in part 130 to amend repeated references to "WLAs/LAs and TMDLs" to read "TMDLs." EPA had clearly stated in its definition of WLAs, LAs and TMDLs, and in the preamble to the 1985 final rule establishing part 130, that WLAs and LAs are part of a TMDL. See 50 FR 1775. Accordingly, the references to WLAs and LAs in these passages are not necessary.

ATTACHMENT T - II

DEFINITION of a TMDL

The definition of a TMDL is found in the Act and EPA regulations, and EPA guidance documents. That broad definition establishes minimum technical requirements for the development of water quality analyses with respect to Section 303(d) of the Clean Water Act. Section 303(d) provides that TMDLs should be established "at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." EPA regulations further state that TMDLs "shall be established for all pollutants preventing or expected to prevent attainment of water quality standards . . .", and that TMDLs "shall take into account critical conditions for stream flow, loading, and water quality parameters." 40 C.F.R. § 130.7. The components of a TMDL are set forth in 40 C.F.R. § 130.2 and include allocations attributed to point sources (wasteload allocation or "WLA") and to nonpoint sources, natural background, tributaries, or adjacent segments (load allocations or "LA"). A TMDL establishes the allowable loading of a pollutant to a waterbody so that water quality standards can be attained. A TMDL must consider all sources of the pollutant for which it is being established and it must enumerate such loads to WLAs and/or LAs such that the applicable water quality standards[29] will be attained and maintained.

A TMDL may address, as appropriate, a single pollutant source or multiple sources and may be established for geographic areas that range in size from a single water quality-limited segment to a large watershed encompassing many segments. The fundamental requirement for a TMDL, however, is that it is based on attaining and/or maintaining applicable State water quality standards as defined in the CWA.

A TMDL is one among a number of tools for implementing state water quality standards. A TMDL is a planning tool that quantifies reductions needed to implement applicable water quality standards and that recommends ways to obtain those reductions. TMDLs are not self-implementing; neither are they by themselves controls. TMDLs are implemented through other statutory authorities, or possibly through voluntary approaches, such as effluent limitations imposed in National Pollutant Discharge Elimination System ("NPDES") permits under Section 402 of the Clean Water Act ("CWA"), nonpoint source management programs, and other authorities provided by the CWA. The mechanisms used to implement TMDLs can extend beyond CWA authorities to include local ordinances, state water quality laws that are more

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[29] 40 CFR §130.7(b)(3) describes applicable water quality standards as those water quality standards established under section 303 of the CWA, including numeric criteria, narrative criteria, waterbody uses and antidegradation requirements.

stringent than the CWA, and water quality protection rules utilized by federal land management agencies.

TMDLs do not need to be described in a specific format or document. It is EPA's policy that the details of documenting TMDLs and the process for EPA review and approval of TMDLs should be established as part of the technical implementation agreement between EPA and the state. However, basic minimum requirements for the development and approvalof a TMDL exist. These requiements have been described in the main body of this paper.

TMDLs may be developed both for waters that do not achieve water quality standards after application of technology-based and other controls and for those waters that are not expected to do so (e.g., waters where future activity, such as expanding or proposed wastewater treatment facility discharges threaten water quality). Development of TMDLs for future activities allows EPA and the states to be proactive and to incorporate water quality-based permit limits into the design of new or expanding wastewater treatment facilities to prevent water quality standards excursions.

The establishment of each TMDL is a separate action not only for each segment or watershed, but also for each pollutant or stressor within each segment. Thus, within a particular water segment or watershed, there can be as many TMDLs as there are water quality limiting pollutants. When establishing priorities for TMDL development for segments or watersheds that are water quality limited for a number of pollutants, a state may assign a high priority to a particular pollutant or stressor within a water segment or watershed, while assigning a low priority to another pollutant or stressor within the same segment or watershed

In addition to the TMDL, the federal regulations offer other alternatives to establishing controls necessary in order to meet applicable water quality standards. In certain situations, waters need not be listed on the CWA Section 303(d) list of waters, and therefore need not have TMDLs developed for them, if effluent limits required by either State or local authority (40 CFR §130.7(b)(1)(ii)) or other pollution control requirements (including BMPs) are required by local, State or federal authority are sufficient to meet the applicable water quality standards (40 CFR §130.7(b)(1)(iii)).

