

Appendix A

RESOURCES FOR LITERATURE REVIEW

RESOURCES FOR THE LITERATURE REVIEW

TMDL Development Process

Non-EPA Resources:

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Appendix B

SURVEY QUESTIONS FOR EPA REGIONAL TMDL STAFF

The following questions are geared to help us better understand your perspectives on TMDL development and implementation, we are interested in knowing more about the work you perform related to TMDLs.

JOB FUNCTIONS RELATED TO TMDLs	Check all that apply:
Does your current position at EPA involve the following functions:	
Developing nonpoint source and/or stormwater-related TMDLs?	
Overseeing contractors that develop nonpoint source and/or stormwater-related TMDLs?	
Approving nonpoint source and/or stormwater-related TMDLs developed by state/third parties?	
Working on 303(d) listings?	

I. The following questions focus on how the variation in the availability, quality, and analysis of data influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

DATA COLLECTION AND ANALYSIS	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
In your experience:						
Is quality data generally available to support the development of TMDLs?						
In your experience are the following types of data generally available to support TMDL development?						
Source loading data						
Ambient water quality data						
Data on runoff quantity						
Land use/land cover data						
In your experience is adequate data generally available to support the following activities?						
Source assessments						
Estimations of loading capacity						
Allocating loads among sources						
Engaging active stakeholder involvement						
Developing a detailed implementation plan						

In your opinion are the following activities necessary to the development of a useful, high quality nonpoint source and/or stormwater-related TMDL?						
New monitoring and data collection efforts tailored to the TMDL						
Volunteer water quality monitoring						
Strict QA/QC procedures and protocols						
A Technical Advisory Committee						
Calibrated water quality models						

II A. The following questions focus on how the variation in the type, source, and duration of funding influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

FUNDING	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
In your experience:						
Have TMDLs with which you have been involved received adequate funding?						
In your experience, are the following funding sources used to support TMDL development?						
CWA 319 Funds						
CWA 104(b)(3)/ WQ Cooperative Agreements						
Great Water Body and National Estuary Programs						
USDA cost share programs						
Other EPA, Federal, state and local funding sources						
Please list other funding sources used to support TMDL development:						

II B. The following questions focus on how the variation in the availability of guidance and protocols influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

GUIDANCE, POLICIES and ANALYSIS.	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
In your experience:						
Is adequate guidance and information on TMDL development generally available to support the development of useful, high quality TMDLs?						
In your opinion, are the following types of materials useful in the development of high quality TMDLs?						
EPA rules and policy documents						
EPA guidance documents, methodologies and analyses						
Regional guidance documents, methodologies, and analyses						

Case studies and examples						
State guidance and analyses						
Academic/NGO guidance and analyses						

II C. The following questions focus on how the variation in leadership roles among stakeholders influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs.

LEADERSHIP ROLES AND RESPONSIBILITIES.	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
In your experience, which stakeholder(s) typically have the lead in TMDL development?:						
Leadership often is shared among stakeholders						
EPA often is the lead						
State environmental quality agency often is the lead						
Another state agency with primary responsibility for the pollutant source type often is the lead						
Local third party often is the lead (e.g., municipality, watershed association, or advisory group)						
Contractor often is the lead						
In your opinion, which stakeholder(s) provide(s) the most effective leadership in the TMDL development process?						
Multiple stakeholders						
EPA						
State environment quality agency						
State agency with primary responsibility						
Local third party						
Contractor						

III. The following questions focus on how the variation in stakeholder involvement influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs

STAKEHOLDER INVOLVEMENT	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
In your experience, how would you characterize the nature of stakeholder involvement in the TMDL development process?						
The level of stakeholder involvement in TMDL development is high.						
The stakeholders involved in TMDL development include all interested parties.						
The stakeholders involved in TMDL development are limited to key players.						
Stakeholder participation has a positive, substantive impact on TMDL development.						

In your opinion, does the involvement of the following types of stakeholders positively influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs?						
EPA TMDL program staff						
EPA water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)						
Other EPA staff with primary responsibility for impairment or source types (e.g., air deposition, Superfund)						
Other Federal agencies with primary responsibility for impairment or source-types (e.g., NRCS, USFS, USFWS).						
State TMDL staff						
State water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)						
Other State agencies with primary responsibility for impairment or source-types (e.g., state agricultural and natural resource agencies)						
Local government environmental and planning agencies						
Pollutant sources and/or their representatives						
National and regional environmental advocacy groups						
Local NGOs and watershed organizations						
Universities and/or research institutions						
Watershed residents						
In your opinion, is stakeholder involvement important in the following stages of TMDL development?						
All phases of the TMDL development process						
Assembling existing data, monitoring, and data analysis						
Source assessments						
Assigning load allocations among sources						
Developing TMDL implementation plans						
Public outreach about TMDL and implementation plan						
In your opinion, do the following TMDL characteristics increase active, meaningful stakeholder involvement in the TMDL development process?						
Stream segment specific TMDLs						
Watershed-wide TMDLs						
Single pollutant TMDLs						
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)						
High degree of impairment						
Type of pollutant						
In your opinion, which type of pollutant presents the greatest challenge for engaging stakeholders in the TMDL development process?						
Bacteria						
Nutrients						

Toxics/Chemical contaminants						
Temperature						
Sediment						
Other (Please list)						

IV. The following questions focus on how the variation in the scale and scope of TMDLs influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs.

SCALE, SCOPE, AND CHARACTERISTICS OF TMDLS	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
<i>In your opinion, do the following TMDL characteristics contribute to developing useful, high quality TMDLs?</i>						
Stream segment specific TMDLs						
Watershed-wide TMDLs						
Single pollutant TMDLs						
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)						
High degree of impairment						
Type of pollutant						
<i>In your opinion, which type of pollutant presents the greatest challenge for developing a useful, high quality TMDL?</i>						
Bacteria						
Nutrients						
Toxics/Chemical contaminants						
Temperature						
Sediment						
Other (Please list)						

V. The following questions focus on which elements of an implementation plan are most important for effective implementation of TMDLs.

IMPLEMENTATION PLANS	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	NR/ Unknown
<i>In your experience:</i>						
Do most TMDLs include some form of an implementation plan?						
Do most TMDLs include a detailed implementation plan?						
<i>In your opinion, are the following elements of an implementation plan essential to effective implementation of TMDLs?</i>						
Appointment of a designated management agency						
Estimation of technical and financial assistance needed						
BMP recommendations for each pollutant						

BMP recommendations targeted geographically						
Analysis of BMP costs and effectiveness						
Identification of necessary load reductions targeted geographically						
Public awareness and education campaign						
Schedule for implementation						
Interim targets						
Criteria to assess progress of implementation						
Monitoring of water quality						

VI. The following questions focus on how the TMDL development process influences the knowledge, attitudes and behaviors of water quality decision makers.

	Water Quality Decision Makers (Check frequency rating below)																								
[Note: Add NR/Unknown category to frequency rating for each organization to web version]	EPA Non-TMDL Program Staff			USDA Programs (e.g., NRCS, Cooperative Extension)			State Nonpoint Source Programs			State Stormwater Programs			State Agriculture Programs			Permitted Stormwater Dischargers			State/Local Government Planning Departments			Watershed Organizations and other local NGOs			
	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	Frequently	Sometimes	Rarely	
In your experience:																									
Are the following organizations notified when draft or final TMDLs are completed?																									
Do the following organizations understand the purpose of the TMDL program?																									
Do the following organizations have a greater commitment to achieve water quality standards based on TMDLs?																									
Do the following organizations have knowledge of TMDL load allocations and pollutant reductions?																									
Do the following organizations have knowledge of the recommended activities required to meet WQ standards?																									
Do the following organizations take new actions to improve water quality based on TMDLs?																									
Do the following organizations target outreach, funding and/or technical assistance based on TMDLs?																									

Appendix C

EPA REGIONAL TMDL SURVEY RESULTS

EPA TMDL SURVEY RESULTS (raw data by counts)

Region	Number of Respondents	Requested Participants	Participation Rate by Region
1	8	8	100%
2	4	6	67%
3	8	8	100%
4	8	8	100%
5	9	10	90%
6	6	8	75%
7	4	6	67%
8	5	7	71%
9	5	8	63%
10	10	11	91%
Total	67	80	84%

The following questions are geared to help us better understand your perspectives on TMDL development and implementation, we are interested in knowing more about the work you perform related to TMDLs.

JOB FUNCTIONS RELATED TO TMDLs	Check all that apply:
Does your current position at EPA involve the following functions:	
Developing nonpoint source and/or stormwater-related TMDLs?	34
Overseeing contractors that develop nonpoint source and/or stormwater-related TMDLs?	42
Approving nonpoint source and/or stormwater-related TMDLs developed by state/third parties?	62
Working on 303(d) listings?	45

I. The following questions focus on how the variation in the availability, quality, and analysis of data influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

DATA COLLECTION AND ANALYSIS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Is quality data generally available to support the development of TMDLs?	1	10	30	20	3	0
In your experience are the following types of data generally available to support TMDL development?						
Source loading data	3	12	33	14	2	0
Ambient water quality data	0	3	19	27	15	0
Data on runoff quantity	5	28	20	10	1	0
Land use/land cover data	0	0	7	31	26	0
In your experience is adequate data generally available to support the following activities?						
Source assessments	0	9	33	21	0	1
Estimations of loading capacity	2	7	24	21	9	0
Allocating loads among sources	0	16	28	14	3	1
Engaging active stakeholder involvement	1	7	21	26	4	3
Developing a detailed implementation plan	3	17	29	7	2	3
In your opinion are the following activities necessary to the development of a useful, high quality nonpoint source and/or stormwater-related TMDL?						
New monitoring/data collection efforts tailored to the TMDL	1	4	9	28	19	0
Volunteer water quality monitoring	0	23	23	12	4	0
Strict QA/QC procedures and protocols	0	8	15	16	23	0
A Technical Advisory Committee	0	18	30	11	2	0
Calibrated water quality models	1	6	24	28	3	0

II A. The following questions focus on how the variation in the type, source, and duration of funding influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

FUNDING	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Have TMDLs with which you have been involved received adequate funding?	1	9	27	19	1	1
In your experience, are the following funding sources used to support TMDL development?						
CWA 319 Funds	7	12	20	16	1	0
CWA 104(b)(3)/ WQ Cooperative Agreements	1	12	23	19	0	0
Great Water Body and National Estuary Programs	23	12	8	3	0	6
USDA cost share programs	23	14	7	1	2	1
Other EPA, Federal, state and local funding sources	3	5	22	22	1	1
Please list other funding sources used to support TMDL development:	Local Conservation districts often contribute in the form of cash or in-kind staff time; USGS cost share (3), s					

II B. The following questions focus on how the variation in the availability of guidance and protocols influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

GUIDANCE, POLICIES and ANALYSIS.	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Is adequate guidance and information on TMDL development generally available to support the development of useful, high quality TMDLs?	0	14	17	24	2	1
In your opinion, are the following types of materials useful in the development of high quality TMDLs?						
EPA rules and policy documents	2	7	22	16	12	0
EPA guidance documents, methodologies and analyses	1	5	22	20	11	0
Regional guidance documents, methodologies, and analyses	0	6	19	21	12	1
Case studies and examples	0	3	23	19	15	0
State guidance and analyses	0	7	20	21	10	0
Academic/NGO guidance and analyses	2	15	26	9	5	0

II C. The following questions focus on how the variation in leadership roles among stakeholders influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs.

LEADERSHIP ROLES AND RESPONSIBILITIES.	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience, which stakeholder(s) typically have the lead in TMDL development?:						
EPA	4	28	19	7	3	0
State environmental quality agency	0	1	4	39	17	0
Another state agency with primary responsibility for the pollutant source type	23	21	8	3	2	0
Local third party (e.g., municipality, watershed association, or advisory group)	14	33	7	3	1	0
Contractor often	16	15	21	6	1	0
Share leadership among stakeholders	14	17	21	7	0	0
Please Specify the stakeholders that typically share leadership.						
In your opinion, which stakeholder(s) provide(s) the most effective leadership in the TMDL development process?						
EPA	1	7	12	29	8	0
State environment quality agency	0	1	6	43	9	0
State agency with primary responsibility for implementation	4	11	15	18	3	6
Local third party	10	22	18	4	1	2
Contractor	20	17	11	6	0	2
Multiple stakeholders	10	16	19	8	3	2
Please Specify the stakeholders that provide the most effective joint leadership.	Regulators, environmental groups, dischargers; cities, industries, universities; multiple states or state and tribe; occasionally local interest groups; Contractor developed with either EPA/State environmental agency					

III. The following questions focus on how the variation in stakeholder involvement influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs

STAKEHOLDER INVOLVEMENT	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience, how would you characterize the nature of stakeholder involvement in the TMDL development process?						
Level of stkhlder involvement in TMDL development is high.	2	13	27	12	4	0
The stakeholders involved in TMDL development include all interested parties.	1	15	21	19	2	0
Stkhlders involved in TMDL develop. limited to key players.	0	9	20	25	4	0
Stakeholder participation has a positive, substantive impact on TMDL development.	0	2	21	24	11	1
In your opinion, does the involvement of the following types of stakeholders positively influence the development of useful, high quality nonpoint source and/or stormwater-						
EPA TMDL program staff	0	0	9	21	26	0
EPA water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	1	4	20	21	9	0
Other EPA staff with primary responsibility for impairment or source types (e.g., air deposition, Superfund)	1	15	27	7	4	2
Other Federal agencies with primary responsibility for impairment or source-types (e.g., NRCS, USFS, USFWS).	3	11	19	16	6	1
State TMDL staff	0	0	5	20	31	0
State water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	0	9	17	20	9	0
Other State agencies with primary responsibility for impairment or source-types (e.g., state agricultural and natural resource agencies)	1	9	29	10	5	1
Local government environmental and planning agencies	0	10	24	16	6	0
Pollutant sources and/or their representatives	1	14	20	14	6	1
National and regional environmental advocacy groups	2	24	20	6	4	0
Local NGOs and watershed organizations	1	13	22	15	4	0
Universities and/or research institutions	1	23	21	7	4	0
Watershed residents	1	22	0	11	6	2
In your opinion, is stakeholder involvement helpful in the following stages of TMDL development?						
Assembling existing data, monitoring, and data analysis	1	10	14	21	11	0
Source assessments	0	10	21	19	6	1
Assigning load allocations among sources	1	15	19	9	10	2
Developing TMDL implementation plans	0	3	7	20	22	3
Public outreach about TMDL and implementation plan	0	2	8	22	22	2
In your opinion, do the following TMDL characteristics lead to more meaningful stakeholder involvement in the TMDL development process?						
Stream segment specific TMDLs	1	13	25	10	3	2
Watershed-wide TMDLs	0	4	15	24	10	1
Single pollutant TMDLs	0	8	37	4	3	2
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	0	2	23	20	8	2
High degree of impairment	0	3	23	19	0	2
In your opinion, which type of pollutant presents a challenge for engaging stakeholders in the TMDL development process?						
Bacteria	3	18	23	7	3	3
Nutrients	1	15	23	8	9	1
Toxics/Chemical contaminants	1	16	24	8	5	3
Temperature	2	9	21	12	4	8
Sediment	2	7	27	11	7	3
Other (Please list)	0	2	0	3	7	5

Other

Dissolved oxygen; Dissolved oxygen/BOD; Mercury (3); air deposited pollutants; PCB; PH; BIO; metals; pesticides; Hg; FCA-Hg; GCA-PCBs; run off volume (e.g. % imper. cover); pollutants with narrative standards.

IV. The following questions focus on how the variation in the scale and scope of TMDLs influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs. In contrast to the previous set of questions which asked about stakeholder involvement, this section addresses how TMDL characteristics impact the quality of TMDLs.

SCALE, SCOPE, AND CHARACTERISTICS OF TMDLS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your opinion, do the following TMDL characteristics contribute to developing useful, high quality TMDLs?						
Stream segment specific TMDLs	1	11	22	15	4	1
Watershed-wide TMDLs	1	1	16	26	9	1
Single pollutant TMDLs	1	7	21	18	4	3
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	0	2	17	29	6	1
High degree of impairment	1	11	19	15	5	4
In your opinion, do the following types of pollutants present a challenge for developing a useful, high quality TMDL?						
Bacteria	2	14	22	13	3	2
Nutrients	0	13	18	14	11	0
Toxics/Chemical contaminants	1	6	25	15	8	2
Temperature	1	11	19	12	6	7
Sediment	1	8	26	10	10	1
Other (Please list)	1	0	1	1	9	3

Other specify

PCBs/legacy toxics; Mercury (5); pollutants that bioaccumulate and whose sources transcend state lines; DO/BOD; air deposited pollutants; PH; AMD; pesticides, metals; Hg; air deposition issues (mercury); atmospheric; run-off volume.

V. The following questions focus on which elements of an implementation plan are most important for effective implementation of TMDLs.

IMPLEMENTATION PLANS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Do most TMDLs include some form of an implementation plan?	3	8	11	18	7	1
Do most TMDLs include a detailed implementation plan?	13	18	16	7	2	1
In your opinion, are the following elements of an implementation plan essential to effective implementation of TMDLs?						
Appointment of a designated management agency	2	1	8	30	12	2
Estimation of technical and financial assistance needed	1	1	12	25	15	1
BMP recommendations for each pollutant	0	2	9	28	15	1
BMP recommendations targeted geographically	0	3	8	30	13	1
Analysis of BMP costs and effectiveness	0	3	13	27	11	1
Identification of necessary load reductions targeted geographically	0	2	7	26	19	1
Public awareness and education campaign	0	1	7	23	23	1
Schedule for implementation	0	4	6	25	18	1
Interim targets	1	2	16	22	13	1
Criteria to assess progress of implementation	0	2	4	26	22	1
Monitoring of water quality	0	0	0	17	36	1

The following questions focus on how the TMDL development process influences the knowledge, attitudes and behaviors of water quality decision makers.

In your experience, are the following organizations notified when draft or final TMDLs are completed?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0	14	21	10	8	0
USDA Programs (e.g., NRCS Cooperative Extension)	2	17	21	12	1	1
State Nonpoint Source Programs	1	5	20	16	10	1
State Stormwater Programs	1	9	17	17	7	2
State Agriculture Programs	1	12	22	9	5	2
Permitted Stormwater Discharges	1	6	14	15	16	0
State/Local Government Planning Departments	0	6	14	19	11	2
Watershed Organizations and other local NGOs	1	5	16	21	7	2

In your experience, do the following organizations understand the purpose of the TMDL program?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0	7	21	26	1	0
USDA Programs (e.g., NRCS Cooperative Extension)	0	11	21	19	0	1
State Nonpoint Source Programs	0	3	11	34	6	0
State Stormwater Programs	0	7	14	23	8	2
State Agriculture Programs	0	10	22	14	2	3
Permitted Stormwater Discharges	0	7	22	17	7	1
State/Local Government Planning Departments	0	9	24	18	2	1
Watershed Organizations and other local NGOs	0	3	24	22	4	1

In your experience, do the following organizations have a greater commitment to achieve water quality standards based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0	10	20	16	6	0
USDA Programs (e.g., NRCS Cooperative Extension)	1	13	24	5	1	5
State Nonpoint Source Programs	0	10	14	19	6	2
State Stormwater Programs	0	16	16	13	4	3
State Agriculture Programs	1	15	21	8	0	5
Permitted Stormwater Discharges	0	14	16	16	2	4
State/Local Government Planning Departments	0	15	21	11	2	2
Watershed Organizations and other local NGOs	0	9	15	15	8	3

In your experience, do the following organizations have knowledge of TMDL load allocations and pollutant reductions?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1	9	29	13	2	0
USDA Programs (e.g., NRCS Cooperative Extension)	2	14	28	4	0	3
State Nonpoint Source Programs	0	7	23	20	1	1
State Stormwater Programs	0	12	19	19	1	1
State Agriculture Programs	2	19	20	7	0	3
Permitted Stormwater Discharges	0	14	14	19	5	1
State/Local Government Planning Departments	1	18	18	12	3	1
Watershed Organizations and other local NGOs	0	9	23	14	5	1

In your experience, do the following organizations have knowledge of the recommended activities for meeting WQ standards?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1	5	29	14	3	2
USDA Programs (e.g., NRCS Cooperative Extension)	0	5	27	16	1	2
State Nonpoint Source Programs	0	7	23	20	1	1
State Stormwater Programs	0	8	15	21	4	3
State Agriculture Programs	1	9	29	12	1	4
Permitted Stormwater Discharges	0	8	17	17	7	3
State/Local Government Planning Departments	0	13	22	14	1	2
Watershed Organizations and other local NGOs	0	6	24	15	4	2

In your experience, do the following organizations take new actions to improve water quality based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1	8	24	14	2	3
USDA Programs (e.g., NRCS Cooperative Extension)	2	9	25	8	0	5
State Nonpoint Source Programs	0	6	18	22	2	3
State Stormwater Programs	3	8	14	19	2	5
State Agriculture Programs	1	14	24	5	1	5
Permitted Stormwater Discharges	3	11	14	15	3	5
State/Local Government Planning Departments	1	17	19	7	3	4
Watershed Organizations and other local NGOs	0	12	18	12	4	4

In your experience, do the following organizations target outreach, funding and/or technical assistance based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	2	10	16	21	3	1
USDA Programs (e.g., NRCS Cooperative Extension)	2	12	26	5	1	4
State Nonpoint Source Programs	1	7	19	18	5	2
State Stormwater Programs	5	9	19	13	2	4
State Agriculture Programs	3	15	20	6	1	5
Permitted Stormwater Discharges	5	14	13	10	1	5
State/Local Government Planning Departments	3	19	18	6	1	4
Watershed Organizations and other local NGOs	2	11	22	7	5	4

In your experience, do the following organizations make watershed planning decisions based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	2	10	21	15	3	1
USDA Programs (e.g., NRCS Cooperative Extension)	2	9	25	5	0	7
State Nonpoint Source Programs	0	5	20	18	4	4
State Stormwater Programs	3	10	16	16	1	5
State Agriculture Programs	2	19	18	5	1	5
Permitted Stormwater Discharges	4	12	11	14	2	7
State/Local Government Planning Departments	1	13	23	7	2	3
Watershed Organizations and other local NGOs	1	11	17	11	6	3

In your experience, do the following organizations make land use planning decisions based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
State/Local Government Planning Departments	3	20	19	5	0	6
Watershed Organizations and other local NGOs	3	10	22	8	3	6

EPA TMDL SURVEY (raw data by percentages)

Region	Number of Respondents
1	12%
2	6%
3	12%
4	12%
5	13%
6	9%
7	6%
8	7%
9	7%
10	15%
	100%

The following questions are geared to help us better understand your perspectives on TMDL development and implementation, we are interested in knowing more about the work you perform related to TMDLs.

JOB FUNCTIONS RELATED TO TMDLS	Check all that apply:
Does your current position at EPA involve the following functions:	
Developing nonpoint source and/or stormwater-related TMDLs?	51%
Overseeing contractors that develop nonpoint source and/or stormwater-related TMDLs?	63%
Approving nonpoint source and/or stormwater-related TMDLs developed by state/third parties?	93%
Working on 303(d) listings?	67%

I. The following questions focus on how the variation in the availability, quality, and analysis of data influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

DATA COLLECTION AND ANALYSIS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Is quality data generally available to support TMDL develop.?	1%	15%	45%	30%	4%	0%
In your experience are the following types of data generally available to support TMDL development?						
Source loading data	4%	18%	49%	21%	3%	0%
Ambient water quality data	0%	4%	28%	40%	22%	0%
Data on runoff quantity	7%	42%	30%	15%	1%	0%
Land use/land cover data	0%	0%	10%	46%	39%	0%
In your experience is adequate data generally available to support the following activities?						
Source assessments	0%	13%	49%	31%	0%	1%
Estimations of loading capacity	3%	10%	36%	31%	13%	0%
Allocating loads among sources	0%	24%	42%	21%	4%	1%
Engaging active stakeholder involvement	1%	10%	31%	39%	6%	4%
Developing a detailed implementation plan	4%	25%	43%	10%	3%	4%

In your opinion are the following activities necessary to the development of a useful, high quality nonpoint source and/or stormwater-related TMDL?

New monitoring and data collection efforts tailored to the TMDL	1%	6%	13%	42%	28%	0%
Volunteer water quality monitoring	0%	34%	34%	18%	6%	0%
Strict QA/QC procedures and protocols	0%	12%	22%	24%	34%	0%
A Technical Advisory Committee	0%	27%	45%	16%	3%	0%
Calibrated water quality models	1%	9%	36%	42%	4%	0%

II A. The following ques. focus on how the variation in the type, source, and duration of funding influence the develop. of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

FUNDING	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Have TMDLs with which you have been involved received adequate funding?	1%	13%	40%	28%	1%	1%
In your experience, are the following funding sources used to support TMDL development?						
CWA 319 Funds	10%	18%	30%	24%	1%	0%
CWA 104(b)(3)/ WQ Cooperative Agreements	1%	18%	34%	28%	0%	0%
Great Water Body and National Estuary Programs	34%	18%	12%	4%	0%	9%
USDA cost share programs	34%	21%	10%	1%	3%	1%
Other EPA, Federal, state and local funding sources	4%	7%	33%	33%	1%	1%

Please list other funding sources used to support TMDL development:

Local Conservation districts often contribute in the form of cash or in-kind staff time; USGS cost share (3), state (10), and local (watershed) (3); TMDL extramural funds from EPA (5); State and Tribal CWA 106 grant funding (14), state TMDL funding for staff; State of TN Division of Water Pollution Control Funds; EPA PACE funds (2), Fed and State special appropriations; superfund; 604(b) dollars pass through to local governments (2); Clean lakes fund/state program funds; supplemental funds and contractor support through the region (2); 104(b) funding without cooperative agreements; Congressional special appropriations; NRCS funding programs; TMDL discretionary funds (2); Clean Water Initiative funds (Michigan); HQ contract; Puerto Rico ASA stewardship; RCD; USFS monies (2); federal watershed contract dollars; OW TMDL funds

II B. The following questions focus on how the variation in the availability of guidance and protocols influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

GUIDANCE, POLICIES and ANALYSIS.	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Is adequate guidance and information on TMDL development generally available to support the development of useful, high quality TMDLs?	0%	21%	25%	36%	3%	1%
In your opinion, are the following types of materials useful in the development of high quality TMDLs?						
EPA rules and policy documents	3%	10%	33%	24%	18%	0%
EPA guidance documents, methodologies and analyses	1%	7%	33%	30%	16%	0%
Regional guidance documents, methodologies, and analyses	0%	9%	28%	31%	18%	1%
Case studies and examples	0%	4%	34%	28%	22%	0%
State guidance and analyses	0%	10%	30%	31%	15%	0%
Academic/NGO guidance and analyses	3%	22%	39%	13%	7%	0%

II C. The following questions focus on how the variation in leadership roles among stakeholders influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs.

LEADERSHIP ROLES AND RESPONSIBILITIES .	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience, which stakeholder(s) typically have the lead in TMDL development?:						
EPA	6%	42%	28%	10%	4%	0%
State environmental quality agency	0%	1%	6%	58%	25%	0%
Another state agency with primary responsibility for the pollutant source type	34%	31%	12%	4%	3%	0%
Local third party (e.g., municipality, watershed association, or advisory group)	21%	49%	10%	4%	1%	0%
Contractor often	24%	22%	31%	9%	1%	0%
Share leadership among stakeholders	21%	25%	31%	10%	0%	0%

Regulators, environmental groups, dischargers; cities, industries, universities; multiple states or state and tribe; occasionally local interest groups; Contractor developed with either EPA/State environmental agency directing work; State association of conservation districts, state agency, watershed association; EPA and state (4); Tribes; watershed groups in the area if already working on water quality problem; EPA, state, basin commissions; state basin commission, third party (contractor or university); committee of stakeholders lead by POTWs; Tribal governments, county governments, Navy; States, EPA ORSANCO; PRASA stewardship - PREQB, DOH, EPA, regulated parties; stakeholders including landowners, point sources, and tribal entities; State, municipal, EPA; tribes, states, adjoining states, sometimes major sources (ex// dam operators); border states on shared waters; river basin commissions, EPA, member states; EPA state water quality agencies, wastewater and stormwater discharger groups, RCDs, USFS, environmental groups, NGOs; Tribes and local conservation districts; state and natural resources agency responsible for mines; state, tribes, EPA; watershed advisory groups, industry, local governments, environmental groups; USFS, NRCS,

Please Specify the stakeholders that typically share leadership.

In your opinion, which stakeholder(s) provide(s) the most effective leadership in the TMDL development process?						
EPA	1%	10%	18%	43%	12%	0%
State environment quality agency	0%	1%	9%	64%	13%	0%
State agency with primary responsibility for implementation	6%	16%	22%	27%	4%	9%
Local third party	15%	33%	27%	6%	1%	3%
Contractor	30%	25%	16%	9%	0%	3%
Multiple stakeholders	15%	24%	28%	12%	4%	3%
Please Specify the stakeholders that provide the most effective joint leadership.	Regulators, environmental groups, dischargers; cities, industries, universities; multiple states or state and tribe; occasionally local interest groups; Contractor developed with either EPA/State					

III. The following questions focus on how the variation in stakeholder involvement influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs

STAKEHOLDER INVOLVEMENT	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience, how would you characterize the nature of stakeholder involvement in the TMDL development process?						
The level of stakeholder involvement in TMDL development is high.	3%	19%	40%	18%	6%	0%
The stakeholders involved in TMDL development include all interested parties.	1%	22%	31%	28%	3%	0%
The stakeholders involved in TMDL development are limited to key players.	0%	13%	30%	37%	6%	0%
Stakeholder participation has a positive, substantive impact on TMDL development.	0%	3%	31%	36%	16%	1%

In your opinion, does the involvement of the following types of stakeholders positively influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs?

EPA TMDL program staff	0%	0%	13%	31%	39%	0%
EPA water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	1%	6%	30%	31%	13%	0%
Other EPA staff with primary responsibility for impairment or source types (e.g., air deposition, Superfund)	1%	22%	40%	10%	6%	3%
Other Federal agencies with primary responsibility for impairment or source-types (e.g., NRCS, USFS, USFWS).	4%	16%	28%	24%	9%	1%
State TMDL staff	0%	0%	7%	30%	46%	0%
State water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	0%	13%	25%	30%	13%	0%
Other State agencies with primary responsibility for impairment or source-types (e.g., state agricultural and natural resource agencies)	1%	13%	43%	15%	7%	1%
Local government environmental and planning agencies	0%	15%	36%	24%	9%	0%
Pollutant sources and/or their representatives	1%	21%	30%	21%	9%	1%
National and regional environmental advocacy groups	3%	36%	30%	9%	6%	0%
Local NGOs and watershed organizations	1%	19%	33%	22%	6%	0%
Universities and/or research institutions	1%	34%	31%	10%	6%	0%
Watershed residents	1%	33%	0%	16%	9%	3%
In your opinion, is stakeholder involvement helpful in the following stages of TMDL development?						
Assembling existing data, monitoring, and data analysis	1%	15%	21%	31%	16%	0%
Source assessments	0%	15%	31%	28%	9%	1%
Assigning load allocations among sources	1%	22%	28%	13%	15%	3%
Developing TMDL implementation plans	0%	4%	10%	30%	33%	4%
Public outreach about TMDL and implementation plan	0%	3%	12%	33%	33%	3%
In your opinion, do the following TMDL characteristics lead to more meaningful stakeholder involvement in the TMDL development process?						
Stream segment specific TMDLs	1%	19%	37%	15%	4%	3%
Watershed-wide TMDLs	0%	6%	22%	36%	15%	1%
Single pollutant TMDLs	0%	12%	55%	6%	4%	3%
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	0%	3%	34%	30%	12%	3%
High degree of impairment	0%	4%	34%	28%	0%	3%
In your opinion, which type of pollutant presents a challenge for engaging stakeholders in the TMDL development process?						
Bacteria	4%	27%	34%	10%	4%	4%
Nutrients	1%	22%	34%	12%	13%	1%
Toxics/Chemical contaminants	1%	24%	36%	12%	7%	4%
Temperature	3%	13%	31%	18%	6%	12%
Sediment	3%	10%	40%	16%	10%	4%
Other (Please list)	0%	3%	0%	4%	10%	7%

Dissolved oxygen; Dissolved oxygen/BOD; Mercury (3); air deposited pollutants; PCB; PH; BIO; metals; pesticides; Hg; FCA-Hg; GCA-PCBs; run off volume (e.g. % imper. cover); pollutants with narrative standards.

Other

IV. The following questions focus on how the variation in the scale and scope of TMDLs influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs. In contrast to the previous set of questions which asked about stakeholder involvement, this section addresses how TMDL characteristics impact the quality of TMDLs.

SCALE, SCOPE, AND CHARACTERISTICS OF TMDLS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your opinion, do the following TMDL characteristics contribute to developing useful, high quality TMDLs?						
Stream segment specific TMDLs	1%	16%	33%	22%	6%	1%
Watershed-wide TMDLs	1%	1%	24%	39%	13%	1%
Single pollutant TMDLs	1%	10%	31%	27%	6%	4%
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	0%	3%	25%	43%	9%	1%
High degree of impairment	1%	16%	28%	22%	7%	6%
In your opinion, do the following types of pollutants present a challenge for developing a useful, high quality TMDL?						
Bacteria	3%	21%	33%	19%	4%	3%
Nutrients	0%	19%	27%	21%	16%	0%
Toxics/Chemical contaminants	1%	9%	37%	22%	12%	3%
Temperature	1%	16%	28%	18%	9%	10%
Sediment	1%	12%	39%	15%	15%	1%
Other (Please list)	1%	0%	1%	1%	13%	4%

PCBs/legacy toxics; Mercury (5); pollutants that bioaccumulate and whose sources transcend state lines; DO/BOD; air deposited pollutants; PH; AMD; pesticides, metals; Hg; air deposition issues (mercury); atmospheric; run-off volume.

Other specify

V. The following questions focus on which elements of an implementation plan are most important for effective implementation of TMDLs.

IMPLEMENTATION PLANS	Never	Seldom	Sometimes	Often	Always	Not Relevant
In your experience:						
Do most TMDLs include some form of an implementation plan?	4%	12%	16%	27%	10%	1%
Do most TMDLs include a detailed implementation plan?	19%	27%	24%	10%	3%	1%
In your opinion, are the following elements of an implementation plan essential to effective implementation of TMDLs?						
Appointment of a designated management agency	3%	1%	12%	45%	18%	3%
Estimation of technical and financial assistance needed	1%	1%	18%	37%	22%	1%
BMP recommendations for each pollutant	0%	3%	13%	42%	22%	1%
BMP recommendations targeted geographically	0%	4%	12%	45%	19%	1%
Analysis of BMP costs and effectiveness	0%	4%	19%	40%	16%	1%
Identification of necessary load reductions targeted geographically	0%	3%	10%	39%	28%	1%
Public awareness and education campaign	0%	1%	10%	34%	34%	1%
Schedule for implementation	0%	6%	9%	37%	27%	1%
Interim targets	1%	3%	24%	33%	19%	1%
Criteria to assess progress of implementation	0%	3%	6%	39%	33%	1%
Monitoring of water quality	0%	0%	0%	25%	54%	1%

The following questions focus on how the TMDL development process influences the knowledge, attitudes and behaviors of water quality decision makers.

In your experience, are the following organizations notified when draft or final TMDLs are completed?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0%	21%	31%	15%	12%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	3%	25%	31%	18%	1%	1%
State Nonpoint Source Programs	1%	7%	30%	24%	15%	1%
State Stormwater Programs	1%	13%	25%	25%	10%	3%
State Agriculture Programs	1%	18%	33%	13%	7%	3%
Permitted Stormwater Discharges	1%	9%	21%	22%	24%	0%
State/Local Government Planning Departments	0%	9%	21%	28%	16%	3%
Watershed Organizations and other local NGOs	1%	7%	24%	31%	10%	3%

In your experience, do the following organizations understand the purpose of the TMDL program?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0%	10%	31%	39%	1%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	0%	16%	31%	28%	0%	1%
State Nonpoint Source Programs	0%	4%	16%	51%	9%	0%
State Stormwater Programs	0%	10%	21%	34%	12%	3%
State Agriculture Programs	0%	15%	33%	21%	3%	4%
Permitted Stormwater Discharges	0%	10%	33%	25%	10%	1%
State/Local Government Planning Departments	0%	13%	36%	27%	3%	1%
Watershed Organizations and other local NGOs	0%	4%	36%	33%	6%	1%

In your experience, do the following organizations have a greater commitment to achieve water quality standards based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	0%	15%	30%	24%	9%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	1%	19%	36%	7%	1%	7%
State Nonpoint Source Programs	0%	15%	21%	28%	9%	3%
State Stormwater Programs	0%	24%	24%	19%	6%	4%
State Agriculture Programs	1%	22%	31%	12%	0%	7%
Permitted Stormwater Discharges	0%	21%	24%	24%	3%	6%
State/Local Government Planning Departments	0%	22%	31%	16%	3%	3%
Watershed Organizations and other local NGOs	0%	13%	22%	22%	12%	4%

In your experience, do the following organizations have knowledge of TMDL load allocations and pollutant reductions?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1%	13%	43%	19%	3%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	3%	21%	42%	6%	0%	4%
State Nonpoint Source Programs	0%	10%	34%	30%	1%	1%
State Stormwater Programs	0%	18%	28%	28%	1%	1%
State Agriculture Programs	3%	28%	30%	10%	0%	4%
Permitted Stormwater Discharges	0%	21%	21%	28%	7%	1%
State/Local Government Planning Departments	1%	27%	27%	18%	4%	1%
Watershed Organizations and other local NGOs	0%	13%	34%	21%	7%	1%

In your experience, do the following organizations have knowledge of the recommended activities for meeting WQ standards?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1%	7%	43%	21%	4%	3%
USDA Programs (e.g., NRCS Cooperative Extension)	0%	7%	40%	24%	1%	3%
State Nonpoint Source Programs	0%	10%	34%	30%	1%	1%
State Stormwater Programs	0%	12%	22%	31%	6%	4%
State Agriculture Programs	1%	13%	43%	18%	1%	6%
Permitted Stormwater Discharges	0%	12%	25%	25%	10%	4%
State/Local Government Planning Departments	0%	19%	33%	21%	1%	3%
Watershed Organizations and other local NGOs	0%	9%	36%	22%	6%	3%

In your experience, do the following organizations take new actions to improve water quality based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	1%	12%	36%	21%	3%	4%
USDA Programs (e.g., NRCS Cooperative Extension)	3%	13%	37%	12%	0%	7%
State Nonpoint Source Programs	0%	9%	27%	33%	3%	4%
State Stormwater Programs	4%	12%	21%	28%	3%	7%
State Agriculture Programs	1%	21%	36%	7%	1%	7%
Permitted Stormwater Discharges	4%	16%	21%	22%	4%	7%
State/Local Government Planning Departments	1%	25%	28%	10%	4%	6%
Watershed Organizations and other local NGOs	0%	18%	27%	18%	6%	6%

In your experience, do the following organizations target outreach, funding and/or technical assistance based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	3%	15%	24%	31%	4%	1%
USDA Programs (e.g., NRCS Cooperative Extension)	3%	18%	39%	7%	1%	6%
State Nonpoint Source Programs	1%	10%	28%	27%	7%	3%
State Stormwater Programs	7%	13%	28%	19%	3%	6%
State Agriculture Programs	4%	22%	30%	9%	1%	7%
Permitted Stormwater Discharges	7%	21%	19%	15%	1%	7%
State/Local Government Planning Departments	4%	28%	27%	9%	1%	6%
Watershed Organizations and other local NGOs	3%	16%	33%	10%	7%	6%

In your experience, do the following organizations make watershed planning decisions based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
EPA Non-TMDL Program Staff	3%	15%	31%	22%	4%	1%
USDA Programs (e.g., NRCS Cooperative Extension)	3%	13%	37%	7%	0%	10%
State Nonpoint Source Programs	0%	7%	30%	27%	6%	6%
State Stormwater Programs	4%	15%	24%	24%	1%	7%
State Agriculture Programs	3%	28%	27%	7%	1%	7%
Permitted Stormwater Discharges	6%	18%	16%	21%	3%	10%
State/Local Government Planning Departments	1%	19%	34%	10%	3%	4%
Watershed Organizations and other local NGOs	1%	16%	25%	16%	9%	4%

In your experience, do the following organizations make land use planning decisions based on TMDLs?

	Never	Seldom	Sometimes	Often	Always	Not Relevant
State/Local Government Planning Departments	4%	30%	28%	7%	0%	9%
Watershed Organizations and other local NGOs	4%	15%	33%	12%	4%	9%

EPA TMDL SURVEY (raw data by counts - never and seldom responses merged; often and always responses merged)

Region	Number of Respondents	Requested Participants	Participation Rate by Region
1	8	8	100%
2	4	6	67%
3	8	8	100%
4	8	8	100%
5	9	10	90%
6	6	8	75%
7	4	6	67%
8	5	7	71%
9	5	8	63%
10	10	11	91%
	67	80	84%

The following questions are geared to better understand your perspectives on TMDL development and implementation.

JOB FUNCTIONS RELATED TO TMDLs	Check all that apply:
Does your current position at EPA involve the following functions:	
Developing nonpoint source and/or stormwater-related TMDLs?	34
Overseeing contractors that develop nonpoint source and/or stormwater-related TMDLs?	42
Approving nonpoint source and/or stormwater-related TMDLs developed by state/third parties?	62
Working on 303(d) listings?	45

I. The following questions focus on how the variation in the availability, quality, and analysis of data influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

DATA COLLECTION AND ANALYSIS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Is quality data generally available to support the development of TMDLs?	11	30	23	0
In your experience are the following types of data generally available to support TMDL development?				
Source loading data	15	33	16	0
Ambient water quality data	3	19	42	0
Data on runoff quantity	33	20	11	0
Land use/land cover data	0	7	57	0
In your experience is adequate data generally available to support the following activities?				
Source assessments	9	33	21	1
Estimations of loading capacity	9	24	30	0
Allocating loads among sources	16	28	17	1
Engaging active stakeholder involvement	8	21	30	3
Developing a detailed implementation plan	20	29	9	3
In your opinion are the following activities necessary to the develop. of a useful, high quality nonpoint source and/or stormwater-related TMDL?				
New monitoring/data collec. efforts tailored to TMDL	5	9	47	0
Volunteer water quality monitoring	23	23	16	0
Strict QA/QC procedures and protocols	8	15	39	0
A Technical Advisory Committee	18	30	13	0
Calibrated water quality models	7	24	31	0

II A. The following questions focus on how the variation in the type, source, and duration of funding influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

FUNDING	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Have TMDLs with which you have been involved received adequate funding?	10	27	20	1
In your experience, are the following funding sources used to support TMDL development?				
CWA 319 Funds	19	20	17	0
CWA 104(b)(3)/ WQ Cooperative Agreements	13	23	19	0
Great Water Body and National Estuary Programs	35	8	3	6
USDA cost share programs	37	7	3	1
Other EPA, Federal, state and local funding sources	8	22	23	1
Please list other funding sources used to support TMDL development:	Local Conservation districts often contribute in the form of cash or in-kind staff time; USGS cost share (3), state (10), and local (watershed) (3); TMDL extramural funds from EPA (5); State and Tribal CWA 106 grant funding (14), state TMDL funding for staff; State of TN Division of Water Pollution Control Funds; EPA PACE funds (2), Fed and State special appropriations; superfund; 604(b) dollars pass through to local governments (2); Clean lakes fund/state program funds; supplemental funds and contractor support through the region (2); 104(b) funding without cooperative agreements; Congressional special appropriations; NRCS funding programs; TMDL discretionary funds (2); Clean Water Initiative funds (Michigan); HQ contract; Puerto Rico ASA stewardship; RCD; USFS monies (2); federal watershed contract dollars; OW TMDL funds			

II B. The following questions focus on how the variation in the availability of guidance and protocols influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

GUIDANCE, POLICIES and ANALYSIS.	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Is adequate guidance and information on TMDL development generally available to support the development of useful, high quality TMDLs?	14	17	26	1
In your opinion, are the following types of materials useful in the development of high quality TMDLs?				
EPA rules and policy documents	9	22	28	0
EPA guidance documents, methodologies and analyses	6	22	31	0
Regional guidance documents, methodologies, and analyses	6	19	33	1
Case studies and examples	3	23	34	0
State guidance and analyses	7	20	31	0
Academic/NGO guidance and analyses	17	26	14	0

II C. The following questions focus on how the variation in leadership roles among stakeholders influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs.

LEADERSHIP ROLES AND RESPONSIBILITIES.	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience, which stakeholder(s) typically have the lead in TMDL development?:				
EPA	32	19	10	0
State environmental quality agency	1	4	56	0
Another state agency with primary responsibility for the pollutant source type	44	8	5	0
Local third party (e.g., municipality, watershed association, or advisory group)	47	7	4	0
Contractor often	31	21	7	0
Share leadership among stakeholders	31	21	7	0

Regulators, environmental groups, dischargers; cities, industries, universities; multiple states or state and tribe; occasionally local interest groups; Contractor developed with either EPA/State environmental agency directing work; State association of conservation districts, state agency, watershed association; EPA and state (4); Tribes; watershed groups in the area if already working on water quality problem; EPA, state, basin commissions; state basin commission, third party (contractor or university); committee of stakeholders lead by POTWs; Tribal governments, county governments, Navy; States, EPA ORSANCO; PRASA stewardship - PREQB, DOH, EPA, regulated parties; stakeholders including landowners, point sources, and tribal entities; State, municipal, EPA; tribes, states, adjoining states, sometimes major sources (ex// dam operators); border states on shared waters; river basin commissions, EPA, member states; EPA state water quality agencies, wastewater and stormwater discharger groups, RCDs, USFS, environmental groups, NGOs; Tribes and local conservation districts; state and natural resources agency responsible for mines; state, tribes, EPA; watershed advisory groups, industry, local governments, environmental groups; USFS, NRCS

Please Specify the stakeholders that typically share leadership.

In your opinion, which stakeholder(s) provide(s) the most effective leadership in the TMDL development process?				
EPA	8	12	37	0
State environment quality agency	1	6	52	0
State agency with primary responsibility for implementation	15	15	21	6
Local third party	32	18	5	2
Contractor	37	11	6	2
Multiple stakeholders	26	19	11	2

State environmental agency and regional soil and water conservation districts in some states; state environmental quality agency and EPA; watershed groups and NGOs; local entities; state, agriculture, watershed leader; stakeholders directly affected by the TMDL; state and EPA; Tribal governments, county governments, and state; city of waco and dairy industry; state agencies with jurisdictional responsibilities; regional staff and state, with contractors; state agency, municipal reps, environmental groups, EPA, other stakeholders; Tribes, sources such as dam owners, private forestry, irrigation districts, watershed groups; river basin commissions with their stakeholders including EPA, member states, industry, and environmental interests; state WQ agency and local watershed groups; Tribes, state, and EPA; and USFS, NRCS, local water and sanitation districts, conservation districts.

Please Specify the stakeholders that provide the most effective joint leadership.

III. The following questions focus on how the variation in stakeholder involvement influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs

STAKEHOLDER INVOLVEMENT	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience, how would you characterize the nature of stakeholder involvement in the TMDL development process?				
Level of stkhlder involvement in TMDL develop.is high.	15	27	16	0
The stakeholders involved in TMDL development include all interested parties.	16	21	21	0
The stakeholders involved in TMDL development are limited to key players.	9	20	29	0
Stakeholder participation has a positive, substantive impact on TMDL development.	2	21	35	1

In your opinion, does the involvement of the following types of stakeholders positively influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs?

EPA TMDL program staff	0	9	47	0
EPA water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	5	20	30	0
Other EPA staff with primary responsibility for impairment or source types (e.g., air deposition, Superfund)	16	27	11	2
Other Federal agencies with primary responsibility for impairment or source-types (e.g., NRCS, USFS, USFWS).	14	19	22	1
State TMDL staff	0	5	51	0
State water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	9	17	29	0
Other State agencies with primary responsibility for impairment or source-types (e.g., state agricultural and natural resource agencies)	10	29	15	1
Local government environmental and planning agencies	10	24	22	0
Pollutant sources and/or their representatives	15	20	20	1
National and regional environmental advocacy groups	26	20	10	0
Local NGOs and watershed organizations	14	22	19	0
Universities and/or research institutions	24	21	11	0
Watershed residents	23	0	17	2

In your opinion, is stakeholder involvement helpful in the following stages of TMDL development?