A. The Purpose of a TMDL

The TMDL is a tool used to establish controls necessary to achieve applicable water quality standards. The TMDL process quantifies the loading capacity of a water for a given stressor and ultimately provides a quantitative scheme for allocating loadings among pollutant sources for a particular water segment. In doing so, the TMDL quantifies the relationships among sources, stressors, control options and water quality conditions. For example, a TMDL may mathematically show how a specified percent reduction of a pollutant is necessary to reach the pollutant concentration reflected in a water quality standard. In some cases, the pollutant for

which the controls are necessary may not have a direct water quality standard but is embodied in the narrative or use portion of the standard. The TMDL process must be able to relate these types of pollutants to the water quality conditions.

TMDLs are vital elements of a growing number of state programs. The process used to develop and implement a TMDL is the technical backbone of the Watershed Protection Approach and is integral to many ecosystem based initiatives. The TMDL's broad applicability to nonpoint source pollution, non-chemical stressors such as habitat degradation and other impairments is increasingly being realized. The TMDL process is also appropriate for addressing cross-media problems such as aerial deposition of pollutants, pollutant transfer through contaminated sediment, inflow of concentrated groundwater and pollutant migration from waste sites. TMDLs are applicable to waters impaired, or threatened by point sources only, nonpoint sources only or a combination of point and nonpoint sources.

B. Range of the TMDL Concept

The term "Total Maximum Daily Load" does not immediately convey the full meaning of the TMDL concept. Historically, there has been confusion concerning the applicability of TMDLs, particularly with respect to nonpoint sources of pollution, nonattainment of water quality standards based on narrative criteria and impairments such as physical degradation of aquatic habitat. This confusion continues today in many circles. Further, there seems to be confusion over the concept that a single loading number would be sufficient to define a TMDL for a water.

As provided for in EPA's implementing regulations and as stated in guidance, the TMDL process has the flexibility for developing comprehensive, watershed-based solutions for many types of problems that effect aquatic ecosystems. The fact that TMDLs can be developed to address nonpoint source problems is demonstrated by EPA's regulations at 40 CFR §130.2(I), which defines a TMDL as:

> "...the sum of the individual WLAs for point sources and the LAs for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs."

The development of load allocations for nonpoint sources and background conditions is

also recognized at 40 CFR §130.2(g), where load allocations are described as:

> "...best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading."

Further, the regulations also establish the applicability of TMDLs to situations involving water quality standards based on narrative or the use designation of the standard. 40 CFR §130.7(c)(1) states:

> "...TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical WQS with seasonal variations and a margin of safety which takes into account any lack
>
> of knowledge concerning the relationship between effluent limitations and water quality. Determinations of TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters."

The regulations provide the flexibility to use TMDLs in a wide range of situations where reduction in nonpoint and/or point source loadings are needed to meet the appropriate water quality standard, numeric, narrative and uses.

C. Steps in TMDL Development

Development of a defensible, implementable TMDL is more than "plugging" numbers into a set of equations to get a number that then can be divided equally between sources. It involves considerable preparation before any type of calculations can be made to establish the TMDL. Even the most simple of cases require the collection of existing data to verify the problem and to determine the level of analysis that can be done for a specific case. All TMDLs that are developed need to go through at least the following steps in order to ensure that they are developed in a manner that will allow a reasonable assurance applicable water quality standards will be attain and/or maintained.

1. collection of existing water quality data, source information, etc (this and the next step could include public participation to help identify data sources and problems)
2. identification of water quality problem to be addressed
3. estimation of cost of controls, level of interest, complexity of the problem and\or some other information to help determine the complexity of the TMDL analysis

necessary
4. selection of analytical tools to be used (models, etc)
5. identification of any data gaps
6. filling of data gaps (optional if it is determined that existing data is sufficient)
7. collection of additional data (again optional)
8. analysis to develop the TMDL, WLA, LA
9. develop control alternatives
10. report preparation
11. public participation

D. Units for TMDLs

As EPA interprets the unit requirements for TMDLs, WLAs and LAs, each of those may be expressed in terms of daily, weekly or annual loads as appropriate to the situation and/or pollutant. Daily loads are appropriate for some circumstances such as acute toxicity. For such pollutants as nutrients, annual loads are more appropriate. Weekly loads may be appropriate to express the allocation of chronic toxicity (In fact, there are situations where dilution will dictate that concentration is the most critical consideration for toxic pollutants). The preamble to the January 1985 federal regulations and the July 1992 federal regulations discusses further the issue of what units are appropriate for which TMDLs. In addition, some pollutants may not allow the units to be expressed in pounds per unit time. For instance, fecal coliform would be more appropriately referred to in counts per ml. See respectively 50 Fed. Reg. 1774 (January. 11, 1985) and 57 Fed. Reg. 33,040 (July 24, 1992).