Assembling existing data, monitoring, and data analysis	11	14	32	0
Source assessments	10	21	25	1
Assigning load allocations among sources	16	19	19	2
Developing TMDL implementation plans	3	7	42	3
Public outreach about TMDL and implementation plan	2	8	44	2

In your opinion, do the following TMDL characteristics lead to more meaningful stakeholder involvement in the TMDL development process?

Stream segment specific TMDLs	14	25	13	2
Watershed-wide TMDLs	4	15	34	1
Single pollutant TMDLs	8	37	7	2
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	2	23	28	2
High degree of impairment	3	23	19	2

In your opinion, which type of pollutant presents a challenge for engaging stakeholders in the TMDL development process?

Bacteria	21	23	10	3
Nutrients	16	23	17	1
Toxics/Chemical contaminants	17	24	13	3
Temperature	11	21	16	8
Sediment	9	27	18	3
Other (Please list)	2	0	10	5

Dissolved oxygen; Dissolved oxygen/BOD; Mercury (3); air deposited pollutants; PCB; PH; BIO; metals; pesticides; Hg; FCA-Hg; GCA-PCBs; run off volume (e.g. % imper. cover); pollutants with narrative standards.

Other

IV. The following questions focus on how the variation in the scale and scope of TMDLs influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs. In contrast to the previous set of questions which asked about stakeholder involvement, this section addresses how TMDL characteristics impact the quality of TMDLs.

SCALE, SCOPE, AND CHARACTERISTICS OF TMDLS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your opinion, do the following TMDL characteristics contribute to developing useful, high quality TMDLs?				
Stream segment specific TMDLs	12	22	19	1
Watershed-wide TMDLs	2	16	35	1
Single pollutant TMDLs	8	21	22	3
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	2	17	35	1
High degree of impairment	12	19	20	4
In your opinion, do the following types of pollutants present a challenge for developing a useful, high quality TMDL?				
Bacteria	16	22	16	2
Nutrients	13	18	25	0
Toxics/Chemical contaminants	7	25	23	2
Temperature	12	19	18	7
Sediment	9	26	20	1
Other (Please list)	1	1	10	3

Other specify

PCBs/legacy toxics; Mercury (5); pollutants that bioaccumulate and whose sources transcend state lines; DO/BOD; air deposited pollutants; PH; AMD; pesticides, metals; Hg; air deposition issues (mercury); atmospheric; run-off volume.

V. The following questions focus on which elements of an implementation plan are most important for effective implementation of TMDLs.

IMPLEMENTATION PLANS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Do most TMDLs include some form of an implementation plan?	11	11	25	1
Do most TMDLs include a detailed implementation plan?	31	16	9	1
In your opinion, are the following elements of an implementation plan essential to effective implementation of TMDLs?				
Appointment of a designated management agency	3	8	42	2
Estimation of technical and financial assistance needed	2	12	40	1
BMP recommendations for each pollutant	2	9	43	1
BMP recommendations targeted geographically	3	8	43	1
Analysis of BMP costs and effectiveness	3	13	38	1
Identification of necessary load reductions targeted geographically	2	7	45	1
Public awareness and education campaign	1	7	46	1
Schedule for implementation	4	6	43	1
Interim targets	3	16	35	1
Criteria to assess progress of implementation	2	4	48	1
Monitoring of water quality	0	0	53	1

The following ques. focus on how the TMDL develop. process influences the knowledge, attitudes and behaviors of water quality decision makers.

In your experience, are the following organizations notified when draft or final TMDLs are completed?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	14	21	18	0
USDA Programs (e.g., NRCS Cooperative Extension)	19	21	13	1
State Nonpoint Source Programs	6	20	26	1
State Stormwater Programs	10	17	24	2
State Agriculture Programs	13	22	14	2
Permitted Stormwater Discharges	7	14	31	0
State/Local Government Planning Departments	6	14	30	2
Watershed Organizations and other local NGOs	6	16	28	2

In your experience, do the following organizations understand the purpose of the TMDL program?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	7	21	27	0
USDA Programs (e.g., NRCS Cooperative Extension)	11	21	19	1
State Nonpoint Source Programs	3	11	40	0
State Stormwater Programs	7	14	31	2
State Agriculture Programs	10	22	16	3
Permitted Stormwater Discharges	7	22	24	1
State/Local Government Planning Departments	9	24	20	1
Watershed Organizations and other local NGOs	3	24	26	1

In your experience, do the following organizations have a greater commitment to achieve water quality standards based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	10	20	22	0
USDA Programs (e.g., NRCS Cooperative Extension)	14	24	6	5
State Nonpoint Source Programs	10	14	25	2
State Stormwater Programs	16	16	17	3
State Agriculture Programs	16	21	8	5
Permitted Stormwater Discharges	14	16	18	4
State/Local Government Planning Departments	15	21	13	2
Watershed Organizations and other local NGOs	9	15	23	3

In your experience, do the following organizations have knowledge of TMDL load allocations and pollutant reductions?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	10	29	15	0
USDA Programs (e.g., NRCS Cooperative Extension)	16	28	4	3
State Nonpoint Source Programs	7	23	21	1
State Stormwater Programs	12	19	20	1
State Agriculture Programs	21	20	7	3
Permitted Stormwater Discharges	14	14	24	1
State/Local Government Planning Departments	19	18	15	1
Watershed Organizations and other local NGOs	9	23	19	1

In your experience, do the following organizations have knowledge of the recommended activities for meeting WQ standards?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	6	29	17	2
USDA Programs (e.g., NRCS Cooperative Extension)	5	27	17	2
State Nonpoint Source Programs	7	23	21	1
State Stormwater Programs	8	15	25	3
State Agriculture Programs	10	29	13	4
Permitted Stormwater Discharges	8	17	24	3
State/Local Government Planning Departments	13	22	15	2
Watershed Organizations and other local NGOs	6	24	19	2

In your experience, do the following organizations take new actions to improve water quality based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	9	24	16	3
USDA Programs (e.g., NRCS Cooperative Extension)	11	25	8	5
State Nonpoint Source Programs	6	18	24	3
State Stormwater Programs	11	14	21	5
State Agriculture Programs	15	24	6	5
Permitted Stormwater Discharges	14	14	18	5
State/Local Government Planning Departments	18	19	10	4
Watershed Organizations and other local NGOs	12	18	16	4

In your experience, do the following organizations target outreach, funding and/or technical assistance based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	12	16	24	1
USDA Programs (e.g., NRCS Cooperative Extension)	14	26	6	4
State Nonpoint Source Programs	8	19	23	2
State Stormwater Programs	14	19	15	4
State Agriculture Programs	18	20	7	5
Permitted Stormwater Discharges	19	13	11	5
State/Local Government Planning Departments	22	18	7	4
Watershed Organizations and other local NGOs	13	22	12	4

In your experience, do the following organizations make watershed planning decisions based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	12	21	18	1
USDA Programs (e.g., NRCS Cooperative Extension)	11	25	5	7
State Nonpoint Source Programs	5	20	22	4
State Stormwater Programs	13	16	17	5
State Agriculture Programs	21	18	6	5
Permitted Stormwater Discharges	16	11	16	7
State/Local Government Planning Departments	14	23	9	3
Watershed Organizations and other local NGOs	12	17	17	3

In your experience, do the following organizations make land use planning decisions based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
State/Local Government Planning Departments	23	19	5	6
Watershed Organizations and other local NGOs	13	22	11	6

EPA TMDL SURVEY (raw data by percentages - never and seldom responses merged; often and always responses merged)

Region	Number of Respondents
1	12%
2	6%
3	12%
4	12%
5	13%
6	9%
7	6%
8	7%
9	7%
10	15%
Total	100%

The following questions are geared to help us better understand your perspectives on TMDL development and implementation.

JOB FUNCTIONS RELATED TO TMDLs	Check all that apply:
Does your current position at EPA involve the following functions:	
Developing nonpoint source and/or stormwater-related TMDLs?	51%
Overseeing contractors that develop nonpoint source and/or stormwater-related TMDLs?	63%
Approving nonpoint source and/or stormwater-related TMDLs developed by state/third parties?	93%
Working on 303(d) listings?	67%

I. The following questions focus on how the variation in the availability, quality, and analysis of data influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

DATA COLLECTION AND ANALYSIS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Is quality data generally available to support the development of TMDLs?	16%	45%	34%	0%
In your experience are the following types of data generally available to support TMDL development?				
Source loading data	22%	49%	24%	0%
Ambient water quality data	4%	28%	63%	0%
Data on runoff quantity	49%	30%	16%	0%
Land use/land cover data	0%	10%	85%	0%
In your experience is adequate data generally available to support the following activities?				
Source assessments	13%	49%	31%	1%
Estimations of loading capacity	13%	36%	45%	0%
Allocating loads among sources	24%	42%	25%	1%
Engaging active stakeholder involvement	12%	31%	45%	4%
Developing a detailed implementation plan	30%	43%	13%	4%
In your opinion are the following activities necessary to the development of a useful, high quality nonpoint source and/or stormwater-related				
New monitoring/data collection efforts tailored to TMDL	7%	13%	70%	0%
Volunteer water quality monitoring	34%	34%	24%	0%
Strict QA/QC procedures and protocols	12%	22%	58%	0%
A Technical Advisory Committee	27%	45%	19%	0%
Calibrated water quality models	10%	36%	46%	0%

II A. The following questions focus on how the variation in the type, source, and duration of funding influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

FUNDING	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Have TMDLs with which you have been involved received adequate funding?	15%	40%	30%	1%
In your experience, are the following funding sources used to support TMDL development?				
CWA 319 Funds	28%	30%	25%	0%
CWA 104(b)(3)/ WQ Cooperative Agreements	19%	34%	28%	0%
Great Water Body and National Estuary Programs	52%	12%	4%	9%
USDA cost share programs	55%	10%	4%	1%
Other EPA, Federal, state and local funding sources	12%	33%	34%	1%
Please list other funding sources used to support TMDL development:	Local Conservation districts often contribute in the form of cash or in-kind staff time; USGS cost share (3), state (10), and local (watershed) (3); TMDL c funds from EPA (5); State and Tribal CWA 106 grant funding (14), state TMDL funding for staff; State of TN Division of Water Pollution Control Fund PACE funds (2), Fed and State special appropriations; superfund; 604(b) dollars pass through to local governments (2); Clean lakes fund/state program fi supplemental funds and contractor support through the region (2); 104(b) funding without cooperative agreements; Congressional special appropriations; funding programs; TMDL discretionary funds (2); Clean Water Initiative funds (Michigan); HQ contract; Puerto Rico ASA stewardship; RCD; USFS mor federal watershed contract dollars; OW TMDL funds			

II B. The following questions focus on how the variation in the availability of guidance and protocols influence the development of useful, high-quality nonpoint source and/or stormwater-related TMDLs.

GUIDANCE, POLICIES and ANALYSIS.	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Is adequate guidance and information on TMDL development generally available to support the development of useful, high quality TMDLs?	21%	25%	39%	1%
In your opinion, are the following types of materials useful in the development of high quality TMDLs?				
EPA rules and policy documents	13%	33%	42%	0%
EPA guidance documents, methodologies and analyses	9%	33%	46%	0%
Regional guidance documents, methodologies, and analyses	9%	28%	49%	1%
Case studies and examples	4%	34%	51%	0%
State guidance and analyses	10%	30%	46%	0%
Academic/NGO guidance and analyses	25%	39%	21%	0%

II C. The following questions focus on how the variation in leadership roles among stakeholders influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs.

LEADERSHIP ROLES AND RESPONSIBILITIES.	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience, which stakeholder(s) typically have the lead in TMDL development?:				
EPA	48%	28%	15%	0%
State environmental quality agency	1%	6%	84%	0%
Another state agency with primary responsibility for the pollutant source type	66%	12%	7%	0%
Local third party (e.g., municipality, watershed association, or advisory group)	70%	10%	6%	0%
Contractor often	46%	31%	10%	0%
Share leadership among stakeholders	46%	31%	10%	0%
Please Specify the stakeholders that typically share leadership.				

In your opinion, which stakeholder(s) provide(s) the most effective leadership in the TMDL development process?

EPA	12%	18%	55%	0%
State environment quality agency	1%	9%	78%	0%
State agency with primary responsibility for implementation	22%	22%	31%	9%
Local third party	48%	27%	7%	3%
Contractor	55%	16%	9%	3%
Multiple stakeholders	39%	28%	16%	3%

Regulators, environmental groups, dischargers; cities, industries, universities; multiple states or state and tribe; occasionally local interest groups; Contractor developed with either EPA/State environmental agency directing work; State association of conservation districts, state agency, watershed association; EPA state (4); Tribes; watershed groups in the area if already working on water quality problem; EPA, state, basin commissions; state basin commission, third party (contractor or university); committee of stakeholders lead by POTWs; Tribal governments, county governments, Navy; States, EPA ORSANCO; PRASA; local government; PREQB, DOH, EPA, regulated parties; stakeholders including landowners, point sources, and tribal entities; State, municipal, EPA; tribes, states, adjacent states; sometimes major sources (ex// dam operators); border states on shared waters; river basin commissions, EPA, member states; EPA state water quality agency; wastewater and stormwater discharger groups, RCDs, USFS, environmental groups, NGOs; Tribes and local conservation districts; state and natural resource agency responsible for mines; state, tribes, EPA; watershed advisory groups, industry, local governments, environmental groups; USFS, NRCS, BLM, local government

Please Specify the stakeholders that provide the most effective joint leadership.

III. The following questions focus on how the variation in stakeholder involvement influence the development of useful, high-quality nonpoint source and/or stormwater TMDLs

STAKEHOLDER INVOLVEMENT	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience, how would you characterize the nature of stakeholder involvement in the TMDL development process?				
The level of stakeholder involvement in TMDL development is high.	22%	40%	24%	0%
The stakeholders involved in TMDL development include all interested parties.	24%	31%	31%	0%
The stakeholders involved in TMDL development are limited to key players.	13%	30%	43%	0%
Stakeholder participation has a positive, substantive impact on TMDL development.	3%	31%	52%	1%
In your opinion, does the involvement of the following types of stakeholders positively influence the development of useful, high quality nonpoint				
EPA TMDL program staff	0%	13%	70%	0%
EPA water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	7%	30%	45%	0%
Other EPA staff with primary responsibility for impairment or source types (e.g., air deposition, Superfund)	24%	40%	16%	3%
Other Federal agencies with primary responsibility for impairment or source-types (e.g., NRCS, USFS, USFWS).	21%	28%	33%	1%
State TMDL staff	0%	7%	76%	0%
State water program (non-TMDL) staff (e.g., nonpoint source, source water, NPDES)	13%	25%	43%	0%
Other State agencies with primary responsibility for impairment or source-types (e.g., state agricultural and natural resource agencies)	15%	43%	22%	1%
Local government environmental and planning agencies	15%	36%	33%	0%
Pollutant sources and/or their representatives	22%	30%	30%	1%
National and regional environmental advocacy groups	39%	30%	15%	0%
Local NGOs and watershed organizations	21%	33%	28%	0%
Universities and/or research institutions	36%	31%	16%	0%
Watershed residents	34%	0%	25%	3%

In your opinion, is stakeholder involvement helpful in the following stages of TMDL development?				
Assembling existing data, monitoring, and data analysis	16%	21%	48%	0%
Source assessments	15%	31%	37%	1%
Assigning load allocations among sources	24%	28%	28%	3%
Developing TMDL implementation plans	4%	10%	63%	4%
Public outreach about TMDL and implementation plan	3%	12%	66%	3%
In your opinion, do the following TMDL characteristics lead to more meaningful stakeholder involvement in the TMDL development process?				
Stream segment specific TMDLs	21%	37%	19%	3%
Watershed-wide TMDLs	6%	22%	51%	1%
Single pollutant TMDLs	12%	55%	10%	3%
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	3%	34%	42%	3%
High degree of impairment	4%	34%	28%	3%
In your opinion, which type of pollutant presents a challenge for engaging stakeholders in the TMDL development process?				
Bacteria	31%	34%	15%	4%
Nutrients	24%	34%	25%	1%
Toxics/Chemical contaminants	25%	36%	19%	4%
Temperature	16%	31%	24%	12%
Sediment	13%	40%	27%	4%
Other (Please list)	3%	0%	15%	7%

Other Dissolved oxygen; Dissolved oxygen/BOD; Mercury (3); air deposited pollutants; PCB; PH; BIO; metals; pesticides; Hg; FCA-Hg; GCA-PCBs; run off v % imper. cover); pollutants with narrative standards.

IV. The following questions focus on how the variation in the scale and scope of TMDLs influence the development of useful, high quality nonpoint source and/or stormwater-related TMDLs. In contrast to the previous questions which asked about stakeholder involvement, this section addresses how TMDL characteristics impact the quality of TMDLs.

SCALE, SCOPE, AND CHARACTERISTICS OF TMDLS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your opinion, do the following TMDL characteristics contribute to developing useful, high quality TMDLs?				
Stream segment specific TMDLs	18%	33%	28%	1%
Watershed-wide TMDLs	3%	24%	52%	1%
Single pollutant TMDLs	12%	31%	33%	4%
Simultaneous development of all TMDLs in a watershed (e.g. multi-pollutant)	3%	25%	52%	1%
High degree of impairment	18%	28%	30%	6%
In your opinion, do the following types of pollutants present a challenge for developing a useful, high quality TMDL?				
Bacteria	24%	33%	24%	3%
Nutrients	19%	27%	37%	0%
Toxics/Chemical contaminants	10%	37%	34%	3%
Temperature	18%	28%	27%	10%
Sediment	13%	39%	30%	1%
Other (Please list)	1%	1%	15%	4%

Other specify PCBs/legacy toxics; Mercury (5); pollutants that bioaccumulate and whose sources transcend state lines; DO/BOD; air deposited pollutants; PH; AMD; pe metals; Hg; air deposition issues (mercury); atmospheric; run-off volume.

V. The following questions focus on which elements of an implementation plan are most important for effective implementation of TMDLs.

IMPLEMENTATION PLANS	Never/Seldom	Sometimes	Often/Always	Not Relevant
In your experience:				
Do most TMDLs include some form of an implementation plan?	16%	16%	37%	1%
Do most TMDLs include a detailed implementation plan?	46%	24%	13%	1%
In your opinion, are the following elements of an implementation plan essential to effective implementation of TMDLs?				
Appointment of a designated management agency	4%	12%	63%	3%
Estimation of technical and financial assistance needed	3%	18%	60%	1%
BMP recommendations for each pollutant	3%	13%	64%	1%
BMP recommendations targeted geographically	4%	12%	64%	1%
Analysis of BMP costs and effectiveness	4%	19%	57%	1%
Identification of necessary load reductions targeted geographically	3%	10%	67%	1%
Public awareness and education campaign	1%	10%	69%	1%
Schedule for implementation	6%	9%	64%	1%
Interim targets	4%	24%	52%	1%
Criteria to assess progress of implementation	3%	6%	72%	1%
Monitoring of water quality	0%	0%	79%	1%

The following ques. focus on how the TMDL develop. process influences the knowledge, attitudes and behaviors of water quality decision makers.

In your experience, are the following organizations notified when draft or final TMDLs are completed?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	21%	31%	27%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	28%	31%	19%	1%
State Nonpoint Source Programs	9%	30%	39%	1%
State Stormwater Programs	15%	25%	36%	3%
State Agriculture Programs	19%	33%	21%	3%
Permitted Stormwater Discharges	10%	21%	46%	0%
State/Local Government Planning Departments	9%	21%	45%	3%
Watershed Organizations and other local NGOs	9%	24%	42%	3%

In your experience, do the following organizations understand the purpose of the TMDL program?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	10%	31%	40%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	16%	31%	28%	1%
State Nonpoint Source Programs	4%	16%	60%	0%
State Stormwater Programs	10%	21%	46%	3%
State Agriculture Programs	15%	33%	24%	4%
Permitted Stormwater Discharges	10%	33%	36%	1%
State/Local Government Planning Departments	13%	36%	30%	1%
Watershed Organizations and other local NGOs	4%	36%	39%	1%

In your experience, do the following organizations have a greater commitment to achieve water quality standards based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	15%	30%	33%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	21%	36%	9%	7%
State Nonpoint Source Programs	15%	21%	37%	3%
State Stormwater Programs	24%	24%	25%	4%
State Agriculture Programs	24%	31%	12%	7%
Permitted Stormwater Discharges	21%	24%	27%	6%
State/Local Government Planning Departments	22%	31%	19%	3%
Watershed Organizations and other local NGOs	13%	22%	34%	4%

In your experience, do the following organizations have knowledge of TMDL load allocations and pollutant reductions?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	15%	43%	22%	0%
USDA Programs (e.g., NRCS Cooperative Extension)	24%	42%	6%	4%
State Nonpoint Source Programs	10%	34%	31%	1%
State Stormwater Programs	18%	28%	30%	1%
State Agriculture Programs	31%	30%	10%	4%
Permitted Stormwater Discharges	21%	21%	36%	1%
State/Local Government Planning Departments	28%	27%	22%	1%
Watershed Organizations and other local NGOs	13%	34%	28%	1%

In your experience, do the following organizations have knowledge of the recommended activities for meeting WQ standards?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	9%	43%	25%	3%
USDA Programs (e.g., NRCS Cooperative Extension)	7%	40%	25%	3%
State Nonpoint Source Programs	10%	34%	31%	1%
State Stormwater Programs	12%	22%	37%	4%
State Agriculture Programs	15%	43%	19%	6%
Permitted Stormwater Discharges	12%	25%	36%	4%
State/Local Government Planning Departments	19%	33%	22%	3%
Watershed Organizations and other local NGOs	9%	36%	28%	3%

In your experience, do the following organizations take new actions to improve water quality based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	13%	36%	24%	4%
USDA Programs (e.g., NRCS Cooperative Extension)	16%	37%	12%	7%
State Nonpoint Source Programs	9%	27%	36%	4%
State Stormwater Programs	16%	21%	31%	7%
State Agriculture Programs	22%	36%	9%	7%
Permitted Stormwater Discharges	21%	21%	27%	7%
State/Local Government Planning Departments	27%	28%	15%	6%
Watershed Organizations and other local NGOs	18%	27%	24%	6%

In your experience, do the following organizations target outreach, funding and/or technical assistance based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	18%	24%	36%	1%
USDA Programs (e.g., NRCS Cooperative Extension)	21%	39%	9%	6%
State Nonpoint Source Programs	12%	28%	34%	3%
State Stormwater Programs	21%	28%	22%	6%
State Agriculture Programs	27%	30%	10%	7%
Permitted Stormwater Discharges	28%	19%	16%	7%
State/Local Government Planning Departments	33%	27%	10%	6%
Watershed Organizations and other local NGOs	19%	33%	18%	6%

In your experience, do the following organizations make watershed planning decisions based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
EPA Non-TMDL Program Staff	18%	31%	27%	1%
USDA Programs (e.g., NRCS Cooperative Extension)	16%	37%	7%	10%
State Nonpoint Source Programs	7%	30%	33%	6%
State Stormwater Programs	19%	24%	25%	7%
State Agriculture Programs	31%	27%	9%	7%
Permitted Stormwater Discharges	24%	16%	24%	10%
State/Local Government Planning Departments	21%	34%	13%	4%
Watershed Organizations and other local NGOs	18%	25%	25%	4%

In your experience, do the following organizations make land use planning decisions based on TMDLs?

	Never/Seldom	Sometimes	Often/Always	Not Relevant
State/Local Government Planning Departments	34%	28%	7%	9%
Watershed Organizations and other local NGOs	19%	33%	16%	9%

Appendix D

**EPA REGIONAL TMDL SURVEY:
HIGHLIGHTS OF QUANTITATIVE RESPONSES**

EPA TMDL Survey: Highlights of Quantitative Responses

I. Data Collection and Analysis

A. *Experience with quality data:* 34% of respondents indicated that quality data is often or always available; and 45% of respondents that it is sometimes available.

B. *Experience with types of available data:*

(often or always in descending order of availability)

Land use/land cover data:	85%
Ambient water quality data:	63%
Source loading data:	24%
Data on runoff quality:	16% (never/seldom 49%)

C. *Experience with data to support specific activities:*

(often or always in descending order of availability)

Estimations of loading capacity:	45%
Engaging stakeholders:	45%
Source assessments:	31%
Allocating loads among sources:	25%
Developing detailed implementation plan:	13%

D. *Opinion regarding activities need for useful, high-quality TMDL:*

(often or always in descending order of need)

New monitoring/data collection	70%
Strict QA/QC procedures and protocols	58%
Calibrated water quality models	46%
Volunteer water quality monitoring	24%
Technical advisory committee	19%

II.A. Funding

- ***Experience with adequate funding:*** 30% of respondents indicate that adequate funding is often or always available; and 40% of respondents that it is sometimes available.
- ***Experience with use of following funding sources:***
25 to 34% of respondents report that three sources of funding (e.g., 319 funds, 104(b)(3), and other government sources) are often or always available, and 55 to 67% of respondents that is sometimes available.
52 to 55% of respondents indicate that the remaining two sources of funding (e.g., Great Water Body and USDA) are never or seldom available.