E. TMDLs are for a Specific Pollutant

The preamble to the 1985 regulations implementing CWA section 303(d), states, "a single TMDL covers only one specific pollutant...". A TMDL may also address a single property of pollution, described in the preamble to the 1985 regulations as , "...for example, acidity, BOD, radioactivity, or toxicity." In addition, the setting of priorities for completing TMDLs may also consider a pollutant by pollutant approach. The CWA requirement that states set priorities when developing TMDLs account for the severity of the pollution problems authorizes a state to issue, for a particular waterbody, a single TMDL for the most serious pollutant first in lieu of establishing a TMDL for all pollutants at once[30].

In situations where a water may be impaired by several pollutants, a determination should be made to see if single or multiple TMDLs need to be established. A TMDL for multiple

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[30] See Dioxin/Organochlorine Center et al. v. Rasmussen ,slip op., No. C93-33D (W.D. Wash) (August 13, 1993)

stressors may be developed if it is efficient to do so and the resulting TMDL will be scientifically sound.

The technical analysis required to develop a TMDL, such as water quality modeling, can vary significantly depending on the type of stressor. Moreover, the assessments necessary to develop multiple, all-encompassing TMDLs might be exceedingly complex. Therefore, it may not be technically feasible to develop multiple TMDLs addressing all of the stressors for a water. By focusing on single stressor TMDLs instead of multiple TMDLs, scientific and mathematical procedures for each TMDL can be simplified. Conversely, occasionally one model may be applicable to multiple stressors, and the same set of controls may reduce many kinds of stressors. Under these circumstances, multiple TMDLs may be feasible and should be developed where appropriate.

F. Complexity of Developing Reliable TMDLs

TMDLs range from simple to complex depending on the situation or the needs of the regulator. They can be developed by using simple desktop approaches or complex calibrated/verified modeling techniques. TMDLs may be developed based solely on existing data, or may require extensive data collection. TMDLs may include a single point source, multiple point sources, nonpoint sources or a combination of point and nonpoint sources. TMDLs may be developed using the phased approach (discussed below). TMDLs may be designed to apply to either low flow steady state or the more complex wet weather transient flow situations.

Like many other regulatory tools, the level of analysis for establishing a TMDL is dependent on the problem to be solved and the intended use of the TMDL. It is appropriate to select the least complex approach appropriate for a situation. As the regulator address increasingly complex situations, correspondingly more resources should generally be allocated for the development of those TMDLs.

As EPA interprets the 303(d) requirements and the TMDL development process, that process does not need to span the entire range of flow conditions expected in the receiving water, but rather may focus on the critical condition of the water body, the sources and pollutants responsible for the impairment. Once the critical condition, pollutants and sources of pollutants are identified, the TMDL may then be established to appropriately allocate those loads to cure the impairment. The determination of the critical condition responsible for the water impairment can be a difficult analysis for many pollutants and sources. For nutrient loadings to a lake or estuary, the annual average loading would be the critical condition; for carcinogenic pollutants (such as dioxin) annual loadings (or longer) would be the appropriate time frame; for point source dominated impairments, the low flow period is critical.

It has been commonly accepted that for situations where point sources of pollution are the

primary source of water quality impairment, the critical condition is the stream design low flow condition. In many cases for rivers and streams point sources of pollution are the dominant source of water quality impairment. In many states, the low flow critical design condition is the 7-day, 10-year low flow period (over a ten year period the lowest 7 day flow of water). Therefore, it is entirely appropriate to develop TMDLs for point sources at these design flows. If TMDLs are also required for a particular pollutant at higher flows, the point source low flow allocation would act as a baseline for any further allocations that may be necessary.

In situations where nonpoint sources of pollution dominate, the selection of a critical condition is not as straight forward. Nonpoint source loads are typically positively correlated to flows. As flow increases so does the loading from nonpoint sources. Compounding the complexity are the various considerations set forth in the water quality standard - magnitude, frequency and duration. Impairment is measured for a particular water body on the basis of whether that water body attains the relevant water quality standards. Many water quality standards for toxic pollutants are expressed not only with a specific criterion number but also by how many times the criterion can be exceeded in a certain period of time (a criterion of 10 ug/l that cannot be exceeded on a four day average more than once over a three year period). The determination of impairment and the appropriate critical condition becomes increasingly complex. In order to fully consider all of these factors over the entire range of seasonally variable flow conditions, it is necessary to go beyond the simple TMDL. Such an analysis would require probabilistic modeling and massive amounts of representative data regarding the range of stream flows and pollutant concentrations. Because long-term, resource-intensive in stream monitoring is required to do such an analysis, in most cases such data is not readily available. Other wise, any data generated as part of TMDL development would be based on many assumptions and may not be reliable.

EPA believes that for point source dominated waters, low flow TMDLs are appropriate and necessary. There is no need to establish additional or more complex TMDLs at higher flows since the low flow will be the controlling factor for many point source treatment needs. Likewise, for situations where nonpoint sources are the dominant or sole source of the impairment, it would be appropriate to conduct only wet weather TMDLs (the critical design conditions for these wet weather situations is another complicating factor). For nonpoint-only TMDLs where the controlling conditions are at higher flows, there would be no need to determine the low flow TMDL component since nonpoint source impacts at the lower flow would be insignificant. In those cases the critical condition would be the higher flow condition. In some situations two TMDLs (or two independent components of one TMDL) may be necessary to redress the impaired water quality. One TMDL would be established for low flow conditions to set the baseline treatment requirements for the point sources; one TMDL would then be established for wet weather (high flow) conditions, based on the statistical probability of recurrence, to establish the needed controls for the nonpoint source contributions for the pollutant of concern.

In many cases it may not be possible to establish a single total loading restriction for a

given water. The loading capacity of a water does not necessarily reflect a fixed amount of loading. Assimilative capacity often varies in time and space due to the dynamic, sometimes random nature of the ecological features (physical, chemical and biological) which comprise a water and its watershed.

Based on the current state of the science and resources, EPA must approach the selection of remedy for nonpoint source problems on a case by case basis. EPA suggests that a process that includes an opportunity for a stepwise or phased approach to addressing nonpoint sources may be the most appropriate. (See Discussion under The Phased TMDL Approach below.) Under that approach, the TMDL would set forth the load allocations based on a simple analytical tool that considers existing and available data. Follow up monitoring would then determine if this approach was sufficient to properly allocate loadings in order for the impaired water to achieve water quality standards. If that monitoring finds that the TMDL is not adequate, then a more detailed approach would be developed to refine the original allocation. EPA also believes that low flow analyses for point sources are appropriate TMDL calculations, under the circumstances described.

G. Time and Resources Necessary for TMDL Establishment

Although very simple TMDLs may be completed quickly, the more complex approaches, such as those that require multiple flow and source considerations, could take a year or more to complete. EPA believes that data collection should not be excluded from the estimation of the time it takes to complete a TMDL. In situations where data collection is necessary to develop a proper TMDL, the collection process could add, at a minimum, several months to the process and most likely considerably longer. In addition, preliminary activities could add another month or more to the front end of the entire process. These preliminary activities include identification of the problem to be resolved, level of analysis necessary to properly address the problem, analytical tool selection, data gap analysis and monitoring program design. EPA estimates that the calculations necessary for developing a TMDL, particularly when several different sources are involved may take up to several months. Calculations for a simple TMDL case would require at least a week.

Public participation is necessary for effective TMDL development and implementation. The time devoted to this activity varies with the complexity of the TMDL, including such other factors as public interest in the particular water. At a minimum, the requirements for public participation in Pennsylvania will add another 2 to 6 months to the entire development process.

EPA estimates that a minimum of 6 months is required to complete the development of a single TMDL, even for the simplest situation. Obviously the time involved will increase with

complexity of the TMDL. A study completed for EPA[31] provides estimates of the resources needed for completion of 14 TMDLs nationwide. In general, it was found that the more complex the modeling associated with the development of the TMDL, the more resources were necessary for completing the work. The resources ranged from a low of 0.08 full time employees (FTEs)[32] and $4,039 for a simple approach to over 10 FTEs and more than $600,000[33].