II.B. Guidance and Protocols

- ***Availability of adequate guidance/protocols for useful, high-quality TMDL:*** 39% of respondents report that adequate guidance is often or always available; and 25% of respondents that it is sometimes available.
- ***Opinion regarding types of materials useful for high-quality TMDLs:*** very similar distribution of responses across all types of material (i.e., often or always responses range from 42 to 51%, sometimes responses range from 28 to 34%, and never/seldom responses range from 4 to 13%) other than academic/NGO guidance. Academic/NGO guidance drops to 21% for often/always responses, 39% for sometimes responses, and 25% for never/seldom responses.

II.C. Leadership

- **Experience with lead in TMDL development:** State environmental agencies overwhelmingly lead TMDL development with 84% in the often/always category. Contractors, shared leadership, other state agencies, and local third parties represent 10% or less in the often/always category.
- **Opinion regarding most effective leader:** State environmental agencies again receive high marks with 78% in the often/always category, and 55% for EPA.

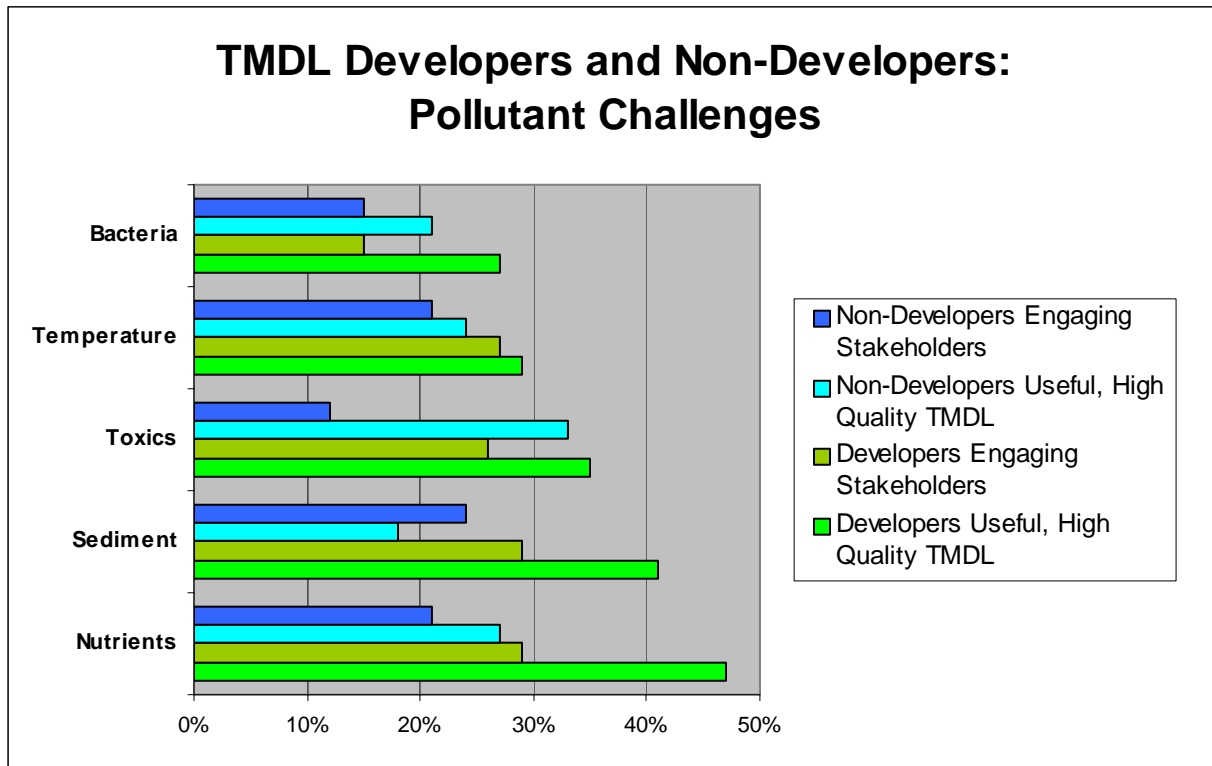
III. Stakeholder Involvement

- A. Characterization of nature of stakeholder involvement:** 52% of respondents report that stakeholder participation often/always has a positive substantive impact. Only 24% of respondents note that the level of stakeholder participation is high.
- B. Opinion regarding positive involvement of different stakeholders:** Among both TMDL developers and non-developers, EPA and State TMDL staff are rated highly for always/often having a positive influence. EPA and State water program staff are also comparably rated for having a positive influence on TMDL development, although 47-50% of TMDL developers rate water programs in the always/often category, whereas 39% of TMDL non-developers rate such water programs in the always/often category. TMDL developers may have the experience to recognize the contributions of EPA and State water programs more than non-TMDL developers. Opinions differ between TMDL developers and non-developers with respect to the positive influence of pollutant sources (38% for developers and 21% for non-developers in the always/seldom category).
- C. Opinion regarding helpful involvement at various stages of TMDL development:** Stakeholders are viewed as often/always helpful with public outreach and implementation (66% of respondents) and in developing implementation plans (63% of respondents). The rate of helpfulness declines steadily in the often/always category for more technical activities such as assembling data, monitoring, and analysis (48% of respondents), source assessments (37% of respondents), and assigning load allocations among sources (28% of respondents).
- D. Opinion as to whether TMDL characteristics lead to more meaningful stakeholder involvement:** Watershed-wide TMDLs (51% of respondents) and simultaneous development of all TMDLs in a watershed (multi-pollutant) (42% of respondents) are viewed as often/always likely to lead to more meaningful stakeholder involvement. Other TMDL characteristics are less likely to often/always encourage meaningful stakeholder involvement (high degree of impairment - 28% of respondents; stream segment specific - 19% of respondents; and single pollutant - 10% of respondents). However, single pollutant TMDLs are much more likely to be viewed as sometimes leading to more meaningful stakeholder involvement (55% of respondents) than any of the other characteristics.
- E. Opinion as to whether types of pollutants present challenges for engaging stakeholders:** Different types of pollutants do not appear to present significantly more or less challenge for engaging stakeholders. The predominant opinion is that sometimes each of the pollutants present a challenge (31-40% of respondents). About a quarter of the respondents (sediments 27%; nutrients 25%; and temperature 24%) often/always present a challenge.

IV. Development of Useful, High Quality TMDL

- A. *Opinion as to whether TMDL characteristics lead to useful, high-quality TMDL:*** Watershed-wide TMDLs (52% of respondents) and simultaneous development of all TMDLs in a watershed (multi-pollutant)(52% of respondents) are viewed as often/always likely to contribute to developing a useful, high-quality TMDL. Other TMDL characteristics are less likely to often/always lead to a useful, high-quality TMDL (single pollutant - 33% of respondents; high degree of impairment - 30% of respondents, and stream-segment specific - 28% of respondents). It is interesting to note that one third of respondents find a single pollutant characteristic to often/always lead to a useful, high-quality TMDL; whereas only 10% of respondents view the same characteristic often/always to lead to more meaningful stakeholder involvement.
- B. *Opinion as to whether types of pollutants present challenge to useful, high-quality TMDL:*** Different types of pollutants do not appear to present significantly more or less challenge to developing a useful, high quality TMDL. Opinions range from 24% for bacteria to 37% for nutrients for pollutants often/always presenting a challenge.

IV.a. Comparison of TMDL Developer and Non-Developers regarding Pollutant Changes



V. Implementation Plans

- A. *Experience with frequency of implementation plans:*** Only 37% of respondents indicate that TMDLs often/always have implementation plans, and 46% of respondents report that TMDLs never/seldom have detailed plans.
- B. *Opinion as to essential elements of an implementation plan:*** All elements surveyed were often/always viewed by at least 52% of respondents as essential, with monitoring capacity (79%

of respondents) and criteria to assess progress (72% of respondents) being the two most important.

VIA. Knowledge of Water Quality Decision Makers/Organizations

- 1. *Notified of draft or final TMDL:*** 46% of respondents note that no type of organization is often/always notified of a draft or final TMDL. Permitted stormwater dischargers are notified often/always (46% of respondents) and state/local government planning departments (45% of respondents). 27% of respondents also indicate that even EPA non-TMDL staff are often/always notified.
- 2. *Experience with WQ decision makers understanding purpose of TMDL program:*** State NPS (60% of respondents) and State stormwater programs (46% of respondents) often/always understand the purpose of the TMDL program more than EPA non-TMDL staff (40% of respondents).
- 3. *Experience with WQ decision makers having knowledge of load allocations and pollutant reductions:*** 36% of respondents note that no type of organization is often/always knowledgeable about LAs and pollutant reductions.
- 4. *Experience with WQ decision makers having knowledge of recommended activities for meeting WQ standards:*** 37% of respondents note that no type of organization is often/always knowledgeable of recommended activities for meeting WQ standards. State stormwater and NPS programs and permitted stormwater discharges have the top three percentages of knowledge (37% of respondents, 31% of respondents, and 36% of respondents, respectively).

VIB. Attitudes of Water Quality Decision Makers

- 1. *Experience with organizations having a greater commitment to achieve WQ standards based on TMDLs:*** The top three organizations that often/always are committed to achieve WQS based on TMDLs are State NPS programs (37% of respondents), watershed organizations and other local NGOs (34% of respondents), and EPA non-TMDL staff (33% of respondents).

VIC. Behaviors of Water Quality Decision Makers

- 1. *Experience with organizations taking new actions to improve WQ based on TMDLs:*** 36% of respondents indicate that no type of organization often/always takes new actions to improve WQ based on TMDLs. The top three organizations that often/always take new actions include State NPS programs (36% of respondents), State stormwater programs (31% of respondents), and permitted stormwater discharges (27% of respondents).
- 2. *Experience with organizations targeting outreach, funding and/or technical assistance based on TMDLs:*** 36% of respondents report that no type of organization often/always targets outreach, funding, and/or technical assistance. The top three organizations that often/always take new actions include EPA non-TMDL staff (36% of respondents), State NPS program (34% of respondents), and State stormwater programs (22% of respondents).
- 3. *Experience with organizations making watershed planning decisions based on TMDLs:*** 33% of respondents note that no type of organization often/always makes watershed planning decisions based on TMDLs. The top three organizations that often/always make watershed

planning decisions include State NPS program (33% of respondents), EPA non-TMDL staff (27% of respondents), and State stormwater programs (25% of respondents).

4. ***Experience with organizations making land use planning decisions based on TMDLs:*** The organizations included in this question were watershed organizations and other local NGOs and state/local government planning departments. Other organizations were not included because they are not responsible for making land use planning decisions. 25% of respondents reported that watershed organizations and local NGOs often/always make land use planning decisions, and 13% of respondents note that state/local govt. planning departments often/always make land use planning decisions. State/local planning depts. sometimes make such decisions (34% of respondents), and watershed organizations sometimes make such decisions (25% of respondents).

Appendix E

**EPA REGIONAL TMDL SURVEY:
HIGHLIGHTS OF QUALITATIVE RESPONSES**

EPA TMDL Survey: Highlights of Qualitative Responses

Data Availability

- For high-priority TMDLs, focus as much on data collection and analysis as on the development process.
- Adequate data and high quality analysis are key. Higher quality and more data are need to make an informed scientific decision.
- "Good" non-point source and stormwater data is virtually non-existent. Data collection efforts need to be deployed to set the baseline reference levels or concentrations for the non-point source and stormwater runoff.
- Use non-governmental monitoring data that has been quality assured and controlled.

Development and Implementation Process

- WQ decision maker needs are better met when TMDL implementation decisions are made within the TMDL development process. Conduct development and implementation processes concurrently.
- Commit resources and involve stakeholders in solving the real environmental problems presented by high-priority TMDLs.
- Develop realistic TMDLs that include appropriate and attainable WQ criteria.
- Develop information regarding cost-effective means to implement TMDL recommendations.
- Be cognizant of differences between stormwater TMDLs and wastewater TMDLS in terms of implementation (BMPs versus effluent limitations) and compliance monitoring (monitoring ambient water quality rather than reviewing compliance with effluent limits). Use phased, adaptive management approach to reduce the runoff from impervious cover at new and existing development.

Funding

- More funding is always needed for better data collection, data analysis, source assessment, and modeling as part of the TMDL development process.
- Long-term funding needs include adequate monitoring to ascertain the effectiveness of the TMDL during the implementation phase.
- Use funding to anticipate water quality impairments, as well as to redress existing problems.
- Funding sources include the following: local conservation districts, TMDL extramural 303 funds from EPA, Tennessee Division of Water Pollution Control funds, Michigan Clean Water Initiative funds, Idaho general funds, 106 grant funding, USGS (typically for monitoring support), 604(b) funding passed to local governments, and contractor support through EPA Regions.

Implementation Plans

- A well-thought out implementation plan with understandable and achievable targets is key. The TMDL needs to reflect real world conditions and include a more specific "road map" for implementation.
- Include more specific information on BMPs, and involve permitting and non-TMDL NPS staff.
- Follow-up monitoring and water quality model refinements are typically necessary to develop effective plans.
- Use the Water Quality Management Plan (WQMP) authority to strengthen implementation efforts.

Stakeholder Awareness and Participation

- Involve stakeholders early in the process for data gathering, source assessment, and watershed characterization.
- Federal and State environmental agencies should identify and invite stakeholders to a series of public meetings at all phases of the development and implementation processes.
- Involving decision makers early results in better information, greater awareness of water quality issues, and more informed decisions.
- Stakeholder input is especially necessary for TMDLs for persistent toxics (e.g., mercury, PCBs, dioxins, etc.)

TMDL Analysis

- Include waste load and load allocations at a finer geographical and land use scale.
- It is more realistic to identify percentage reductions in pollutants to achieve water quality standards, rather than assigning a precise daily loading capacity.
- Provide more flexibility in the TMDL document and a better explanation of the impacts and expected actions of stormwater sources.

TMDL Education

- Provide more assistance to stormwater sources to implement options and approaches.
- More guidance is needed on the narrative standards for nutrients, sediment, and temperature; margins of safety, watershed TMDLs, the meaning of "reasonable assurance," and mercury issues.
- Provide more training for modeling runoff from specific land uses in different types of geologic sites (i.e., wet/dry; low/high; flat/steep).
- Graphically display TMDLs in a geographical context with information about impairment, pollutants, sources, reductions, and BMPs.
- Work with State environmental agencies to develop more reader-friendly TMDLs and to increase public awareness of stormwater management.

TMDL Leadership

- The biggest challenges are to find meaningful non-point source controls to achieve the load allocations (LAs) and to provide reasonable assurance for the waste load allocations (WLAs).
- Leadership is needed to integrate federal and state programs devoted to water quality issues to find shared goals and to translate them into program specific activities designed to identify, prioritize, and fix impairments.
- EPA management needs to be open and encourage new and innovative ways to address the backlog of impaired waterbody segments.
- Change the accounting system to reflect less on numbers and more on achievement.
- States are frustrated with the inconsistency and conflicts between HQ and Regional direction.

Watershed TMDLs

- Encourage watershed TMDLs to address all pollutants of concern at one time.
- Concern that resources dedicated to the EMAP approach do not directly benefit TMDL work.

Appendix F

**EPA REGIONAL TMDL SURVEY:
TABLE OF QUALITATIVE RESULTS**

EPA TMDL Survey: Qualitative Responses

Data Availability

<p align="center">General suggestions to improve TMDL development process</p>	<p align="center">Suggestions for EPA TMDLs to better meet WQ decision maker needs</p>	<p align="center">Suggestions for involving WQ decision makers in the development process to improve TMDLs</p>
<ul style="list-style-type: none"> • For high priority TMDLs, focus as much on data collection and analysis as on the development process. • Adequate data and high quality analysis are key. • Collect accurate and robust data including 24-hour samplings for DO violations and storm event data. • More and better quality monitoring data is needed to support TMDL/303(d) listing process. Emphasis on REMAP/EMAP approach with probabilistic WQ monitoring approaches, and associated funding, do not benefit TMDL development and water quality standards related programs. • Use non-governmental monitoring data that has been quality assured and controlled. • "Good" non-point source and stormwater data is virtually non existent. Data collection efforts need to be deployed to set the baseline reference levels or concentrations for the non-point source and stormwater runoff. • Qualitative and quantitative data are scarce to develop a high-quality TMDL due to limited resources. Encourage and campaign for more environmental research funding for WQ issues. • Data collection and analysis presents a significant challenge. Even when watershed groups or others collect the data, someone must coordinate the efforts and analyze the data. • Survey the data available for each waterbody impairment on the 303(d) list. Available data should include monitoring, land use, and potential modeling approaches. For example, there is little data and no pertinent models available to address DO in lakes and reservoirs in Puerto Rico. Monitoring and data collection programs should be designed to address the data gaps for TMDLs. • Allow for more time for data collection and development. • The most limiting factor for the timely development of quality TMDLs is the existence of environmental data to help with source identification and other aspects of defining the problem and ultimately the solutions. This relates to the lack of resources at the state level needed to collect the data. 	<ul style="list-style-type: none"> • Need more data to better characterize sources to provide better allocations. • Higher quality and more data to make informed decisions with better science. This costs money that no one seems to want to spend. • TMDLs tend to be all over the place regarding data quality and content. It would be helpful to have a bottom line. 	<ul style="list-style-type: none"> • Can better inform whether data exists to support TMDL development. • Provide additional funding sources for involvement and implementation. • By collecting and providing data necessary to better characterize contributions.

EPA TMDL Survey: Qualitative Responses

Development and Implementation Process

General suggestions to improve TMDL development process	Suggestions for EPA TMDLs to better meet WQ decision maker needs	Suggestions for involving WQ decision makers in the development process to improve TMDLs
<ul style="list-style-type: none"> • It is a significant resource challenge for many states to coordinate data collection, analyses, development, implementation plans, etc. • TMDLs as they are developed now serve as an effective means to document and quantify the relative magnitude of the waterbody impairment and to determine the relative contribution of continuous point source versus nonpoint source, stormwater pollution impacts. Typically, follow-up monitoring and water quality model refinements are necessary to develop effective implementation plans. • Stormwater TMDLs are different than wastewater TMDLs (BMP vs. effluent limitation) and the type of TMDL (check ambient WQ rather than review compliance with effluent limits). Target run-off column such as impervious cover or compare flow characteristics with reference to unimpaired stream. The way to fix the problem is to limit and reduce directly connected impervious cover from new and existing development over time (i.e. phased adaptive management implementation). This approach would solve 80% of the problem. 	<ul style="list-style-type: none"> • WQ decision makers need to feel confident in the outcomes of TMDLs. Segmented TMDLs are not all that helpful. • WQ decision maker needs are better met when TMDL implementation decisions are made within the TMDL development process. • Our States do about 90% of the TMDLs. The WQ decision maker is usually EPA and the State. TMDLs have to be realistic, and implementable, not simply a paper exercise that meets the requirements of a TMDL. • First, prioritize the TMDLs and identify those that are most important from an environmental perspective. Quit wasting time and resources arguing over minute details on inconsequential TMDLs that will not make an environmental difference. For high priority TMDLs, commit resources and involve people. • Develop realistic TMDLs that include appropriate and attainable WQ criteria. Develop implementation plans (with cost analyses) that enable people to understand what needs to be changed to attain WQ criteria. • Cost-effective information on ways to implement TMDL recommendations is a real need. • WLAs and LAs should be in a format to ease implementation. TMDL implementation plans are not required by the Clean Water Act, but they would be helpful and should be developed concurrently with the TMDL when funding is available. • Allow for more time for the development of a TMDL (modify the 8 to 13 year policy). 	<ul style="list-style-type: none"> • Solicit more help in source identification from WQ decision makers so that TMDLs can be more specific. The more specific we can be, the easier it will be for the WQ decision makers to understand how to address the problem. • For waters that are impaired due to multiple sources, WQ decision makers need to look at the large scale picture rather than the individual waterbody. The TMDL process needs to be more than a paperwork exercise, and TMDLs must be developed with a purpose and goal that can be implemented. • Dedicated, long-term local engagement in the TMDL implementation process is important to ensure that funding is targeted at permanent solutions. • Clarify key steps in the development process so that decision makers are engaged at the proper times. Initiate implementation planning concurrently with the TMDL development process, do not sequence these two processes. • Improve coordination between state and EPA water quality programs.

EPA TMDL Survey: Qualitative Responses

Funding		
General suggestions to improve TMDL development process	Suggestions for EPA TMDLs to better meet WQ decision maker needs	Suggestions for involving WQ decision makers in the development process to improve TMDLs
<ul style="list-style-type: none"> • Need long-term funding. • More funding is needed to anticipate WQ impairments and to be proactive, rather than always addressing the problems retrospectively. • Too much money and time is spent on guidance. Most TMDLs have specific analytic needs. Other Federal agencies are often working at cross purposes on issues such as mercury deposition and federal water subsidies. USFS funding has also been cut. • More funding is always needed for better data collection, data analysis, source assessment, and modeling. • Existing funding in some states may be sufficient, provided that planning is improved and a good data collection plan exists. • Establish adequately funded federal technical support center. 	<ul style="list-style-type: none"> • Provide increased funding for non-competitive, rigorous projects on monitoring, research, assessment and implementation. • More funding for better data collection. 	<ul style="list-style-type: none"> • If the State had more resources to assist with TMDL implementation and to conduct TMDL effectiveness monitoring, that would be a huge improvement in the effectiveness of the TMDL program • The TMDL development process is currently working, but the long term question is adequate funding for monitoring to ascertain effectiveness of the TMDL. • Provide sufficient funding to nonpoint sources such that every TMDL implementation plan can have both a carrot (\$) and a stick (new regulatory requirements or programs.) The USFS and BLM need additional funding that is not tied to timber harvest or grazing revenues. • Involve WQ decision makers with more funding.
Implementation Plans		
<ul style="list-style-type: none"> • The lack of regulatory authority to require an implementation plan, and the funding to execute the plan, are constraining factors. • It is important to work with local planners to permit development that addresses WA impacts in the planning phase, rather than redressing the problem after the completion of the development. • Follow-up monitoring and WQ model refinements are typically necessary to develop effective plans. • Conduct implementation planning concurrently with TMDL development, and involve those programs responsible for permitting and NPS control development directly (i.e., TMDL staff can not represent all program interests). • Keep the TMDL focused on the load for the segment. Use the Water Quality Management Plan(WQMP), 40 CFR 130.6, to meet the needs of WQ decision makers. The WQMP uses gubernatorial authority and EPA approval to better define implementation plans. Updates to the WQMP occur as information changes to include more effective BMPs or the removal of a discharger. 	<ul style="list-style-type: none"> • It would be good if the TMDLs included a more specific "road map" for implementation in order to serve as a catalyst for real improvements in water quality. • Ensure that EPA approval process requires TMDLs that support identification of the measures needed to meet WQS. • The greatest problem is that EPA does not approve or disapprove TMDLs based on implementation. That section of the TMDL is probably the most important to decision makers, but is not required or reviewed. • Revise the regulations to require implementation plans as part of the TMDL. • The key is to place more emphasis on implementation plans with more specific information on BMPs. • Keep the TMDL focused on the load for the segment. Use the Water Quality Management Plan(WQMP) as specified in 40 CFR 130.6. • Provide detailed implementation plans. 	<ul style="list-style-type: none"> • A well-thought out implementation plan with understandable and achievable targets is key. The TMDL needs to reflect real world conditions.