H. Waste Load Allocations

Historically, EPA has accepted work labeled as a waste load allocation ("WLA") analysis as satisfying the substantive and procedural requirements of § 303(d). These WLAs have included full consideration of all point, nonpoint, and natural sources, given due consideration to seasonality and a margin of safety, properly considered critical conditions, and they have designed controls that will properly implement water quality standards.

Any contention that WLAs constitute only simplified estimates and that to satisfy the requirements of § 303(d) they must be based on field data and a calibrated and verified water quality model,[34] as well as take into account nonpoint sources and background loadings, is inaccurate. A water quality analysis that meets the minimum technical requirements of a TMDL, including adequate accounting for nonpoint sources and background loadings, can qualify as the functional equivalent of a TMDL.

Consistent with EPA regulations, WLAs can range from simplified estimates to highly accurate allocations of load. Furthermore, there is no provision in the Act or EPA regulations

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31 "TMDL Development Cost Estimates: Case Studies of 14 TMDLs", US EPA, Office of Water, EPA-R-96-001, May 1996

32 The report notes that the FTE estimate may be low for many of the cases since it includes only those FTEs for the lead agency. As an example, the report notes that for the Flint Creek TMDL, an FTE of 2.00 was reported but abut 14 additional FTEs were provided by other participating agencies. The Flint Creek TMDL was considered to be a simple TMDL costing over $1,000,000.

33 This estimate of over $600,000 is low since the total resources provided other agencies were not included in all cases. See footnote number 3 for a discussion on the Flint Creek and the underestimation of resources.

34 Calibrated and verified models are those mathematical water quality models whose performance and accuracy have been tested against actual field water quality data. The process of calibration involves the "fitting" of the model's performance to observed field data. The process of verification involves checking the model's performance against independent field data that was not used in the calibration process. If the model can reasonably predict the pollutant concentrations and the pollutant or parameter profiles that are measured, then the model can be considered calibrated. Calibrated/verified models and the needed data collection are conducted in order to ensure the technical defensibility of the resulting TMDL, as occurs when the receiving water is particularly important or when the cost to upgrade a wastewater treatment facility to comply with new permit limits based on the TMDL is substantial.

that requires the use of field data or the use of calibrated and verified water quality models to qualify the analysis as a TMDL. There may be instances where a calibrated and verified water quality model will be needed to sort out technical issues and derive technically-defensible components of a TMDL, but the decision to develop such resource intensive WLAs is properly within the discretion of the state, subject to EPA review.

I. Seasonal Variations

States have accounted for seasonal variations by establishing season-based TMDLs, most often using the environmental conditions of the most critical season of the year to develop the TMDL and then applying the results of the TMDL across the full year. This is accomplished under certain situations, such as when a state elects to calculate a low-flow TMDL using an extreme low-flow that occurs only during one time of the year, but applying the water quality controls derived from the low-flow TMDL across all seasons. This is also accomplished when a state elects to use an extreme ambient temperature from one season to formulate a TMDL, but apply the results of the TMDL to the full year. In both the low-flow and extreme temperature examples, a state may elect to apply controls based on actual seasonal flows and temperatures, but this would result in controls less stringent than those controls derived from applying the most critical flow and temperature across the full year.

J. Summation of TMDL Components

The summation of point sources loadings developed through a WLA and of nonpoint source and background load allocations is not necessary to be considered as a TMDL. Water quality models used to develop a TMDL must account for sources of loading for the pollutant of concern. To perform a water quality analysis that implements water quality standards, taking into proper consideration critical conditions, a margin of safety,[35] seasonality, and all pollutant sources, and then not to accept that work as an analysis that qualifies as a TMDL because the loads were not mathematically summed misses the entire point of the TMDL program. Of greatest utility to the regulatory agencies and the public is an articulation of the TMDL in terms of levels of control throughout the watershed, allocating and defining loads to individual sources of pollution. Indeed, mathematically summing the point source loads under a WLA and the nonpoint source load as well as background source loads under a LA for a watershed which has many waterbody segments and many sources may be more confounding that meaningful. An important aspect in TMDL development is to consider all sources and allocate loading responsibilities to the identified sources at a level that ensures the attainment of water quality standards.

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[35] The margin of safety may be incorporated into the TMDL either explicitly, by adding a discrete variable to the underlying water quality model, or implicitly, by making conservative assumptions when setting the model's coefficients.

K. Simplifying Assumptions Allowed

When developing TMDLs, States must balance the need to make prompt water quality-based decisions with the need to acquire the best possible information and data. The task of collecting field data for TMDL analyses can be an extremely time consuming and resource intensive process. To assist the states, EPA has published a series of technical guidance documents which outline a range of data gathering techniques to support TMDLs. The amount of data needed, as well as the best technical methodology, to develop a TMDL varies considerably from site to site. States are given discretion, with EPA review and public participation, to determine the proper balance between the need to collect site-specific information, apply appropriate technical methods, and the urgency of the water quality decision in question. An approach included in EPA's guidance states that "[the analytical techniques which are used in water quality modeling should be the simplest possible that will still allow the water quality manager to make confident and defensible water pollution control decisions. In many cases, simplified modeling efforts that have less extensive manpower and data requirements are often adequate to make decisions." See EPA, Simplified Analytical Method for Determining NPDES Effluent Limitations for POTW's Discharging into Low-Flow Streams (1980).

Other simplifications that could occur in the course of TMDL development include assumptions that concern critical upstream flow conditions, geographic scope (focussing on one part of the watershed), modeling approach, background conditions, and stream biological rates. States have used these assumptions to focus efforts on particular problems and make their water quality-based decisions more responsive and timely. EPA takes the position, and I agree, that the use of such simplifying assumptions is not inconsistent with the substantive and procedural requirements of § 303(d).

Any contention that the water quality analyses submitted by Pennsylvania cannot qualify as a TMDL because nonpoint sources or background loadings are not considered fails to appreciate the complete range of the State's TMDL work and the role of simplifying assumptions. EPA recommends that States consider background and nonpoint sources during critical conditions for all water quality analyses. Consistent with EPA guidance, however, it is acceptable to use simplifying assumptions, such as relying on data from other similar streams in the state to estimate background and nonpoint sources. States may use its discretion to make judgements whether the collection of field data is necessary to develop a technically defensible TMDL. Where States elect to use water quality data from reference streams as an estimate of background and nonpoint source loadings in its development of the components of TMDLs, EPA may consider those estimates as adequate representations for purposes of TMDL review and approval.

L. Low-Flow as a Critical Condition

For conventional pollutants such as dissolved-oxygen consuming substances, EPA has long recognized that a reasonable presumption is that low-flow periods of high ambient temperature are most often the critical condition with respect to discharges from municipal point source treatment facilities and other continuous discharging point sources. Although a stream may exhibit stress during periods of high-flow, in particular, stormwater conditions, the pollutant liability associated with municipal facilities as a source and contributor to biological, physical, and chemical stress on the receiving water is often the greatest at low-flow conditions. Because of this, EPA believes that TMDLs based on low-flow conditions are the proper simplification to address treatment needs at municipal facilities. Nothing in Section 303(d) or EPA regulations requires that the underlying water quality models used to develop TMDLs or WLAs simultaneously address multiple hydrologic events (e.g. low-flow, high-flow, etc.).

During periods of environmental stress at low-flow, the TMDL typically allocates treatment responsibilities to point sources. At high-flow stress periods, the TMDL correctly directs attention to a combination of point source and nonpoint source controls or possibly all nonpoint source controls. EPA regulations recognize that wasteload allocations can be made less stringent if nonpoint source pollution controls are "practicable."

With respect to municipal wastewater facilities, it is proper to assume that low-flow, high temperature is the most critical condition. The use of this rebuttable presumption is appropriate for the development of TMDLs which address water quality problems such as low dissolved oxygen. Accordingly, it is appropriate to develop a TMDL for dissolved oxygen consuming pollutants under this critical low-flow.

Seasonal variation can be, and is, considered when developing low flow TMDLs. The most obvious situation is that of nitrification. Nitrifiers are more active during the warmer temperatures of summer. They are not significantly active during winter months. Therefore, when allocating ammonia loads to a point source as part of a dissolved oxygen based low flow TMDL, many times the nitrification requirements are removed or reduced (that is the effluent concentration is allowed to be higher) during the winter months, thus allowing an increased loading of ammonia.