EPA TMDL Survey: Qualitative Responses

Stakeholder Awareness and Participation

General suggestions to improve TMDL development process	Suggestions for EPA TMDLs to better meet WQ decision maker needs	Suggestions for involving WQ decision makers in the development process to improve TMDLs
<ul style="list-style-type: none"> • Need local people that have the will to solve problems. • Identify stakeholders early in the process prior to the monitoring and assessment that shape the TMDL development process (or delisting) so that the process is more meaningful for stakeholders. • Early involvement of stakeholders is necessary to bring groups together to address sources of pollution and also implementation of TMDLs. Stakeholder input is especially necessary for TMDLs for persistent toxics (e.g., mercury, PCBs, dioxins, etc.) in order to assess all sources, develop TMDLs, and design implementation plans. • TMDLs with heavy stakeholder involvement must be carefully structured with intensive state or EPA staff involvement to ensure the process is transparent and objective (and not dominated by a subset of discharger interests). 	<ul style="list-style-type: none"> • More stakeholder involvement is needed early and often throughout the entire TMDL development process. • EPA should engage more with the WQ decision makers through meetings and other communication medias. EPA needs to know more about the interested stakeholders. A TMDL outreach program may be helpful to educate WQ decision makers and the stakeholders. • Most of our TMDLs are state TMDLs, not EPA TMDLs. Voluntary measures to achieve the LAs are more likely to be achieved for non-point source TMDLs if a local sponsor group and leader can be found. Otherwise, the TMDL is likely to just be a paper exercise. • EPA should encourage the involvement of WQ decision makers in the TMDL development process and continuously seek to improve TMDL development based on sound science. The decision makers and public need to be educated on the new technology and their responsibilities in the community to improve WQ. 	<ul style="list-style-type: none"> • Bring stakeholders in on the front end in data gathering, source assessment and watershed characterization. Keep participants informed as the TMDL is being developed and get their input for implementation. This process of stakeholder engagement can only be done for the high priority TMDLs, and not the "quick and dirty ones" that are completed for lawsuit commitments. • To improve stakeholder involvement, we need to better demonstrate the problem occurring in the stream and how it is impacting stakeholders. More transparency and easier to understand models are important so that stakeholders can understand how a decision was reached. • Stakeholder involvement in Region 4 is limited by the timeframes and volume of TMDL production necessary to meet Consent Decree requirements. EPA does most of the Florida TMDLs and we cannot meet with most local stakeholders. The States can meet with select groups for some TMDLs, but typically do not have the time and resources to lead stakeholder groups for all TMDLs. • Involve WQ decision makers early in the development process. • TMDL development needs to be more inclusive of stakeholders so that more groups are part of the process and will work on implementation. • Through better stakeholder involvement, WQ decision makers will know more about how TMDLs will affect their watersheds through LAs and WLAs. • EPA and State environmental agencies (i.e., the lead TMDL developer) should identify and invite stakeholders to a series of public meetings. The meetings should take place at the following phases: planning stage, data acquisition, load allocation, trading mechanism, draft TMDL review, and final TMDL adoption and implementation. • Involving decision makers results in better information, greater awareness of water quality issues, and more informed decisions. • Engage more of the stakeholders tasked with implementing a TMDL more often and sooner in the development process.

EPA TMDL Survey: Qualitative Responses

TMDL Analysis

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|---|--|--|
| <ul style="list-style-type: none"> • It is more realistic to identify percentage reductions in pollutants to achieve water quality standards, rather than pretending that we can identify a precise loading capacity such as 67 pounds per day. • Appropriate WQ criteria are needed for realistic, defensible TMDLs. | <ul style="list-style-type: none"> • Include WL and LAs at a finer geographical and land use scale. Do not be afraid to "point fingers" to assist in prioritizing response measures. • The TMDLs do not address economic and financial considerations, nor consider trade-offs in assigning LAs between different sources. • Provide understandable and meaningful targets to address the pollutant(s). • Provide more flexibility in the TMDL document, and a better explanation of the impacts and expected actions of storm water sources. • Target reductions on a finer scale. | |
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TMDL Education

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| <ul style="list-style-type: none"> • More guidance for stormwater TMDLs is needed and should be a higher priority nationally. • More guidance on narrative standards for nutrients, sediment, and temperature would be helpful. • HQ website that responded to questions, and the availability of electronic TMDLs, would be helpful. • Provide additional written technical guidance and provide developers with more hands-on technical assistance. • Provide more assistance to storm water sources in terms of implementing options and approaches. | <ul style="list-style-type: none"> • Promote guidance that identifies measures to meet WQS. • Provide more training for modeling runoff from specific land uses in different types of geologic sites, (i.e., wet/dry; low/high; flat/steep). • Require Regional nonpoint source program staff to take at least a TMDL 101 (or higher) course. • Develop a meaningful education and training program for EPA TMDL and non-TMDL staff, then transfer the knowledge gained to the state agencies and educate the stakeholders and decision makers about the TMDL program and its goals in improving health of the nations water. • Graphically display TMDLs in a geographical context with information about impairment, pollutants, sources, reductions, and BMPs. Government agencies should sponsor these educational tools, rather than providing "mind numbing lists and reports on state/EPA web pages" which are seldom used and are not compelling. • Work with State agency to develop more reader-friendly TMDLs. ME DEP worked up a well-received new format for lake TMDLs which presents general problem/solution information (and specific implementation recommendations) in the beginning of the report. Technical TMDL details for EPA review are included in the back of the report. • Sponsor a State-led annual conference on TMDL development and implementation. • Provide better and more consistent guidance on areas of flexibility. Better delineation of what can be achieved will therefore be available to the decision makers. | <ul style="list-style-type: none"> • Provide more timely guidance on issues such as margins of safety (MOS), watershed TMDLs, reasonable assurance, mercury and other issues. • Improve stakeholder understanding of purpose of the TMDL program to ensure more effective implementation. • Inform Regional nonpoint source staff better about the TMDL development process, particularly with respect to the fact that EPA has no authority to require, or review, an implementation plan as part of its approval process. Develop better coordination between nonpoint managers in HQ and regional staff. • The WQ decision makers have to be familiar with the TMDL development process and be knowledgeable about the policy, technical and financial issues associated with each site-specific TMDL. They have to be visionary, open-minded and willing to compromise. • Increase public awareness of stormwater management through state NEMO programs and state-wide, regional, and national stormwater management awareness programs (e.g., <i>Think Blue</i> campaign in Maine, adapted from WA or OR program). By our individual and collective land use actions, we are all "WQ decision-makers". • Provide better education of TMDLs to enhance the understanding and participation of WQ decision makers. Emphasize flexibility and WQ benefits. |
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EPA TMDL Survey: Qualitative Responses

TMDL Leadership		
General suggestions to improve TMDL development process	Suggestions for EPA TMDLs to better meet WQ decision maker needs	Suggestions for involving WQ decision makers in the development process to improve TMDLs
<ul style="list-style-type: none"> • The biggest challenges are to find meaningful non-point source controls to achieve the LAs and to provide reasonable assurance for the WLAs. Integrating standards, TMDLS, monitoring, and watershed work remains a challenge. These programs often are too focused on individual agendas to make the changes necessary for significant environmental change -- not to mention the state programs. We need to find shared goals and translate them into program specific activities designed to identify, prioritize, and fix impairments. • EPA management needs to be open and encourage new and innovative ways to address the back log of impaired waterbody segments. It is critical that EPA actually take a leadership role in this area. Staffers, middle and senior management must embrace change and foster ways of doing things in a better way. Otherwise, the TMDL program is destined to fail. • In general, EPA needs to provide clear leadership on the details of TMDL development. This allows the state and local stakeholders to have a framework to work from and also, hopefully, a schedule for completion of the tasks. EPA needs to further empower the state to feel confident about making certain policy decisions that are state specific. EPA absolutely needs to provide a presence at community or stakeholder meetings. This elevates the importance of the TMDL in the watershed and gives the community confidence and support in moving forward with the TMDL development process. • Change the accounting system to reflect less on numbers and more on achievements 	<ul style="list-style-type: none"> • Regional leadership must decide to commit resources to high priority TMDLs, and preclude managers and lawyers from redirecting resources to low priority TMDLs. • We presently do not include WQ decision makers' input into our approval decisions, although we do provide the modeling or technical framework to state agencies. Involving these decision makers would help us to meet their needs more effectively. 	<ul style="list-style-type: none"> • States are frustrated with the inconsistency and conflicts between HQ and the Regions.
Watershed TMDLs		
<ul style="list-style-type: none"> • Focus more on watershed TMDLs for the complete picture, and not on EMAP approach. • Encourage watershed TMDLs. • Watershed TMDLs and data collection is the way to address all pollutants of concern at one time. It is also important to look at the complete picture when developing implementation plans. 		<ul style="list-style-type: none"> • EPA needs to conform with the fact that States often implement TMDLs on a regional or watershed basis. • Provide funding to stakeholders interested in forming a watershed action group prior to TMDL development so that they can follow the process, make recommendations and make decisions as the TMDL is developed. The same group can then participate in development of the implementation plan. • The TMDLs should be developed on a large-scale (watershed basis)for multiple pollutants.

Appendix G

**SURVEY QUESTIONS FOR EPA NON-TMDL PROGRAM
AREAS AND NATIONAL ESTUARY PROGRAM STAFF**

NON-TMDL EPA Staff Survey

Log In Page:

Thank you for taking the time to participate in the TMDL survey. Before you begin, please disable any popup blockers currently running on your computer. **[Insert instructions on how to do this]** After you have disabled your popup blocker, please enter your ID number (as provided in the survey notification email) into the Login box below. A new window will open with instructions and the TMDL survey.

Note: This survey is best viewed with display resolution set to **1024 by 768 pixels**. To change your display resolution, go to the Control Panel folder, select Display, and click on the "Settings" tab. Adjust the "Screen Area" bar to 1024 by 768.

Intro Page

The Office of Wetlands, Oceans, and Watersheds in partnership with Office of Policy Economics and Innovation is evaluating the effectiveness of the Total Maximum Daily Load (TMDL) development process at creating "implementable" TMDLs for stormwater and nonpoint sources. While TMDLs identify the degree to which a water body is impaired and generally calculate necessary reductions to attain water quality standards, their implementation is dependent on a wide range of other programs. In this survey, we seek your insights about the utility of TMDLs to programs that more directly address stormwater and nonpoint source pollution.

While we understand that not all questions will be relevant to all survey respondents, we do ask that you attempt to answer all questions relevant to your work. Your responses will help us tailor the TMDL program to better meet your program needs for achieving water quality goals.

In the survey notification email, you were provided with an ID number. Although this ID is unique to each survey taker, it will be used only for the purposes of survey administration. Names and IDs will not be provided to EPA in conjunction with responses nor will they be used for the purposes of data analysis. We are hopeful that this degree of confidentiality will encourage you to provide us with candid answers in order to improve the effectiveness of the TMDL program.

We estimate that this survey will take you approximately 20 minutes to complete. If you are unable to complete the survey in one sitting, you may access the survey at a later time using the URL and User ID provided to you via email. Your User ID will retrieve any answers previously submitted.

If you experience any difficulties, please contact Allison Barasz at Industrial Economics, Inc. (IEc) by email at **abarasz@indecon.com** or by phone at **(617) 354 0074**. (IEc has been contracted to assist EPA with the evaluation and to administer this survey.)

Please click Next >> to begin the survey.

ROLES AND RESPONSIBILITIES RELATED TO TMDLS

The following questions are geared to help us better understand your involvement with TMDL development and implementation.

Please check the box that best represents your program area. If you work in more than one area please check the program that represents the majority of your work.

Program Area	
Permitted Storm water	<input type="checkbox"/>
Nonpoint Source	<input type="checkbox"/>
National Estuary Program/Great Waterbody Program	<input type="checkbox"/>
Smart growth	<input type="checkbox"/>
Groundwater/Drinking water/Source water protection	<input type="checkbox"/>
Air Program	<input type="checkbox"/>
Clean Water State Revolving Fund	<input type="checkbox"/>
Superfund	<input type="checkbox"/>

4. Either during TMDL development or after a TMDL is completed, the state has the opportunity to develop an implementation plan for achieving water quality improvements set forth in the TMDL. Has your program or your state counterpart's program ever been involved in the development of a TMDL implementation plan? If your answer is no, not relevant, or don't know, please skip to question 6.

	YES	NO	Not Relevant	Don't Know
Your EPA Program				
State Counterpart Program				

5. If yes, please characterize how frequently you or your state counterpart's program have been involved when TMDLs are developed pertinent to your work?

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
You							
State Counterpart Program							

AVAILABILTY AND USEFULNESS OF TMDL INFORMATION

6. How frequently do you seek out information from TMDL documents for specific waterbodies relevant to your work?

Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know

7. If you do seek out information from TMDL documents for specific waterbodies, which sources do you turn to? Please select all that apply.

EPA TMDL staff,

State TMDL staff,

National EPA TMDL website

Regional EPA TMDL website

State TMDL website,

other [open ended fill in].

8. On average, how long does it take you to acquire the relevant TMDL document?
Please check the box that most closely fits your experience.

Less than 15 minutes	Less than a couple of hours	Less than one day	More than one day	Usually Can't Find	Not Relevant	Don't Know

9. How useful are each of the following elements of a TMDL to your overarching program? (please consider **both** your program and your state counterpart's program in this answer)

	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know
Compilation of source loads						
Pollutant reductions needed to meet water quality standards in the waterbody						
Allocation to specific sources						

10. How useful are each of the following elements of a TMDL *implementation plan* to your overarching program? (please consider **both** your program and your state counterpart's program in this answer)

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Assigning responsibilities for implementation tasks							
Estimation of technical and financial assistance needed							
BMP recommendations for each pollutant							
BMP recommendations targeted geographically							
Analysis of BMP costs and effectiveness							
Identification of necessary load reductions targeted geographically							

Public awareness and education campaign							
Schedule for implementation							
Interim targets							
Criteria to assess progress of implementation							
Monitoring of water quality							

TMDL INTEGRATION WITH OTHER PROGRAMS

The following questions focus on how effectively TMDLs are integrated into programs that can implement them.

11. How frequently **is** your program and your state counterpart's program notified when relevant TMDLs and TMDL Implementation Plans are developed?

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Notification when relevant TMDLs are developed							
Your EPA Program							
State Counterpart Program							
Notification when relevant Implementation Plans are developed							
Your EPA Program							
State Counterpart Program							

12. How frequently **would** notification of relevant TMDL and TMDL Implementation Plan development be useful to your program and your state counterpart's program?

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Notification when relevant TMDLs are developed							
Your EPA Program							

State Counterpart Program							
Notification when relevant Implementation Plans are developed							
Your EPA Program							
State Counterpart Program							

13. When working in a specific water body, how frequently are you aware of the following?

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Relevant TMDL pollutant reduction recommendations for that water body							
Recommended activities for meeting water quality standards in TMDLs or TMDL implementation plans (e.g., specific BMPs, etc) for that water body							

14. Does your program and your state counterpart's program have a policy of incorporating TMDL implementation into program activities?

	YES	NO	Not Relevant	Don't Know
Your EPA program				
State Counterpart Program				

15. How frequently does your program and your state counterpart's program target your efforts to specific impaired waters for the purpose of achieving water quality standards?

Your Program	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Education & Outreach							
Your EPA Program							

State Counterpart Program							
Funding (e.g., grants, cooperative agreements, contractor support & loans)							
Your EPA Program							
State Counterpart Program							
Technical Assistance							
Your EPA Program							
State Counterpart Program							

16. How frequently does your program and your state counterpart's program make watershed planning decisions based on TMDL pollutant reduction recommendations?

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know
Your EPA program							
State Counterpart Program							

At the outset of this survey, you were asked to identify your primary area of work (e.g., Nonpoint Source respondents, Permitted Storm Water respondents, etc.). The following eleven questions are tailored toward these particular respondents. Please answer *only* those questions that correspond to your particular program, and scroll through the questions that do not apply to you. NOTE: There are 2 questions at the end of this survey for ALL respondents.

17. For *Nonpoint Source respondents*: In your experience, how frequently does the nonpoint source program (the combined efforts of both state and EPA programs) participate in the development of TMDL implementation plans which meet both TMDL and nonpoint source program objectives? (If you did not identify your major program area as *nonpoint source*, please skip this question.)

Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know

21. For ***Superfund respondents***: During Remedial Investigations and Feasibility Studies does your program generally calculate the impact of pollutant loadings from Superfund sites to surface water quality pollutant concentrations? (If you did not identify your major program area as ***Superfund***, please skip this question.)

Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know

22. For ***Superfund respondents***: When selecting a remediation option how frequently does your program select a clean-up level that meets surface water quality standards, i.e. water quality standards are not waived from the Applicable and Relevant and Appropriate Requirements (ARARs)? (If you did not identify your major program area as ***Superfund***, please skip this question.)

Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know

23. For ***Clean Water State Revolving Fund respondents***: In your Region, how many states target some portion of their State Revolving Fund loans to waters identified as impaired with the purpose of achieving water quality standards? Please check one. (If you did not identify your major program area as ***Clean Water SRF***, please skip this question.)

0	1	2	3	4	5	6 or more	Don't Know

24. For ***Groundwater/Drinking water/Source Water Protection respondents***: How frequently does your program collaborate with 303(d) program staff to share relevant Source Water Assessments? (If you did not identify your major program area as ***Groundwater/Drinking Water/Source Water Protection***, please skip this question.)

Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know

25. *For Groundwater/Drinking water/Source Water Protection respondents:* How does the Drinking Water Program use information and data pertaining to waters listed as impaired under section 303(d) of the Clean Water Act that also contain drinking water intakes? For example, do you encourage states to assign priority consideration to these waters when undertaking projects to manage Source Water Protection Areas? [open ended question, free response] (If you did not identify your major program area as ***Groundwater/Drinking Water/Source Water Protection***, please skip this question.)

26. *For Air Quality respondents:* Please describe the nature of state air program involvement in developing TMDLs where the pollutant load to impaired waterbodies is reasonably thought to be partially or completely caused by atmospheric deposition. [open ended question, free response] (If you did not identify your major program area as ***Air Quality***, please skip this question.)

27. *For Air Quality respondents:* How do state air emission regulations reflect consideration of deposition impacts to waterbodies? [open ended question, free response] (If you did not identify your major program area as ***Air Quality***, please skip this question.)

28. *For Smart Growth respondents:* Does the Smart Growth program have tools that can model projected pollutant loadings for the purpose of developing TMDLs, TMDL future growth pollutant load allocations, or implementation plans? [open ended question, free response] (If you did not identify your major program area as ***Smart Growth***, please skip this question.)

YOUR RECOMMENDATIONS

We are interested in your recommendations for how to improve TMDLs to better suit your program needs. Please reflect on your experience to answer the following questions.

29. How might TMDLs be improved to better meet you and/or your state counterpart's needs? Please consider improvements to the TMDL document, the TMDL development process, and the TMDL implementation plan.

30. How might your program be improved to better address TMDL development and implementation with the ultimate goal of meeting water quality standards?

Appendix H

NON-TMDL PROGRAM AREA SURVEY RESULTS

1. Do your program's activities result in the reduction of pollutant in surface waters?

Program Area	Yes	No	Yes	No	Total
Air Program	85.7%	14.3%	12	2	14
Clean Water State Revolving Fund	100.0%	0.0%	3	0	3
Groundwater/ Drinking water/ Source water protection	100.0%	0.0%	7	0	7
National Estuary Program/ Great Waterbody Program	100.0%	0.0%	23	0	23
None	100.0%	0.0%	3	0	3
Nonpoint Source	96.8%	3.2%	30	1	31
Overall	97.1%	2.9%	102	3	105
Permitted Storm water	100.0%	0.0%	6	0	6
Smart growth	100.0%	0.0%	4	0	4
Superfund	100.0%	0.0%	14	0	14

2. Has your EPA program ever been involved in the development of a TMDL for any of these pollutants?

Program Area	Yes	No	Not Relevant	Don't know	Yes	No	Not Relevant	Don't Know	Total
Air Program	78.6%	21.4%	0.0%	0.0%	11	3	0	0	14
Clean Water State Revolving Fund	0.0%	100.0%	0.0%	0.0%	0	3	0	0	3
Groundwater/ Drinking water/ Source water protection	42.9%	28.6%	0.0%	28.6%	3	2	0	2	7
National Estuary Program/ Great Waterbody Program	72.7%	27.3%	0.0%	0.0%	16	6	0	0	22
None	100.0%	0.0%	0.0%	0.0%	3	0	0	0	3
Nonpoint Source	69.2%	26.9%	0.0%	3.8%	18	7	0	1	26
Overall	57.6%	31.3%	1.0%	10.1%	57	31	1	10	99
Permitted Storm water	33.3%	50.0%	16.7%	0.0%	2	3	1	0	6
Smart growth	25.0%	75.0%	0.0%	0.0%	1	3	0	0	4
Superfund	21.4%	28.6%	0.0%	50.0%	3	4	0	7	14

2. Has your State Counterpart's program ever been involved in the development of a TMDL for any of these pollutants?

Program Area	Yes	No	Not Relevant	Don't know	Yes	No	Not Relevant	Don't Know	Total
Air Program	61.5%	7.7%	7.7%	23.1%	8	1	1	3	13
Clean Water State Revolving Fund	0.0%	100.0%	0.0%	0.0%	0	3	0	0	3
Groundwater/ Drinking water/ Source water protection	50.0%	0.0%	0.0%	50.0%	3	0	0	3	6
National Estuary Program/ Great Waterbody Program	85.0%	5.0%	10.0%	0.0%	17	1	2		20
None	100.0%	0.0%	0.0%	0.0%	3	0	0	0	3
Nonpoint Source	82.8%	10.3%	0.0%	6.9%	24	3	0	2	29
Overall	62.9%	12.4%	7.2%	17.5%	61	12	7	17	97
Permitted Storm water	50.0%	0.0%	16.7%	33.3%	3	0	1	2	6
Smart growth	25.0%	25.0%	50.0%	0.0%	1	1	2	0	4
Superfund	15.4%	23.1%	7.7%	53.8%	2	3	1	7	13

3. If yes, please characterize the frequency of your involvement when TMDLs are developed pertinent to your program area.

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	18.2%	18.2%	54.5%	9.1%	0.0%	0.0%	0.0%	2	2	6	1	0	0	0	11
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0	0	0
Groundwater/ Drinking water/ Source water protection	0.0%	60.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0	3	0	0	0	1	1	5
National Estuary Program/ Great Waterbody Program	9.5%	33.3%	9.5%	23.8%	14.3%	9.5%	0.0%	2	7	2	5	3	2	0	21
None	0.0%	33.3%	0.0%	33.3%	33.3%	0.0%	0.0%	0	1	0	1	1	0	0	3
Nonpoint Source	8.0%	24.0%	24.0%	20.0%	8.0%	8.0%	8.0%	2	6	6	5	2	2	2	25
Overall	13.3%	25.3%	24.0%	16.0%	8.0%	9.3%	4.0%	10	19	18	12	6	7	3	75
Permitted Storm water	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	0.0%	0	0	2	0	0	1	0	3
Smart growth	33.3%	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	1	0	1	0	0	1	0	3
Superfund	75.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	3	0	1	0	0	0	0	4

3. If yes, please characterize the frequency of your state counterpart's program when TMDLs are developed pertinent to your program area.