M. State Discretion Under the TMDL Program

Section 303(d) of the CWA affords the states a wide range of decision-making latitude in how it goes about developing TMDLs. To begin with, the definition of TMDL found in EPA regulations itself provides the states with discretion. For example, 40 C.F.R. § 130.7 provides that "TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach." The most common method in most states, including Pennsylvania, for developing TMDLs is the pollutant-by-pollutant approach. It addresses the physical and chemical impacts of loadings of a single pollutant or parameter (e.g., low dissolved oxygen) on the receiving water. The TMDL process also can be used to establish controls, if necessary, for quantifiable non-chemical

parameters that are preventing the attainment of water quality standards. These regulations also explain that states are allowed to express TMDLs "in terms of either mass per time, toxicity, or other appropriate measure," and that the load allocation portion of a TMDL "may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." Section 303(d) and EPA regulations also afford the states ability to prioritize the waters for which TMDLs will be developed.

The states, with EPA review, may determine the amount of effort that should be invested in a particular TMDL. The amount of time needed to develop a TMDL varies since there is a range of complexity found in water quality problems. Certain TMDLs that are simple can be performed with minimal environmental data and without the need of calibrated and verified water quality models. Other more complex TMDLs may take a long period of time to develop because of many factors. Key factors affecting the complexity of a TMDL include: the number and types of pollutant sources (multiple sources generally result in technically more complex and difficult TMDLs); the quantity, quality and availability of data and information regarding water quality and quantity, and the characteristics of the point/nonpoint source discharge; the extent of background and/or nonpoint source pollution (which is often difficult to characterize and quantify); critical gaps in information that may result in needed additional data collection; the fate and effects of pollutants discharged; the degree of public interest in the TMDL(s); the feasibility of controlling the pollutant sources; and the degree of uncertainty in the analysis.

Complex TMDLs can use the same mathematical model as simple TMDLs or they can use models incorporating more complex mathematical formulation representing more complicated stream biology and chemistry, such as algal growth kinetics or heavy metal reactions. The complex models can be steady state or dynamic; they can represent varying stream and discharge flows and can consider multiple dischargers and the biological and chemical interaction of various wastewater dischargers (e.g., industries, municipalities, and stormwater runoff). In order to develop a TMDL using complex models, the state generally needs to collect site-specific data regarding the wastewater sources and the receiving waterbody.

It is important to note that EPA considers TMDL development to be more than just the actual calculation of acceptable loads for implementation of water quality standards. Included in this process are efforts to collect environmental data, when needed, as well as the resources necessary to seek public participation.

N. The Phased Approach to TMDL Development

When developed according to a phased approach, a TMDL can be used to establish load reductions where there is impairment due to nonpoint sources or where there is lack of data or adequate modeling. EPA regulations provide that load allocations for nonpoint sources may be based on gross allotments depending on availability of data and appropriate techniques for predicting loads. Under the phased approach, the TMDL authority would then perform

additional monitoring of the water body to evaluate the effectiveness of nonpoint source management measures or more stringent effluent limitations.

Under the phased approach, the TMDL is developed based on the information at hand, best professional judgement and a margin of safety. The TMDL authority may then collect additional monitoring data to evaluate the effectiveness of the TMDL and whether more stringent effluent limitations and/or a revised TMDL may be necessary. The margin of safety in any TMDL should reflect the adequacy of data and the decree of uncertainty about the relationship between pollutant loading and receiving water quality. If necessary, the TMDL may be revised based on new monitoring information.

The phased approach can be applied to either low flow critical condition TMDLs or wet weather based TMDLs. Application for low flow is no different than if applied to a high flow rainfall related situation. Generally, when developing the wasteload allocations for point sources at the critical stream flow, six major areas must be considered: 1) point source characteristics, 2) receiving waterbody characteristics, 3) background conditions, 4) any nonpoint source contributions, 5) multiple discharge interaction, and 6) a margin of safety. Items 1 and 2 are generally available or appropriate simplifying assumptions are available. Background conditions refer to natural contributions of the pollutant of concern to the receiving waterbody. However, in many situations, it is difficult to distinguish between different types of loads so natural and other background loads are considered as one.

Because TMDLs require the full consideration of point, nonpoint sources and background in order to ensure the impaired water meet the appropriate water quality standard, the phased approach can be used in situations where background and/or nonpoint source data are not yet available. Instead of delaying the development of the TMDL until the data is collected, the state may establish the TMDL based on available information and best professional judgement, include a monitoring requirement and a schedule for implementation of the TMDL. Nonpoint source loadings (and background contributions) can be established using gross allotments until additional data are collected to better quantify the background and/or the nonpoint source loadings. This would be Phase I of the TMDL development. Based on a review of that data, the State or EPA could determine if nonpoint sources and/or background loads are significant and if the TMDL must be reconsidered and should be recalculated.

O. Activities that Meet the Substantive Requirements of CWA §303(d)(2)[36]

Many types of activities may qualify as TMDLs. EPA regulations at 40 CFR §130.7(b)(1) provide that waters need not be included on the section 303(d) list of waters if other Federal, state or local requirements are stringent enough to result in the attainment or

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[36] These are considered as TMDLs and will be referred to as "equivalent TMDLs" throughout this report.

maintenance of applicable water quality standards. That is, if there is a reasonable assurance that the controls will attain and maintain applicable water quality standards in a reasonable time frame, then those waters need not be identified as needing TMDLs, and hence, TMDLs are not required. These activities are essentially considered an equivalent to a calculated TMDL.

In all cases, equivalent TMDLs must meet several basic principles. There basic principles include: 1) controls must be linked to the problem at hand, 2) controls must be sufficient to meet applicable water quality standards, 3) there must be a reasonable assurance that the controls will be implemented, and 4) there is a reasonable time frame for implementation.

Because there are few if any regulatory requirements for the implementation of nonpoint source controls at the federal level, and just as few at the state and local level, the above exception has been interpreted to include both required and voluntary approaches to nonpoint source controls. However, whether the proposed control (or TMDL equivalent) is required or voluntary in nature, there must be a reasonable expectation that certain conditions will be met in order to consider them as equivalent TMDLs. There must also be a reasonable time frame for the controls to be put in place and some follow-up monitoring plan to assess the success of the plan in attaining the applicable water quality standard.

Examples of reasonable assurance for required controls may include authorization by federal or state authority, or local ordinance, for actions that have been shown to attain water quality standards or the activity is backed by a performance bond or similar legal contract, such as a contract that covers a point/nonpoint source trading agreement.

Reasonable assurances for voluntary approaches may be satisfied if:

1. it is technically feasible; and
2. it is specific to the stressor of concern; and
3. appropriate predictive analysis suggests that the appropriate water quality standards will be met; and
4. there is an implementation plan with a reasonable time frame; and
5. there is local buy in for the implementation

Some examples of other activities that may qualify as TMDL equivalents include:

1. stormwater management plans
2. lake restoration plans developed under section 314 of the CWA
3. nonpoint source watershed activities and plans as developed under section 319 of the CWA
4. abandoned mine drainage watershed restoration plans
5. local watershed restoration plans

P. Trends in TMDL Development

In the past, federal and state water quality management programs have focused on controlling point sources of pollution by implementing waste load allocations in the form of water quality-based effluent limitations in NPDES permits. Water quality data and water quality models that could easily integrate an analysis of both point sources and nonpoint sources of pollution where generally not available in earlier years nor were they easy to use. In recent years, the effects of nonpoint source contributions to water quality problems are becoming better understood. Water quality models and the related data collection that can assist in quantifying and characterizing nonpoint sources of pollution are being developed and can be used in the TMDL process.

Throughout the country, the initial phase of TMDL development was for the purpose of supporting programs to construct municipal waste treatment plants. Through the WLA component of TMDLs, water quality-based effluent limitations were developed for use in NPDES permits.

The states and EPA have made substantial progress, through the 1970's and 1980's, in addressing problems from chemical pollutants. However, the goal of the CWA is to preserve the chemical as well as the physical and biological integrity of this nation's waters. Thus, even as progress was being made, EPA and states recognized that physical and biological problems were a significant source of water quality impairments. EPA and the states noticed that cumulative effects of chemical pollution and disturbances to the physical conditions of streams, lakes and estuaries were affecting aquatic as well as human populations. Consequently, EPA began to look toward a more integrated, holistic approach to improving water quality.

ATTACHMENT TMDL - III

TABLE for TMDL SUBMITTAL REVIEW

Characteristic	included?	Comments