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	0.0%	10.0%	50.0%	10.0%	0.0%	10.0%	20.0%	0	1	5	1	0	1	2	10
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0	0	0
Groundwater/ Drinking water/ Source water protection	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0	3	0	0	0	1	1	5
National Estuary Program/ Great Waterbody Program	0.0%	42.1%	5.3%	42.1%	42.1%	5.3%	5.3%	0	0	1	8	8	1	1	19
None	0.0%	33.3%	33.3%	33.3%	33.3%	0.0%	0.0%	0	0	1	1	1	0	0	3
Nonpoint Source	0.0%	34.6%	34.6%	34.6%	7.7%	0.0%	19.2%	0	1	9	9	2	0	5	26
Overall	0.0%	28.8%	24.7%	28.8%	15.1%	6.8%	17.8%	0	5	18	21	11	5	13	73
Permitted Storm water	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	33.3%	0	0	1	1	0	0	1	3
Smart growth	0.0%	33.3%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	75.0%	0	0	1	0	0	0	3	4

4. Has your Program ever been Involved in the Development of a TMDL Implementation Plan?

Program Area	Yes	No	Not Relevant	Don't Know	Yes	No	Not Relevant	Don't Know	Total
Air Program	23.1%	69.2%	7.7%	0.0%	3	9	1	0	13
Clean Water State Revolving Fund	0.0%	100.0%	0.0%	0.0%	0	3	0	0	3
Groundwater/ Drinking water/ Source water protection	57.1%	14.3%	0.0%	28.6%	4	1	0	2	7
National Estuary Program/ Great Waterbody Program	45.5%	54.5%	0.0%	0.0%	10	12	0	0	22
None	100.0%	0.0%	0.0%	0.0%	2	0	0	0	2
Nonpoint Source	65.5%	24.1%	0.0%	10.3%	19	7	0	3	29
Overall	46.9%	38.8%	2.0%	12.2%	46	38	2	12	98
Permitted Storm water	50.0%	50.0%	0.0%	0.0%	3	3	0	0	6
Smart growth	25.0%	50.0%	25.0%	0.0%	1	2	1	0	4
Superfund	33.3%	8.3%	0.0%	58.3%	4	1	0	7	12

4. Has your State Counterpart's Program ever been Involved in the Development of a TMDL Implementation Plan?

Program Area	Yes	No	Not Relevant	Don't Know	Yes	No	Not Relevant	Don't Know	Total
Air Program	25.0%	8.3%	16.7%	50.0%	3	1	2	6	12
Clean Water State Revolving Fund	0.0%	66.7%	0.0%	33.3%	0	2	0	1	3
Groundwater/ Drinking water/ Source water protection	42.9%	0.0%	0.0%	57.1%	3	0	0	4	7
National Estuary Program/ Great Waterbody Program	66.7%	14.3%	4.8%	14.3%	14	3	1	3	21
None	100.0%	0.0%	0.0%	0.0%	2	0	0	0	2
Nonpoint Source	83.3%	10.0%	0.0%	6.7%	25	3	0	2	30
Overall	55.8%	11.6%	6.3%	26.3%	53	11	6	25	95
Permitted Storm water	50.0%	0.0%	0.0%	50.0%	3	0	0	3	6
Smart growth	33.3%	0.0%	66.7%	0.0%	1	0	2	0	3
Superfund	18.2%	18.2%	9.1%	54.5%	2	2	1	6	11

6. How frequently do you seek out information from TMDL documents for specific waterbodies relevant to your work?

Program Area	Almost Always	Often	Sometimes	Seldom	Almost Never	Not Relevant	Don't Know	Almost Always	Often	Sometimes	Seldom	Almost Never	Not Relevant	Don't Know	Total
Nonpoint Source	6.7%	26.7%	26.7%	20.0%	13.3%	6.7%	0.0%	2	8	8	6	4	2	0	30
National Estuary Program/Great Waterbody Program	4.5%	13.6%	45.5%	27.3%	9.1%	0.0%	0.0%	1	3	10	6	2	0	0	22
Overall	3.1%	15.3%	35.7%	22.4%	18.4%	4.1%	1.0%	3	15	35	22	18	4	1	98
Air Program	0.0%	0.0%	38.5%	30.8%	23.1%	7.7%	0.0%	0	0	5	4	3	1	0	13
Clean Water State Revolving Fund	0.0%	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%	0	0	2	1	0	0	0	3
Groundwater/Drinking water/Source water protection	0.0%	0.0%	14.3%	28.6%	42.9%	14.3%	0.0%	0	0	1	2	3	1	0	7
None	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0	1	1	0	0	0	0	2
Permitted Storm water	0.0%	33.3%	50.0%	0.0%	16.7%	0.0%	0.0%	0	2	3	0	1	0	0	6
Smart growth	0.0%	25.0%	0.0%	25.0%	50.0%	0.0%	0.0%	0	1	0	1	2	0	0	4
Superfund	0.0%	0.0%	45.5%	18.2%	27.3%	0.0%	9.1%	0	0	5	2	3	0	1	11

7. If you do seek out information from TMDL documents for specific waterbodies, which sources do you turn to? Please select all that apply.

Program Area	EPA TMDL Staff	State TMDL Staff	National EPA TMDL Website	Regional EPA TMDL Website	State TMDL Website	Other	EPA TMDL Staff	State TMDL Staff	National EPA TMDL Website	Regional EPA TMDL Website	State TMDL Website	Other (See Below)	Total Respondents
Air Program	78.6%	14.3%	21.4%	35.7%	21.4%	0.0%	11	2	3	5	3	0	14
Clean Water State Revolving Fund	66.7%	33.3%	66.7%	33.3%	33.3%	0.0%	2	1	2	1	1	0	3
Groundwater/Drinking water/Source water protection	85.7%	14.3%	0.0%	0.0%	0.0%	14.3%	6	1	0	0	0	1	7
National Estuary Program/Great Waterbody Program	65.2%	47.8%	17.4%	4.3%	26.1%	17.4%	15	11	4	1	6	4	23
None	66.7%	66.7%	33.3%	0.0%	33.3%	33.3%	2	2	1	0	1	1	3
Nonpoint Source	74.2%	41.9%	25.8%	29.0%	32.3%	9.7%	23	13	8	9	10	3	31
Overall	70.5%	37.1%	21.9%	20.0%	25.7%	10.5%	74	39	23	21	27	11	105
Permitted Storm water	83.3%	50.0%	0.0%	33.3%	33.3%	33.3%	5	3	0	2	2	2	6
Smart growth	75.0%	50.0%	25.0%	25.0%	50.0%	0.0%	3	2	1	1	2	0	4
Superfund	50.0%	28.6%	28.6%	14.3%	14.3%	0.0%	7	4	4	2	2	0	14

Other Responses

Groundwater/ Drinking water/ Source water protection	Regional Database
National Estuary Program/Great Waterbody Program	The TMDL document itself; National Estuary Program Directors; Geographically-based staff; and County planning and permits department, other state monitoring departments - Dept. of Natural Resources
None	My own reference materials. Another person also commented that "I am new to UIC/Source Water protection program and am not aware of any use of TMDLs in our work."
Nonpoint Source	State Nonpoint Source Staff; State NPS Staff; and the hard copy of the document.
Permitted Stormwater	TMDL Documents; and Google.

8. On average, how long does it take you to acquire the relevant TMDL document?

Program Area	Less than 15 minutes	Less than a couple of hours	Less than one day	More than one day	Usually can't Find	Not Relevant	Don't Know	Less than 15 minutes	Less than a couple of hours	Less than one day	More than one day	Usually can't Find	Not Relevant	Don't Know	Total
Groundwater/Drinking water/Source water protection	14.3%	0.0%	28.6%	28.6%	0.0%	28.6%	0.0%	1	0	2	2	0	2		7
National Estuary Program/Great Waterbody Program	14.3%	33.3%	33.3%	0.0%	0.0%	9.5%	9.5%	3	7	7	0	0	2	2	21
Nonpoint Source	13.3%	23.3%	36.7%	10.0%	0.0%	10.0%	6.7%	4	7	11	3	0	3	2	30
Overall	9.4%	24.0%	30.2%	12.5%	0.0%	14.6%	9.4%	9	23	29	12	0	14	9	96
Air Program	8.3%	25.0%	16.7%	16.7%	0.0%	25.0%	8.3%	1	3	2	2	0	3	1	12
Clean Water State Revolving Fund	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%	0.0%	0	2	1	0	0	0		3
None	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0	1	0	1	0	0		2
Permitted Storm water	0.0%	16.7%	33.3%	33.3%	0.0%	0.0%	16.7%	0	1	2	2	0	0	1	6
Smart growth	0.0%	0.0%	50.0%	0.0%	0.0%	50.0%	0.0%	0	0	2	0	0	2		4
Superfund	0.0%	18.2%	18.2%	18.2%	0.0%	18.2%	27.3%		2	2	2	0	2	3	11

9. How useful are the compilation of source loads to your overarching program?

Program Area	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Total
Air Program	0.0%	16.7%	25.0%	33.3%	25.0%	0.0%	0	2	3	4	3	0	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%		0	1	2	0	0	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	14.3%	28.6%	0.0%	28.6%	1	1	1	2	0	2	7
National Estuary Program/Great Waterbody Program	4.5%	9.1%	27.3%	50.0%	4.5%	4.5%	1	2	6	11	1	1	22
None	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0	0	1	1	0	0	2
Nonpoint Source	0.0%	17.9%	21.4%	53.6%	0.0%	7.1%	0	5	6	15		2	28
Overall	3.2%	12.6%	25.3%	43.2%	4.2%	11.6%	3	12	24	41	4	11	95
Permitted Storm water	0.0%	16.7%	33.3%	50.0%	0.0%	0.0%	0	1	2	3	0	0	6
Smart growth	25.0%	0.0%	25.0%	25.0%	0.0%	25.0%	1	0	1	1	0	1	4
Superfund	0.0%	9.1%	27.3%	18.2%	0.0%	45.5%	0	1	3	2	0	5	11

9. How useful are pollutant reductions needed to meet the water quality standards in the waterbody to your overarching program?

Program Area	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Total
Air Program	0.0%	8.3%	33.3%	33.3%	25.0%	0.0%	0	1	4	4	3	0	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0	0	0	3	0	0	3
Groundwater/Drinking water/Source water protection	0.0%	28.6%	28.6%	14.3%	0.0%	28.6%	0	2	2	1	0	2	7
National Estuary Program/Great Waterbody Program	0.0%	0.0%	40.9%	54.5%	4.5%	0.0%	0	0	9	12	1	0	22
None	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0	0	1	1	0	0	2
Nonpoint Source	0.0%	3.6%	32.1%	57.1%	0.0%	7.1%	0	1	9	16	0	2	28
Overall	1.1%	5.3%	28.4%	49.5%	5.3%	10.5%	1	5	27	47	5	10	95
Permitted Storm water	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%	0	0	2	4	0	0	6
Smart growth	25.0%	0.0%	0.0%	25.0%	25.0%	25.0%	1	0	0	1	1	1	4
Superfund	0.0%	9.1%	0.0%	45.5%	0.0%	45.5%	0	1	0	5	0	5	11

9. How useful are allocations to specific sources to your overarching program?

Program Area	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Not at all useful	Of little use	Somewhat useful	Very useful	Not relevant	Don't Know	Total
Air Program	0.0%	25.0%	33.3%	8.3%	25.0%	8.3%	0	3	4	1	3	1	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%	0	0	1	2	0	0	3
Groundwater/Drinking water/Source water protection	0.0%	42.9%	14.3%	14.3%	0.0%	28.6%	0	3	1	1	0	2	7
National Estuary Program/Great Waterbody Program	0.0%	4.5%	22.7%	59.1%	9.1%	4.5%	0	1	5	13	2	1	22
None	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0	0	1	1	0	0	2
Nonpoint Source	3.6%	14.3%	21.4%	39.3%	7.1%	14.3%	1	4	6	11	2	4	28
Overall	3.2%	12.6%	22.1%	37.9%	7.4%	16.8%	3	12	21	36	7	16	95
Permitted Storm water	0.0%	0.0%	16.7%	66.7%	0.0%	16.7%	0	0	1	4	0	1	6
Smart growth	25.0%	0.0%	25.0%	25.0%	0.0%	25.0%	1	0	1	1	0	1	4
Superfund	9.1%	9.1%	9.1%	18.2%	0.0%	54.5%	1	1	1	2	0	6	11

10. How useful is assigning responsibilities for implementation tasks to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	25.0%	16.7%	8.3%	0.0%	25.0%	16.7%	1	3	2	1	0	3	2	12
Clean Water State Revolving Fund	33.3%	0.0%	0.0%	33.3%	0.0%	0.0%	33.3%	1	0	0	1	0	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	1	1	1	1	1	1	1	7
National Estuary Program/Great Waterbody Program	9.5%	9.5%	9.5%	28.6%	19.0%	9.5%	14.3%	2	2	2	6	4	2	3	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	7.4%	25.9%	25.9%	29.6%	0.0%	11.1%	0	2	7	7	8	0	3	27
Overall	7.7%	9.9%	19.8%	19.8%	17.6%	9.9%	15.4%	7	9	18	18	16	9	14	91
Permitted Storm water	0.0%	0.0%	66.7%	0.0%	33.3%	0.0%	0.0%	0	0	4	0	2	0	0	6
Smart growth	33.3%	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	1	0	1	0	0	1	0	3
Superfund	9.1%	9.1%	9.1%	9.1%	9.1%	18.2%	36.4%	1	1	1	1	1	2	4	11

10. How useful is estimation of technical and financial assistance needed to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	16.7%	8.3%	25.0%	0.0%	25.0%	16.7%	1	2	1	3	0	3	2	12
Clean Water State Revolving Fund	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0	1	0	0	1	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	0.0%	57.1%	0.0%	0.0%	14.3%	14.3%	1	0	4	0	0	1	1	7
National Estuary Program/Great Waterbody Program	14.3%	14.3%	9.5%	28.6%	14.3%	4.8%	14.3%	3	3	2	6	3	1	3	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	10.7%	17.9%	35.7%	21.4%	0.0%	14.3%	0	3	5	10	6	0	4	28
Overall	7.6%	13.0%	17.4%	23.9%	13.0%	8.7%	16.3%	7	12	16	22	12	8	15	92
Permitted Storm water	0.0%	16.7%	50.0%	16.7%	16.7%	0.0%	0.0%	0	1	3	1	1	0	0	6
Smart growth	33.3%	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	1	0	1	0	0	1	0	3
Superfund	9.1%	18.2%	0.0%	9.1%	9.1%	18.2%	36.4%	1	2	0	1	1	2	4	11

10. How useful are BMP recommendations for each pollutant to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	33.3%	8.3%	0.0%	25.0%	16.7%	1	1	4	1	0	3	2	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	33.3%	0	0	1	0	1	0	1	3
Groundwater/Drinking water/Source water protection	0.0%	14.3%	14.3%	42.9%	14.3%	0.0%	14.3%	0	1	1	3	1	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	4.8%	23.8%	23.8%	38.1%	4.8%	4.8%	0	1	5	5	8	1	1	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	3.6%	28.6%	28.6%	32.1%	0.0%	7.1%	0	1	8	8	9	0	2	28
Overall	2.2%	6.6%	24.2%	23.1%	24.2%	7.7%	12.1%	2	6	22	21	22	7	11	91
Permitted Storm water	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	0	0	2	2	2	0	0	6
Smart growth	0.0%	50.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0	1	0	0	0	1	0	2
Superfund	9.1%	9.1%	9.1%	9.1%	9.1%	18.2%	36.4%	1	1	1	1	1	2	4	11

10. How useful are BMP recommendations targeted geographically to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	33.3%	8.3%	0.0%	25.0%	16.7%	1	1	4	1	0	3	2	12
Clean Water State Revolving Fund	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	1	0	0	0	1	0	1	3
Groundwater/Drinking water/Source water protection	0.0%	0.0%	28.6%	42.9%	0.0%	0.0%	28.6%	0	0	2	3	0	0	2	7
National Estuary Program/Great Waterbody Program	4.8%	4.8%	14.3%	19.0%	42.9%	4.8%	9.5%	1	1	3	4	9	1	2	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	17.9%	17.9%	25.0%	32.1%	0.0%	7.1%	0	5	5	7	9	0	2	28
Overall	4.3%	8.7%	20.7%	20.7%	23.9%	6.5%	15.2%	4	8	19	19	22	6	14	92
Permitted Storm water	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	0	0	2	2	2	0	0	6
Smart growth	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	0.0%	0	0	2	0	0	1	0	3
Superfund	9.1%	9.1%	9.1%	9.1%	9.1%	9.1%	45.5%	1	1	1	1	1	1	5	11

10. How useful are analysis of BMP costs and effectiveness to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	16.7%	16.7%	16.7%	8.3%	0.0%	25.0%	16.7%	2	2	2	1	0	3	2	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%	0	0	0	0	2	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	0.0%	42.9%	14.3%	0.0%	14.3%	1	1	0	3	1	0	1	7
National Estuary Program/Great Waterbody Program	9.5%	9.5%	9.5%	33.3%	23.8%	4.8%	9.5%	2	2	2	7	5	1	2	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	21.4%	25.0%	25.0%	21.4%	0.0%	7.1%	0	6	7	7	6	0	2	28
Overall	6.5%	14.1%	17.4%	22.8%	18.5%	7.6%	13.0%	6	13	16	21	17	7	12	92
Permitted Storm water	0.0%	0.0%	66.7%	0.0%	33.3%	0.0%	0.0%	0	0	4	0	2	0	0	6
Smart growth	0.0%	0.0%	33.3%	33.3%	0.0%	33.3%	0.0%	0	0	1	1	0	1	0	3
Superfund	9.1%	18.2%	0.0%	9.1%	9.1%	18.2%	36.4%	1	2	0	1	1	2	4	11

10. How useful are identification of necessary load reductions targeted geographically to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	0.0%	8.3%	16.7%	33.3%	0.0%	25.0%	16.7%	0	1	2	4	0	3	2	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	33.3%	0	0	1	0	1	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	0.0%	42.9%	0.0%	0.0%	28.6%	1	1	0	3	0	0	2	7
National Estuary Program/Great Waterbody Program	0.0%	4.8%	28.6%	23.8%	33.3%	4.8%	4.8%	0	1	6	5	7	1	1	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	17.9%	21.4%	28.6%	25.0%	0.0%	7.1%	0	5	6	8	7	0	2	28
Overall	3.3%	9.8%	18.5%	29.3%	19.6%	5.4%	14.1%	3	9	17	27	18	5	13	92
Permitted Storm water	0.0%	0.0%	16.7%	50.0%	33.3%	0.0%	0.0%	0	0	1	3	2	0	0	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3

Superfund	9.1%	9.1%	9.1%	18.2%	9.1%	0.0%	45.5%	1	1	1	2	1	0	5	11
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10. How useful are public awareness and education campaigns to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	16.7%	0.0%	25.0%	16.7%	0.0%	25.0%	16.7%	2	0	3	2	0	3	2	12
Clean Water State Revolving Fund	66.7%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	2	0	0	0	0	0	1	3
Groundwater/Drinking water/Source water protection	0.0%	0.0%	71.4%	14.3%	0.0%	0.0%	14.3%	0	0	5	1	0	0	1	7
National Estuary Program/Great Waterbody Program	4.8%	9.5%	14.3%	19.0%	38.1%	4.8%	9.5%	1	2	3	4	8	1	2	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	3.7%	11.1%	25.9%	25.9%	22.2%	0.0%	11.1%	1	3	7	7	6	0	3	27
Overall	8.8%	6.6%	26.4%	20.9%	17.6%	5.5%	14.3%	8	6	24	19	16	5	13	91
Permitted Storm water	0.0%	0.0%	33.3%	50.0%	16.7%	0.0%	0.0%	0	0	2	3	1	0	0	6
Smart growth	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	0.0%	0	0	2	0	0	1	0	3
Superfund	18.2%	9.1%	18.2%	9.1%	9.1%	0.0%	36.4%	2	1	2	2	1	0	4	11

10. How useful are schedules for implementation to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	25.0%	8.3%	16.7%	8.3%	0.0%	25.0%	16.7%	3	1	2	1	0	3	2	12
Clean Water State Revolving Fund	33.3%	0.0%	0.0%	33.3%	0.0%	0.0%	33.3%	1	0	0	1	0	0	1	3
Groundwater/Drinking water/Source water protection	33.3%	16.7%	16.7%	16.7%	0.0%	0.0%	16.7%	2	1	1	1	0	0	1	6
National Estuary Program/Great Waterbody Program	4.8%	4.8%	42.9%	23.8%	9.5%	4.8%	9.5%	1	1	9	5	2	1	2	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	14.3%	25.0%	17.9%	32.1%	0.0%	10.7%	0	4	7	5	9	0	3	28
Overall	8.8%	11.0%	24.2%	17.6%	16.5%	7.7%	14.3%	8	10	22	16	15	7	13	91
Permitted Storm water	0.0%	0.0%	16.7%	16.7%	50.0%	16.7%	0.0%	0	0	1	1	3	1	0	6
Smart growth	33.3%	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	1	0	1	0	0	1	0	3
Superfund	0.0%	27.3%	9.1%	9.1%	9.1%	9.1%	36.4%	0	3	1	1	1	1	4	11

10. How useful are interim targets to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	27.3%	18.2%	9.1%	18.2%	0.0%	18.2%	9.1%	3	2	1	2	0	2	1	11
Clean Water State Revolving Fund	33.3%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	1	0	1	0	0	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	28.6%	14.3%	28.6%	0.0%	0.0%	14.3%	1	2	1	2	0	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	19.0%	28.6%	28.6%	4.8%	4.8%	14.3%	0	4	6	6	1	1	3	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	7.1%	7.1%	46.4%	14.3%	14.3%	0.0%	10.7%	2	2	13	4	4	0	3	28
Overall	8.8%	12.1%	30.8%	18.7%	9.9%	5.5%	14.3%	8	11	28	17	9	5	13	91

Permitted Storm water	0.0%	0.0%	33.3%	16.7%	50.0%	0.0%	0.0%	0	0	2	1	3	0	0	6
Smart growth	33.3%	0.0%	33.3%	0.0%	0.0%	33.3%	0.0%	1	0	1	0	0	1	0	3
Superfund	0.0%	9.1%	27.3%	9.1%	9.1%	9.1%	36.4%	0	1	3	1	1	1	4	11

10. How useful are criteria to assess progress of implementation to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	16.7%	16.7%	25.0%	0.0%	16.7%	16.7%	1	2	2	3	0	2	2	12
Clean Water State Revolving Fund	33.3%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	1	0	1	0	0	0	1	3
Groundwater/Drinking water/Source water protection	14.3%	42.9%	0.0%	14.3%	14.3%	0.0%	14.3%	1	3	0	1	1	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	14.3%	19.0%	19.0%	28.6%	4.8%	14.3%	0	3	4	4	6	1	3	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	14.3%	28.6%	25.0%	21.4%	0.0%	10.7%	0	4	8	7	6	0	3	28
Overall	3.3%	15.2%	20.7%	20.7%	18.5%	6.5%	15.2%	3	14	19	19	17	6	14	92
Permitted Storm water	0.0%	0.0%	16.7%	33.3%	50.0%	0.0%	0.0%	0	0	1	2	3	0	0	6
Smart growth	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	0.0%	0	0	2	0	0	1	0	3
Superfund	0.0%	18.2%	9.1%	9.1%	9.1%	18.2%	36.4%	0	2	1	1	1	2	4	11

10. How useful is monitoring of water quality to your overarching program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	0.0%	33.3%	16.7%	16.7%	16.7%	1	1	0	4	2	2	2	12
Clean Water State Revolving Fund	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	1	0	0	0	1	0	1	3
Groundwater/Drinking water/Source water protection	0.0%	14.3%	0.0%	42.9%	28.6%	0.0%	14.3%	0	1	0	3	2	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	9.5%	14.3%	14.3%	52.4%	4.8%	4.8%	0	2	3	3	11	1	1	21
None	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0	0	0	1	0	0	0	1
Nonpoint Source	0.0%	0.0%	25.0%	25.0%	39.3%	0.0%	10.7%	0	0	7	7	11	0	3	28
Overall	4.3%	5.4%	15.2%	22.8%	34.8%	4.3%	13.0%	4	5	14	21	32	4	12	92
Permitted Storm water	0.0%	0.0%	16.7%	33.3%	50.0%	0.0%	0.0%	0	0	1	2	3	0	0	6
Smart growth	0.0%	33.3%	0.0%	33.3%	0.0%	33.3%	0.0%	0	1	0	1	0	1	0	3
Superfund	18.2%	0.0%	27.3%	0.0%	18.2%	0.0%	36.4%	2	0	3	0	2	0	4	11

11. How frequently is your program notified when relevant TMDLs are developed?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	25.0%	16.7%	25.0%	0.0%	8.3%	16.7%	8.3%	3	2	3	0	1	2	1	12
Clean Water State Revolving Fund	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3	0	0	0	0	0	0	3
Groundwater/Drinking water/Source water protection	57.1%	14.3%	0.0%	14.3%	0.0%	0.0%	14.3%	4	1	0	1	0	0	1	7
National Estuary Program/Great Waterbody Program	10.5%	21.1%	10.5%	15.8%	31.6%	5.3%	5.3%	2	4	2	3	6	1	1	19
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	11.1%	14.8%	33.3%	14.8%	22.2%	0.0%	3.7%	3	4	9	4	6	0	1	27
Overall	20.2%	14.6%	22.5%	11.2%	15.7%	6.7%	9.0%	18	13	20	10	14	6	8	89
Permitted Storm water	16.7%	0.0%	50.0%	16.7%	0.0%	16.7%	0.0%	1	0	3	1	0	1	0	6
Smart growth	0.0%	0.0%	33.3%	0.0%	0.0%	33.3%	33.3%	0	0	1	0	0	1	1	3
Superfund	18.2%	18.2%	18.2%	9.1%	9.1%	0.0%	27.3%	2	2	2	1	1	0	3	11

11. How frequently is your state counterpart program notified when relevant TMDLs are developed?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	8.3%	0.0%	8.3%	25.0%	41.7%	1	1	1	0	1	3	5	12
Clean Water State Revolving Fund	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	1	0	0	0	0	0	2	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	0.0%	14.3%	0.0%	0.0%	57.1%	1	1	0	1	0	0	4	7
National Estuary Program/Great Waterbody Program	0.0%	5.6%	5.6%	5.6%	33.3%	11.1%	38.9%	0	1	1	1	6	2	7	18
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	3.7%	14.8%	25.9%	14.8%	22.2%	0.0%	18.5%	1	4	7	4	6	0	5	27
Overall	5.7%	9.1%	12.5%	9.1%	15.9%	11.4%	36.4%	5	8	11	8	14	10	32	88
Permitted Storm water	0.0%	0.0%	33.3%	0.0%	0.0%	16.7%	50.0%	0	0	2	0	0	1	3	6
Smart growth	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	9.1%	9.1%	0.0%	9.1%	9.1%	9.1%	54.5%	1	1	0	1	1	1	6	11

11. How frequently is your program notified when relevant TMDL Implementation Plans are developed?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	41.7%	16.7%	8.3%	0.0%	0.0%	16.7%	16.7%	5	2	1	0	0	2	2	12
Clean Water State Revolving Fund	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3	0	0	0	0	0	0	3
Groundwater/Drinking water/Source water protection	57.1%	14.3%	14.3%	0.0%	0.0%	0.0%	14.3%	4	1	1	0	0	0	1	7
National Estuary Program/Great Waterbody Program	9.5%	14.3%	19.0%	9.5%	28.6%	4.8%	14.3%	2	3	4	2	6	1	3	21
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	10.7%	7.1%	35.7%	14.3%	21.4%	7.1%	3.6%	3	2	10	4	6	2	1	28
Overall	21.7%	10.9%	22.8%	9.8%	13.0%	8.7%	13.0%	20	10	21	9	12	8	12	92
Permitted Storm water	16.7%	16.7%	33.3%	16.7%	0.0%	16.7%	0.0%	1	1	2	1	0	1	0	6
Smart growth	0.0%	0.0%	33.3%	0.0%	0.0%	33.3%	33.3%	0	0	1	0	0	1	1	3
Superfund	18.2%	9.1%	18.2%	18.2%	0.0%	0.0%	36.4%	2	1	2	2	0	0	4	11

11. How frequently is your state counterpart program notified when relevant TMDL Implementation Plans are developed?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	8.3%	0.0%	0.0%	25.0%	50.0%	1	1	1	0	0	3	6	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	0	0	1	0	0	0	2	3
Groundwater/Drinking water/Source water protection	14.3%	14.3%	0.0%	14.3%	0.0%	0.0%	57.1%	1	1	0	1	0	0	4	7
National Estuary Program/Great Waterbody Program	0.0%	0.0%	10.0%	10.0%	35.0%	10.0%	35.0%	0	0	2	2	7	2	7	20
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	0.0%	7.1%	17.9%	25.0%	28.6%	3.6%	17.9%	0	2	5	7	8	1	5	28
Overall	3.3%	5.5%	13.2%	13.2%	16.5%	12.1%	36.3%	3	5	12	12	15	11	33	91
Permitted Storm water	0.0%	0.0%	33.3%	0.0%	0.0%	16.7%	50.0%	0	0	2	0	0	1	3	6
Smart growth	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	9.1%	9.1%	9.1%	9.1%	0.0%	9.1%	54.5%	1	1	1	1	0	1	6	11

12. How frequently would notification of relevant TMDLs be useful to your EPA program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	16.7%	41.7%	8.3%	16.7%	8.3%	0.0%	1	2	5	1	2	1	0	12
Clean Water State Revolving Fund	0.0%	0.0%	66.7%	0.0%	33.3%	0.0%	0.0%	0	0	2	0	1	0	0	3
Groundwater/Drinking water/Source water protection	0.0%	14.3%	28.6%	14.3%	28.6%	0.0%	14.3%	0	1	2	1	2	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	5.3%	26.3%	10.5%	57.9%	0.0%	0.0%	0	1	5	2	11	0	0	19
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	0.0%	3.7%	25.9%	25.9%	40.7%	0.0%	3.7%	0	1	7	7	11	0	1	27
Overall	2.3%	5.7%	29.5%	20.5%	31.8%	3.4%	6.8%	2	5	26	18	28	3	6	88
Permitted Storm water	0.0%	0.0%	33.3%	50.0%	0.0%	0.0%	16.7%	0	0	2	3	0	0	1	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3
Superfund	0.0%	0.0%	30.0%	30.0%	10.0%	0.0%	30.0%	0	0	3	3	1	0	3	10

12. How frequently would notification of relevant TMDLs be useful to your state counterpart program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	0.0%	8.3%	8.3%	8.3%	16.7%	16.7%	41.7%	0	1	1	1	2	2	5	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%	0	0	0	0	2	0	1	3
Groundwater/Drinking water/Source water protection	0.0%	14.3%	28.6%	14.3%	14.3%	0.0%	28.6%	0	1	2	1	1	0	2	7
National Estuary Program/Great Waterbody Program	0.0%	0.0%	11.1%	22.2%	44.4%	5.6%	16.7%	0	0	2	4	8	1	3	18
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	0.0%	3.7%	22.2%	18.5%	40.7%	3.7%	11.1%	0	1	6	5	11	1	3	27
Overall	1.1%	3.4%	17.2%	19.5%	27.6%	8.0%	23.0%	1	3	15	17	24	7	20	87
Permitted Storm water	0.0%	0.0%	16.7%	50.0%	0.0%	0.0%	33.3%	0	0	1	3	0	0	2	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3
Superfund	0.0%	0.0%	30.0%	20.0%	0.0%	10.0%	40.0%	0	0	3	2	0	1	4	10

12. How frequently would notification of relevant TMDL Implementation Plan development be useful to your EPA program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	9.1%	18.2%	27.3%	18.2%	18.2%	9.1%	0.0%	1	2	3	2	2	1	0	11
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	0	0	1	1	1	0	0	3
Groundwater/ Drinking water/Source water protection	0.0%	14.3%	14.3%	0.0%	57.1%	0.0%	14.3%	0	1	1	0	4	0	1	7
National Estuary Program/Great Waterbody Program	0.0%	4.8%	23.8%	9.5%	61.9%	0.0%	0.0%	0	1	5	2	13	0	0	21
None	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0	0	0	0	1	0	0	1
Nonpoint Source	0.0%	3.6%	17.9%	21.4%	50.0%	3.6%	3.6%	0	1	5	6	14	1	1	28
Overall	1.1%	5.6%	22.2%	22.2%	40.0%	3.3%	5.6%	1	5	20	20	36	3	5	90
Permitted Storm water	0.0%	0.0%	33.3%	50.0%	0.0%	0.0%	16.7%	0	0	2	3	0	0	1	6
Smart growth	0.0%	0.0%	33.3%	33.3%	0.0%	33.3%	0.0%	0	0	1	1	0	1	0	3
Superfund	0.0%	0.0%	20.0%	50.0%	10.0%	0.0%	20.0%	0	0	2	5	1	0	2	10

12. How frequently would notification of relevant TMDL Implementation Plan development be useful to your state counterpart program?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	0.0%	8.3%	8.3%	8.3%	16.7%	16.7%	41.7%	0	1	1	1	2	2	5	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%	0	0	0	0	2	0	1	3
Groundwater/ Drinking water/Source water protection	0.0%	14.3%	14.3%	14.3%	28.6%	0.0%	28.6%	0	1	1	1	2	0	2	7
National Estuary Program/Great Waterbody Program	0.0%	0.0%	10.0%	15.0%	55.0%	5.0%	15.0%	0	0	2	3	11	1	3	20
None	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0	0	0	0	1	0	0	1
Nonpoint Source	0.0%	3.6%	10.7%	17.9%	53.6%	3.6%	10.7%	0	1	3	5	15	1	3	28
Overall	0.0%	3.4%	11.2%	21.3%	37.1%	6.7%	20.2%	0	3	10	19	33	6	18	89
Permitted Storm water	0.0%	0.0%	20.0%	60.0%	0.0%	0.0%	20.0%	0	0	1	3	0	0	1	5
Smart growth	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%	0.0%	0	0	0	2	0	1	0	3
Superfund	0.0%	0.0%	20.0%	40.0%	0.0%	10.0%	30.0%	0	0	2	4	0	1	3	10

13. When working in a specific water body, how frequently are you aware of relevant TMDL pollutant reduction recommendations for that water body?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	16.7%	8.3%	25.0%	33.3%	0.0%	16.7%	0.0%	2	1	3	4	0	2	0	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%	0	0	0	0	2	1	0	3
Groundwater/ Drinking water/Source water protection	14.3%	42.9%	14.3%	0.0%	0.0%	28.6%	0.0%	1	3	1	0	0	2	0	7
National Estuary Program/Great Waterbody Program	15.0%	20.0%	20.0%	20.0%	25.0%	0.0%	0.0%	3	4	4	4	5	0	0	20
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	14.8%	22.2%	25.9%	11.1%	22.2%	3.7%	0.0%	4	6	7	3	6	1	0	27
Overall	13.5%	19.1%	25.8%	15.7%	15.7%	9.0%	1.1%	12	17	23	14	14	8	1	89
Permitted Storm water	0.0%	33.3%	50.0%	16.7%	0.0%	0.0%	0.0%	0	2	3	1	0	0	0	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3
Superfund	10.0%	10.0%	40.0%	10.0%	10.0%	10.0%	10.0%	1	1	4	1	1	1	1	10

13. When working in a specific water body, how frequently are you aware of recommended activities for meeting water quality standards in TMDLs or TMDL implementation plans for that water body?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	18.2%	18.2%	9.1%	27.3%	9.1%	18.2%	0.0%	2	2	1	3	1	2	0	11
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0	0	0	1	1	1	0	3
Groundwater/ Drinking water/Source water protection	14.3%	28.6%	28.6%	0.0%	0.0%	28.6%	0.0%	1	2	2	0	0	2	0	7
National Estuary Program/Great Waterbody Program	19.0%	14.3%	28.6%	19.0%	19.0%	0.0%	0.0%	4	3	6	4	4	0	0	21
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	3.6%	10.7%	35.7%	14.3%	25.0%	0.0%	10.7%	1	3	10	4	7	0	3	28
Overall	14.4%	13.3%	26.7%	17.8%	15.6%	7.8%	4.4%	13	12	24	16	14	7	4	90
Permitted Storm water	33.3%	33.3%	16.7%	16.7%	0.0%	0.0%	0.0%	2	2	1	1	0	0	0	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3
Superfund	20.0%	0.0%	30.0%	20.0%	10.0%	10.0%	10.0%	2	0	3	2	1	1	1	10

14. Does your program have a policy of incorporating TMDL implementation into program activities?

Program Area	Yes	No	Not Relevant	Don't Know	Yes	No	Not Relevant	Don't Know	Total
Air Program	8.3%	41.7%	16.7%	33.3%	1	5	2	4	12
Clean Water State Revolving Fund	66.7%	33.3%	0.0%	0.0%	2	1	0	0	3
Groundwater/ Drinking water/Source water protection	42.9%	28.6%	0.0%	28.6%	3	2	0	2	7
National Estuary Program/Great Waterbody Program	71.4%	19.0%	0.0%	9.5%	15	4	0	2	21
None	0.0%	0.0%	100.0%	0.0%	0	0	1	0	1
Nonpoint Source	67.9%	14.3%	7.1%	10.7%	19	4	2	3	28
Overall	53.8%	22.0%	6.6%	17.6%	49	20	6	16	91
Permitted Storm water	83.3%	16.7%	0.0%	0.0%	5	1	0	0	6
Smart growth	33.3%	33.3%	0.0%	33.3%	1	1	0	1	3
Superfund	30.0%	20.0%	10.0%	40.0%	3	2	1	4	10

14. Does your state counterpart's program have a policy of incorporating TMDL implementation into program activities?

Program Area	Yes	No	Not Relevant	Don't Know	Yes	No	Not Relevant	Don't Know	Total
Air Program	0.0%	8.3%	25.0%	66.7%	0	1	3	8	12
Clean Water State Revolving Fund	66.7%	0.0%	0.0%	33.3%	2	0	0	1	3
Groundwater/ Drinking water/Source water protection	14.3%	42.9%	0.0%	42.9%	1	3	0	3	7
National Estuary Program/Great Waterbody Program	75.0%	5.0%	5.0%	15.0%	15	1	1	3	20
None	0.0%	0.0%	100.0%	0.0%	0	0	1	0	1
Nonpoint Source	67.9%	14.3%	3.6%	14.3%	19	4	1	4	28
Overall	47.8%	14.4%	10.0%	27.8%	43	13	9	25	90
Permitted Storm water	50.0%	16.7%	0.0%	33.3%	3	1	0	2	6
Smart growth	33.3%	33.3%	33.3%	0.0%	1	1	1	0	3
Superfund	20.0%	20.0%	20.0%	40.0%	2	2	2	4	10

15. How frequently does your EPA program use education and outreach for the purpose of achieving water quality standards?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	41.7%	0.0%	16.7%	8.3%	0.0%	33.3%	0.0%	5	0	2	1	0	4	0	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	33.3%	66.7%	0.0%	0	0	0	0	1	2	0	3
Groundwater/ Drinking water/Source water protection	28.6%	28.6%	0.0%	14.3%	0.0%	14.3%	14.3%	2	2	0	1	0	1	1	7
National Estuary Program/Great Waterbody Program	10.0%	15.0%	20.0%	40.0%	10.0%	5.0%	0.0%	2	3	4	8	2	1	0	20
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	3.6%	14.3%	17.9%	21.4%	35.7%	3.6%	3.6%	1	4	5	6	10	1	1	28
Overall	11.2%	15.7%	19.1%	19.1%	16.9%	12.4%	5.6%	10	14	17	17	15	11	5	89
Permitted Storm water	0.0%	16.7%	16.7%	16.7%	33.3%	0.0%	16.7%	0	1	1	1	2	0	1	6
Smart growth	0.0%	33.3%	33.3%	0.0%	0.0%	33.3%	0.0%	0	1	1	0	0	1	0	3
Superfund	0.0%	33.3%	33.3%	0.0%	0.0%	11.1%	22.2%	0	3	3	0	0	1	2	9

15. How frequently does your state counterpart program use education and outreach for the purpose of achieving water quality standards?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	0.0%	8.3%	0.0%	0.0%	33.3%	50.0%	1	0	1	0	0	4	6	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0	0	0	0	1	1	1	3
Groundwater/ Drinking water/Source water protection	28.6%	28.6%	0.0%	0.0%	0.0%	14.3%	28.6%	2	2	0	0	0	1	2	7
National Estuary Program/Great Waterbody Program	0.0%	5.0%	20.0%	45.0%	10.0%	5.0%	15.0%	0	1	4	9	2	1	3	20
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	0.0%	3.7%	18.5%	37.0%	37.0%	0.0%	3.7%	0	1	5	10	10	0	1	27
Overall	3.4%	7.9%	15.7%	23.6%	15.7%	12.4%	21.3%	3	7	14	21	14	11	19	89
Permitted Storm water	0.0%	16.7%	0.0%	33.3%	16.7%	0.0%	33.3%	0	1	0	2	1	0	2	6
Smart growth	0.0%	0.0%	33.3%	0.0%	0.0%	66.7%	0.0%	0	0	1	0	0	2	0	3
Superfund	0.0%	20.0%	20.0%	0.0%	0.0%	20.0%	40.0%	0	2	2	0	0	2	4	10

15. How frequently does your EPA program provide funding for the purpose of achieving water quality standards?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	41.7%	0.0%	16.7%	8.3%	0.0%	33.3%	0.0%	5	0	2	1	0	4	0	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	33.3%	0.0%	0	0	0	0	2	1	0	3
Groundwater/ Drinking water/Source water protection	28.6%	28.6%	14.3%	0.0%	0.0%	14.3%	14.3%	2	2	1	0	0	1	1	7
National Estuary Program/Great Waterbody Program	9.5%	14.3%	33.3%	33.3%	9.5%	0.0%	0.0%	2	3	7	7	2	0	0	21
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	0.0%	3.6%	10.7%	39.3%	42.9%	0.0%	3.6%	0	1	3	11	12	0	1	28
Overall	13.2%	8.8%	16.5%	23.1%	18.7%	12.1%	7.7%	12	8	15	21	17	11	7	91
Permitted Storm water	16.7%	0.0%	16.7%	16.7%	16.7%	33.3%	0.0%	1	0	1	1	1	2	0	6
Smart growth	0.0%	33.3%	33.3%	0.0%	33.3%	0.0%	0.0%	0	1	0	1	0	1	0	3
Superfund	20.0%	10.0%	0.0%	0.0%	0.0%	20.0%	50.0%	2	1	0	0	0	2	5	10

15. How frequently does your state counterpart program provide funding for the purpose of achieving water quality

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	0.0%	8.3%	8.3%	0.0%	33.3%	41.7%	1	0	1	1	0	4	5	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%	0	0	0	0	2	0	1	3
Groundwater/ Drinking water/Source water protection	28.6%	14.3%	14.3%	0.0%	0.0%	14.3%	28.6%	2	1	1	0	0	1	2	7
National Estuary Program/Great Waterbody Program	5.0%	0.0%	15.0%	50.0%	10.0%	5.0%	15.0%	1	0	3	10	2	1	3	20
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	0.0%	3.6%	3.6%	57.1%	28.6%	0.0%	7.1%	0	1	1	16	8	0	2	28
Overall	6.7%	3.3%	8.9%	32.2%	14.4%	12.2%	22.2%	6	3	8	29	13	11	20	90
Permitted Storm water	0.0%	0.0%	16.7%	16.7%	16.7%	0.0%	50.0%	0	0	1	1	1	0	3	6
Smart growth	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	20.0%	10.0%	0.0%	0.0%	0.0%	30.0%	40.0%	2	1	0	0	0	3	4	10

15. How frequently does your EPA program provide technical assistance for the purpose of achieving water quality standards?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	25.0%	16.7%	25.0%	8.3%	8.3%	16.7%	0.0%	3	2	3	1	1	2	0	12
Clean Water State Revolving Fund	33.3%	0.0%	33.3%	33.3%	0.0%	0.0%	0.0%	1	0	1	1	0	0	0	3
Groundwater/ Drinking water/Source water protection	28.6%	14.3%	14.3%	0.0%	0.0%	14.3%	28.6%	2	1	1	0	0	1	2	7
National Estuary Program/Great Waterbody Program	4.8%	9.5%	38.1%	33.3%	14.3%	0.0%	0.0%	1	2	8	7	3	0	0	21
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	7.1%	7.1%	28.6%	28.6%	25.0%	0.0%	3.6%	2	2	8	8	7	0	1	28
Overall	11.0%	12.1%	27.5%	20.9%	13.2%	5.5%	9.9%	10	11	25	19	12	5	9	91
Permitted Storm water	0.0%	16.7%	16.7%	16.7%	16.2%	16.7%	16.7%	0	1	1	1	1	1	1	6
Smart growth	0.0%	33.3%	0.0%	33.3%	0.0%	33.3%	0.0%	0	1	0	1	0	1	0	3
Superfund	10.0%	20.0%	20.0%	0.0%	0.0%	0.0%	50.0%	1	2	2	0	0	0	5	10

15. How frequently does your state counterpart program provide technical assistance for the purpose of achieving water quality standards?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	8.3%	16.7%	0.0%	8.3%	25.0%	33.3%	1	1	2	0	1	3	4	12
Clean Water State Revolving Fund	0.0%	0.0%	33.3%	33.3%	0.0%	0.0%	33.3%	0	0	1	1	0	0	1	3
Groundwater/ Drinking water/Source water protection	28.6%	14.3%	14.3%	0.0%	0.0%	14.3%	28.6%	2	1	1	0	0	1	2	7
National Estuary Program/Great Waterbody Program	0.0%	0.0%	20.0%	50.0%	10.0%	5.0%	15.0%	0	0	4	10	2	1	3	20
None	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0	0	1	0	0	0	0	1
Nonpoint Source	0.0%	3.6%	17.9%	46.4%	25.0%	0.0%	7.1%	0	1	5	13	7	0	2	28
Overall	4.4%	4.4%	18.9%	28.9%	12.2%	8.9%	22.2%	4	4	17	26	11	8	20	90
Permitted Storm water	0.0%	0.0%	16.7%	16.7%	16.7%	0.0%	50.0%	0	0	1	1	1	0	3	6
Smart growth	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	10.0%	10.0%	20.0%	0.0%	0.0%	10.0%	50.0%	1	1	2	0	0	1	5	10

16. How frequently does your EPA program make watershed planning decisions based on TMDL pollutant reduction recommendations?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	33.3%	0.0%	8.3%	0.0%	0.0%	50.0%	8.3%	4	0	1	0	0	6	1	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	3	0	3
Groundwater/ Drinking water/Source water protection	57.1%	14.3%	0.0%	0.0%	0.0%	14.3%	14.3%	4	1	0	0	0	1	1	7
National Estuary Program/Great Waterbody Program	4.8%	14.3%	42.9%	23.8%	4.8%	4.8%	4.8%	1	3	9	5	1	1	1	21
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	7.1%	17.9%	28.6%	17.9%	21.4%	0.0%	7.1%	2	5	8	5	6	0	2	28
Overall	14.3%	15.4%	22.0%	14.3%	8.8%	16.5%	8.8%	13	14	20	13	8	15	8	91
Permitted Storm water	0.0%	16.7%	16.7%	33.3%	0.0%	33.3%	0.0%	0	1	1	2	0	2	0	6
Smart growth	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	1	0	0	1	0	1	0	3
Superfund	10.0%	40.0%	10.0%	0.0%	10.0%	0.0%	30.0%	1	4	1	0	1	0	3	10

16. How frequently does your state counterpart program make watershed planning decisions based on TMDL pollutant reduction recommendations?

Program Area	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Air Program	8.3%	0.0%	0.0%	0.0%	0.0%	33.3%	58.3%	1	0	0	0	0	4	7	12
Clean Water State Revolving Fund	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0	0	0	0	1	1	1	3
Groundwater/ Drinking water/Source water protection	14.3%	28.6%	0.0%	0.0%	0.0%	14.3%	42.9%	1	2	0	0	0	1	3	7
National Estuary Program/Great Waterbody Program	0.0%	10.0%	20.0%	40.0%	5.0%	10.0%	15.0%	0	2	4	8	1	2	3	20
None	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	0	0	0	0	1	0	1
Nonpoint Source	0.0%	11.1%	25.9%	22.2%	25.9%	0.0%	14.8%	0	3	7	6	7	0	4	27
Overall	3.4%	12.4%	12.4%	20.2%	11.2%	13.5%	27.0%	3	11	11	18	10	12	24	89
Permitted Storm water	0.0%	16.7%	0.0%	50.0%	0.0%	0.0%	33.3%	0	1	0	3	0	0	2	6
Smart growth	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0	0	0	1	0	2	0	3
Superfund	10.0%	30.0%	0.0%	0.0%	10.0%	10.0%	40.0%	1	3	0	0	1	1	4	10

17. For Nonpoint Source respondents: In your experience, how frequently does the nonpoint source program participate in the development of TMDL implementation plans which meet both TMDL and nonpoint source program objectives?*

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Total Respondents	0	4	8	6	10	6	2	36
Percentage of Total	0.0%	11.1%	22.2%	16.7%	27.8%	16.7%	5.6%	

**Note: some of the individuals who responded to this question did not identify Nonpoint source as their primary program area*

18. For Permitted Storm Water respondents: In your experience, how frequently do TMDL writers coordinate with permit writers for implementing stormwater permits?*

	Almost Never	Seldom	Sometimes	Often	Almost Always	Not Relevant	Don't Know	Total
Municipal Separate Stormwater MS4 (Total Respondents)	1	2	2	0	0	5	2	12
Municipal Separate Stormwater MS4 (Percent of Total)	8.3%	16.7%	16.7%	0.0%	0.0%	41.7%	16.7%	100.0%
Construction (Total Respondents)	1	3	1	0	0	4	2	11
Construction (Percent of Total)	9.1%	27.3%	9.1%	0.0%	0.0%	36.4%	18.2%	100.0%
Industrial (Total Respondents)	1	1	3	0	0	4	2	11
Industrial (Percent of Total)	9.1%	9.1%	27.3%	0.0%	0.0%	36.4%	18.2%	100.0%

*Note: some of the individuals who responded to this question did not identify Permitted Storm Water as their primary program area

19. For Permitted Storm Water respondents: Please describe the nature and/or extent of the TMDL and Permits staff coordination.

We have a workgroup which meets regularly to update permits and TMDL activities of staff.

Have established work group to standardize collaborative efforts. From the permitting perspective, anytime an individual permit is up for issuance, the TMDL staff is consulted for any necessary TMDL drive conditions of the permit. When a general permit

We are beginning to explore the relationship.

We establish within the stormwater permits the need to be consistent with State TMDLs and to demonstrate accomplishments with TMDLs.

Permit Writers initiate contact with TMDL Writers to determine if receiving waters are covered by TMDLs.

EPA permit writer and regional TMDL staff discuss specific TMDLs on a case-by-case basis, in order to clarify the intent of the TMDL (for permit writing purposes) or to attempt to develop/create meaningful storm water TMDLs at the outset. EPA permit writer discusses specific TMDLs with state TMDL staff as necessary.

Appendix I

**NONPOINT SOURCE/STORMWATER TMDL CASE STUDIES:
HIGHLIGHTS OF INTERVIEW RESPONSES AND TMDL DOCUMENTS**

EPA TMDL Case Studies: Highlights of Interview Responses and TMDL Documents¹

I. Resources

A. Availability/Quality of Data

Overall, the availability and quality of data was a persistent issue during the TMDL development and implementation planning process. The process of developing the TMDL itself generated significant amounts of data which contributed to increased stakeholder knowledge. However, in a number of cases (CC, CL, EP and TC) the ability to gather data sufficient to adequately characterize source loading and linkages was compromised by time and resource constraints (see External Factors, below).

B. Funding

For all the cases, TMDLs were funded primarily with Section 319 monies, regardless of which stakeholder led the development process. In the cases where leadership was shared between state and local agencies (EP and CL) or assumed by a third party (CC), the state distributed Section 319 grants to local groups. Funds were also contributed to the process directly by stakeholders, as in CL and CC, but also as in-kind contributions, e.g., monitoring conducted by stakeholders but funded through separate grants or funding sources (CC, NR). Despite the availability of basic funding, more resources are needed to provide adequate TMDL staffing levels at the state level (CC and NR) and ensure that follow-up monitoring and implementation activities are carried out (CL, CC, and NR).

II. Leadership

In four cases (NR, MRG, TC, and GR), the TMDL development process was led exclusively by a state environmental agency. In two cases (EP, CL), leadership was shared by the state and local conservation agencies. In the last case (CC), the process was led by a third party. For EP and CL, the state initiated TMDL development but turned over responsibility and funding for the process to local conservation districts. The districts, with input from the state, carried out all functions related to TMDL development including planning, data collection and analysis, stakeholder involvement, and TMDL report preparation. In the case of CC, a local watershed group comprised primarily of water users and dischargers, hired a contractor to develop all TMDLs scheduled for the CC watershed. Shared or third-party leadership in these instances appears to be the result of time and resource constraints experienced by the state environmental agencies acting under schedules imposed by consent decrees. For CC, staffing shortages at the LA Regional Water Quality Control Board only partially contributed to third-party leadership. Members of the CC Watershed Management Plan were wary of EPA involvement in TMDL development and decided to initiate the process themselves to ensure adequate stakeholder participation.

III. Stakeholder Awareness and Involvement

A. Character of Stakeholder Involvement

The TMDL development process involved an extensive and diverse collection of stakeholders in four of the seven cases (CC, EP, MRG, and NR). Stakeholders included representatives from federal, state, local, and Tribal government agencies; consultants; agriculture; environmental groups; homeowner associations; academia; and other local interests. Regulators, impacted parties, and polluters were all represented. In CL, TC, and GR, stakeholder representation was more limited and homogeneous. Most of the stakeholders involved in the development of these TMDLs included state and local government agencies and few, if any, non-governmental local interests.

¹ For the purposes of this summary, the following abbreviations will be used for each case: CC = Calleguas Creek Nitrogen TMDL; CL = Cottonwood Lake Phosphorus/Sediment TMDL; EP = East Pond Phosphorus TMDL; GR = Grand River E. Coli TMDL; MRG = Middle Rio Grande Fecal Coliform TMDL; NR = Nooksack River Fecal Coliform TMDL; TC = Turkey Creek Fecal Coliform TMDL

B. Level of Involvement

The four cases with the most extensive and diverse stakeholder representation (CC, EP, MRG, and NR) also tended to involve stakeholders earlier and more frequently throughout the TMDL development process. Stakeholders in these cases participated either as advisors to the process, as in the case of NR, or collaborated formally and informally with the process leaders to provide comments and input on the draft TMDLs. For CC, NR, EP, and CL, stakeholders also provided assistance with data collection, modeling activities, public education, and funding. Stakeholders not otherwise involved with leading the TMDL development process for TC and GR were generally given opportunities to review and provide comments on the draft TMDLs prior to or during the public notice period.

C. Access to TMDL

Approaches to stakeholder and public access to the TMDLs vary across cases, although at a minimum, all cases convened public meetings in conjunction with the 30-day public notice period. These approaches ranged from presentations of the draft TMDL at public meetings and targeted mailings to ongoing discussions of the TMDL process at advisory committee meetings. In general, however, the cases that involved a larger number and diversity of stakeholders also afforded stakeholders more opportunities to access the draft TMDLs and have their concerns addressed. Stakeholder involvement for CC, NR, and EP occurred both informally, e.g., via phone conversations and in-person discussions, and at more structured, formal assemblies. MRG involved stakeholders during a series of five, formal public meetings at which information on the TMDL was presented. The degree to which stakeholders participated in the TMDL development process and the means by which they gained access to the draft TMDL influenced their perceptions about the TMDL, awareness of their contribution to water quality impairment (in the case of polluters), and commitment to the implementation process.

IV. Implementation Plans

A. Planning Process

Implementation plans were completed for four of the TMDLs - CC, CL, EP, and NR. A fifth case, MRG, is currently in the process of developing its plan. CC and EP developed their plans concurrently with the TMDL, while CL, NR, and MRG developed their plans after the TMDL was completed. In all cases except CL, plans were developed in accordance with a state legal requirement. There is no state law requiring an implementation plan be developed for GR. In the case of TC, the TMDL was designated by the state as a "medium priority" and will be reconsidered for implementation in 2008.

B. Stakeholder Involvement

Stakeholder involvement during the implementation planning phase tended to follow the same process established in each case for the development of the TMDL, although at a lesser intensity (due in part to waning stakeholder interest). Stakeholder involvement in the implementation planning process being conducted for MRG, however, is more extensive than for the development of the TMDL. The process is being led by a third party with grant funding and includes the establishment of a local watershed advisory group.

C. Characteristics of Plans

All final and draft plans include descriptions of agricultural and/or storm water BMPs. Other than BMPs, the specific elements contained in each plan vary considerably. Some of the more important elements found in the plans include: follow-up monitoring strategies (CC, CL, EP, and NR); identification of responsible parties (CC, CL, EP, and NR); funding sources (CL, EP, and NR); a detailed budget (CL and NR); and implementation milestones (CC and CL). Plans developed for CC, EP, and NR incorporate existing BMPs and projects being conducted independently of the TMDL.

V. Impacts on Customers

A. Customer Knowledge

Overall, the TMDL development process helped to generate new data and a more complete understanding of the watersheds, particularly linkages between water quality, impairment, and the sources of contamination. Since many of the TMDLs were some of the very first completed in their states, the TMDL development process also increased participants' understanding of TMDLs and the steps and inputs required to successfully complete them. Gains in knowledge were not uniform across all stakeholder groups, however. Local watershed groups and conservation districts tended to have a more comprehensive understanding of their watersheds which they shared with other stakeholders during the development of the TMDL. State environmental agencies were often the stakeholders most likely to benefit from gains in knowledge of the watershed. Generally, participation in the implementation planning process did not influence knowledge among stakeholders, with the exception of CC, where agricultural producers gained an awareness of the impact of agricultural runoff on groundwater quality; and MRG, in which the state gained an understanding of how the dynamics of FC-contaminated storm water can affect implementation.

B. Customer Behavior

The TMDL development process influenced customer behavior or actions in two main ways: 1) it helped to establish priorities for state allocations of Section 319 funding and facilitated the acquisition of funding for local projects (CC, EP, GR, and NR), and 2) it influenced the processes undertaken to develop subsequent TMDLs. In the case of CL, EP, GP, and TC, the experience prompted the process leaders to plan for broader and more timely stakeholder involvement in future TMDLs. Among cases with high levels of stakeholder involvement (CC and NR), the TMDL development process improved the interactions among stakeholders and led to more productive deliberations between stakeholders and process leaders, particularly where these relationships had historically been contentious. Changes in behavior following the implementation planning process echoed the influence on behavior of the TMDL development process. An additional impact is on the interest and participation of the agricultural community. For CL, the implementation planning process prompted more direct outreach to farmers during the TMDL development and implementation phases. For CC, the process helped to generate more active involvement and investment in implementation projects.

VI. Satisfaction with TMDLs/Plans

In general, satisfaction with both the process leading to the development of the TMDL and the implementation plan varied among stakeholders within each case and did not appear to be influenced by the breadth or degree of stakeholder involvement, i.e., in each case some stakeholders expressed complete satisfaction with the process and outcomes while other expressed reservations. In cases with extensive stakeholder involvement (CC, EP, and NR), stakeholders tended to express overall satisfaction with the level of involvement achieved and the processes that supported it, e.g., the collaborative process and specific stakeholder contributions to the process such as data collection. Among the cases with more limited stakeholder involvement (CL, GP, and TC) it is difficult to gauge satisfaction of stakeholders other than the process leaders since so few, if any local, non-government representatives participated or were available for comment. A few of these stakeholders who were identified expressed dissatisfaction with their involvement in the TMDL development process.

Stakeholders across all cases expressed varying degrees of satisfaction with the technical aspects of the TMDL but also varying degrees of doubt about the ability of the TMDLs and/or implementation plans to effect timely improvements in water quality through the application NPS BMPs. Agricultural interests participating in CC, EP, and NR, in particular raised concerns about the load allocations established for agriculture and the scientific methods used to generate load allocations. Other areas of satisfaction include:

- meeting the requirements/deadline of the consent decree
- ability to balance priorities given limited resources
- few difficulties encountered developing TMDL

- assignment of implementation responsibilities
- contribution of stakeholders to data collection process

Other areas of dissatisfaction include:

- insufficient interest and participation from stakeholders, particularly agriculture
- inability to collect all needed data during the TMDL development timeframe
- impact of external factors on ability of TMDL/plans to achieve load allocations, e.g., pollutant sequestration and poor local economy
- inability to ensure implementation of plans
- high cost of implementation activities but limited funding

VII. External Factors

There were a number of factors external to the TMDL development and implementation planning process that influenced the TMDLs and their implementation.

A. Consent Decree

The completion timeframe for all but one of the TMDLs (MRG) was determined by consent decree. Consent decrees exerted pressure on state environmental agencies to finalize TMDLs as quickly as possible. As mentioned previously, the pressure to complete TMDLs on schedule limited opportunities for comprehensive sampling and data analysis (CC, CL, EP and TC), stretched state resources available to support TMDL development and implementation (CC and NR), and for some cases (CL, TC, and GR) prevented more meaningful stakeholder involvement.

B. Pollutant Type

Bacterial impairments appear to present the most challenges for TMDL development and implementation. Three of the four cases that addressed fecal coliform bacteria (MRG, NR, and TC) experienced difficulty fully characterizing the degree of impairment and the relationship between bacterial contamination and non-point sources, particularly urban storm water and agricultural runoff. The stringent fecal coliform standards established for the watersheds and the types of BMPs and controls proposed to achieve the standards, particularly for storm water, were criticized by polluters.

C. Degree of Impairment

For NR, the high level of impairment in the watershed and impact on shellfish beds catalyzed the TMDL development process and involvement by stakeholders. The state's decision to close shellfish beds due to fecal contamination initiated an independent watershed protection process that dovetailed with the development of the TMDL. This external process influenced the composition and commitment of stakeholders on the advisory committee, data availability, the modeling analysis used to establish load allocations, and elements of the implementation plan established for the TMDL.

For TC, the low level of fecal coliform impairment in the watershed, evidenced by fewer than 10% of water samples exceeding the standard, led the state to designate the TMDL as a "medium priority" for implementation. TMDLs assigned a medium priority status are required to undergo further data evaluation and can be reconsidered for implementation in 2008. This prioritization scheme allows the state to marshal its limited resources more effectively toward remediating highly impaired watersheds.

D. Existing Water Quality Planning Agenda/ 319 and NPS Programs

Like the NR TMDL, most of the other cases were impacted by events occurring independently of the TMDL process, particularly existing water quality planning efforts or ongoing activities being conducted with funding from the states' 319/NPS programs. Existing planning agendas tended to influence the degree

of stakeholder involvement in the TMDL development process as well as the relationships between stakeholders and state environmental agencies. Implementation plans developed for TMDLs incorporate many of the BMPs and source control activities, e.g., Phase II storm water requirements, already planned or in progress. This suggests that many of these activities would have occurred in the absence of the TMDLs, given available funding.

VIII. Suggestions

Stakeholders involved in each case offered a number of concrete suggestions for how their state (and EPA) can improve the TMDL development and implementation planning process. These suggestions include, for TMDL development:

- expedite EPA's TMDL approval process (CL)
- increase funding for TMDLs (CL)
- increase stakeholder involvement earlier in the TMDL development process (CL, NR)
- emphasize a collaborative approach to stakeholder involvement (NR)
- improve characterization of urban NPS, e.g., storm water (NR)
- improve the scientific basis for load estimations (EP)
- involve stakeholders more directly in data collection and analysis of loadings and linkages (GR, TC),

and for implementation planning:

- initiate discussion of implementation earlier in the TMDL development process (CC)
- have EPA assume a greater role in promoting and funding implementation (NR)
- solicit more input from agricultural interests to foster active participation (CC, CL)
- increase state resources for implementation tracking and evaluation (CC)
- collect all pertinent data before the implementation phase (CC)
- secure adequate funding for implementation activities (NR, CL)
- increase the authority of state environmental agencies to require compliance with implementation plans (NR, CL).

Appendix J

SUMMARY OF TMDL CASE STUDY BACKGROUND INFORMATION

Case Study Background Information - Summary

Case Study Background Information - Summary								
		Cases Studied						
		Implementation Plan					No Plan	
		East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
State	ME	NM	SD	CA	WA	KS	MI	
EPA Region	I	VI	VIII	IX	X	VII	V	
Pollutant¹	P	FC	P	N	FC	FC	EC	
TMDL Approved	2001	2002	2001	2003	2000	2002	2003	
TMDL Development Phase								
Resources	Data	<ul style="list-style-type: none"> Generated by state and stakeholders 	<ul style="list-style-type: none"> Generated by state and stakeholders 	<ul style="list-style-type: none"> Generated by stakeholders 	<ul style="list-style-type: none"> Generated by stakeholders and contractor 	<ul style="list-style-type: none"> Generated by state and stakeholders 	<ul style="list-style-type: none"> Generated by state 	<ul style="list-style-type: none"> Generated by state
	Leadership	<ul style="list-style-type: none"> Top-down Shared with state 	<ul style="list-style-type: none"> Top-down Led by state 	<ul style="list-style-type: none"> Top-down Shared with state & local agencies 	<ul style="list-style-type: none"> Bottom-up Led by third-party 	<ul style="list-style-type: none"> Top-down Led by state 	<ul style="list-style-type: none"> Top-down Led by state 	<ul style="list-style-type: none"> Top-down Led by state
	Funding	<ul style="list-style-type: none"> Provided through Section 319 	<ul style="list-style-type: none"> Provided through Section 319 	<ul style="list-style-type: none"> 60% provided through state grants; Stakeholder provided some 	<ul style="list-style-type: none"> Provided through Section 205(j) 	<ul style="list-style-type: none"> Some provided through state Centennial Clean Water Grants 	<ul style="list-style-type: none"> Provided through Section 319 	
Stakeholder Involvement	Characteristics	<ul style="list-style-type: none"> Extensive and diverse representation Early/freq involvement Informal and formal collaborative process 	<ul style="list-style-type: none"> Extensive and diverse representation Early involvement Formal, minimally collaborative process 	<ul style="list-style-type: none"> Limited and homogeneous representation Infrequent involvement Informal collaborative 	<ul style="list-style-type: none"> Extensive and diverse representation Early involvement Informal and formal collaborative process 	<ul style="list-style-type: none"> Extensive and diverse representation Early/freq involvement Informal and formal collaborative process 	<ul style="list-style-type: none"> Limited and homogeneous representation Infrequent involvement Formal, minimally collaborative process 	<ul style="list-style-type: none"> Limited and homogeneous representation Not collaborative process

¹ P = phosphorus, FC = fecal coliform, N = nitrogen compounds, EC = E. coli

Case Study Background Information - Summary

		Cases Studied						
		Implementation Plan				No Plan		
		East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
Impact on TMDL	<ul style="list-style-type: none"> Contributed to data collection and public education 				<ul style="list-style-type: none"> Contributed to data collection, watershed modeling efforts, and funding 	<ul style="list-style-type: none"> Contributed to data collection 		
Customer Access to TMDL	<ul style="list-style-type: none"> Had full access to & awareness of draft and final TMDL; Opportunity to provide comment only 	<ul style="list-style-type: none"> Had limited access to draft and final TMDL 	<ul style="list-style-type: none"> Had limited access to draft and final TMDL Opportunity to provide comment only 	<ul style="list-style-type: none"> Had full access to initial draft TMDL but limited access to final draft Participated in consensus-based decision making 	<ul style="list-style-type: none"> Had full access and awareness of draft and final TMDL Participated in an advisory capacity with consensus-based decision making 	<ul style="list-style-type: none"> Had limited access to TMDL Opportunity to provide comment 	<ul style="list-style-type: none"> Had limited access to TMDL Opportunity to provide comment 	
Influence of TMDL	Knowledge	<ul style="list-style-type: none"> Process increased knowledge of watershed and TMDL process 	<ul style="list-style-type: none"> Process increased knowledge of watershed, urban stormwater, and TMDL process 	<ul style="list-style-type: none"> Process increased knowledge of watershed and TMDL process 	<ul style="list-style-type: none"> Process increased knowledge of watershed, TMDL process, and the perspective of agricultural producers 	<ul style="list-style-type: none"> Process increased knowledge of watershed, bacterial contamination, and TMDL process 	<ul style="list-style-type: none"> Process influenced stakeholder expectations toward results 	<ul style="list-style-type: none"> Process increased knowledge of watershed, and pollution sources

Case Study Background Information - Summary

		Cases Studied						
		Implementation Plan				No Plan		
		East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
Behavior	<ul style="list-style-type: none"> • Process influenced subsequent data collection; • Influenced subsequent approach to TMDL development • Facilitated access to funding 	<ul style="list-style-type: none"> • No reported influence 	<ul style="list-style-type: none"> • Process increased role of conservation districts in TMDL development • Increased subsequent stakeholder involvement 	<ul style="list-style-type: none"> • Process prompted adoption of a more formal deliberative process • Influenced subsequent interaction among stakeholders 	<ul style="list-style-type: none"> • Process increased access to funding • Prompted subsequent change in state emphasis and decisions • Increased communication with and behavior of agricultural producers 	<ul style="list-style-type: none"> • Process helped state to establish priorities • Helped target limited resources • Influenced subsequent approach to TMDL development 	<ul style="list-style-type: none"> • Process helped target limited resources • Prompted change in subsequent approach to stakeholder involvement 	
Implementation Planning Phase								
Aspects of Plan/ Process	Development Timeframe	<ul style="list-style-type: none"> • Developed with TMDL • Legal requirement 	<ul style="list-style-type: none"> • Developed after TMDL • Legal requirement 	<ul style="list-style-type: none"> • Developed after TMDL 	<ul style="list-style-type: none"> • Developed with TMDL • Legal requirement 	<ul style="list-style-type: none"> • Developed after TMDL • Legal requirement 	• N/A	• N/A
	Stakeholder Involvement	<ul style="list-style-type: none"> • Involvement the same as for TMDL development • Limited access to plan 	<ul style="list-style-type: none"> • 3rd party convened process • Informal and formal collaborative process • Participated in advisory capacity 	<ul style="list-style-type: none"> • Involvement the same as for TMDL development 	<ul style="list-style-type: none"> • Involvement the same as for TMDL development 	<ul style="list-style-type: none"> • Informal collaborative process • Participated in an advisory capacity 	• N/A	• N/A

Case Study Background Information - Summary

		Cases Studied						
		Implementation Plan				No Plan		
		East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
Elements Included in Plan	<ul style="list-style-type: none"> • BMPs • Monitoring plan • Responsible parties • Funding sources • Educational activities • Existing watershed activities 	Draft plan: <ul style="list-style-type: none"> • BMPs • Plan strategies • Plan goals/objectives • Plan timeframe 	<ul style="list-style-type: none"> • BMPs • Monitoring plan • Responsible parties • Funding sources • Budget • Implementation milestones 	<ul style="list-style-type: none"> • BMPs and associated costs • Monitoring plan and special studies • Responsible parties • Implementation milestones 	<ul style="list-style-type: none"> • BMPs • Monitoring plan • Responsible parties • Funding sources • Budget 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	
Influence of Plan	Knowledge	<ul style="list-style-type: none"> • No influence reported 	<ul style="list-style-type: none"> • Increased knowledge of the implem. planning process 	<ul style="list-style-type: none"> • No influence reported 	<ul style="list-style-type: none"> • Increased knowledge of the implem. planning process • Changed stakeholder perspectives about agricultural producers 	<ul style="list-style-type: none"> • No influence reported 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A

Case Study Background Information - Summary

Case Study Background Information - Summary								
		Cases Studied						
		Implementation Plan				No Plan		
		East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
Behavior	<ul style="list-style-type: none"> • Plan helped to secure Section 319 funds • Prompted change in subsequent plan format • Prompted formalization of stakeholder participation in planning process 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Planning process influenced subsequent outreach to agricultural producers 	<ul style="list-style-type: none"> • Prompted change in subsequent implementation planning process • Influenced the scope and funding for monitoring • Influenced participation by agricultural producers 	<ul style="list-style-type: none"> • Plan influenced the scope and funding for monitoring 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	
Other								
Satisfaction	<ul style="list-style-type: none"> • Varied satisfaction with TMDL and overall satisfaction with plan reported 	<ul style="list-style-type: none"> • Overall satisfaction with TMDL reported 	<ul style="list-style-type: none"> • Varied satisfaction with TMDL and plan reported 	<ul style="list-style-type: none"> • Varied satisfaction with TMDL and overall satisfaction with plan reported 	<ul style="list-style-type: none"> • Varied satisfaction with TMDL and plan reported 	<ul style="list-style-type: none"> • Varied satisfaction with TMDL reported 	<ul style="list-style-type: none"> • Overall satisfaction with TMDL reported 	

Case Study Background Information - Summary

	Cases Studied						
	Implementation Plan					No Plan	
	East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
Suggestions	<ul style="list-style-type: none"> • Improve the science used to develop load allocations 	<ul style="list-style-type: none"> • No suggestions reported 	<ul style="list-style-type: none"> • Expedite EPA approval of TMDLs • Increase funding for TMDL development and implementation • Make implementation mandatory 	<ul style="list-style-type: none"> • Collect needed data prior to implementation • Increase resources for implementation • Make implementation mandatory • Solicit more input from agricultural producers 	<ul style="list-style-type: none"> • Focus on urban sources • Solicit stakeholder input earlier in the process • Emphasize a collaborative approach • Expedite implementation planning • Increase funding for implementation • Establish state implementation authority 	<ul style="list-style-type: none"> • Collect more data during TMDL development • Conduct more in-depth analysis of source loading and linkages • Involve stakeholders more directly in the process 	<ul style="list-style-type: none"> • Solicit stakeholder knowledge as part of monitoring effort

Case Study Background Information - Summary

	Cases Studied						
	Implementation Plan					No Plan	
	East Pond	Middle Rio Grande	Cottonwood Lake	Calleguas Creek	Nooksack River	Turkey Creek	Grand River
External Factors	<ul style="list-style-type: none"> • TMDL developed under consent decree • Existing water plan agenda was in place prior to TMDL • Existing NPS programs were ongoing in watershed 	<ul style="list-style-type: none"> • FC pollution presented challenges for characterization and mitigation • Existing water plan agenda was in place prior to TMDL • Existing NPS programs were ongoing in watershed 	<ul style="list-style-type: none"> • TMDL developed under consent decree • Existing water plan agenda was in place prior to TMDL • Existing NPS programs were ongoing in watershed 	<ul style="list-style-type: none"> • TMDL developed under consent decree 	<ul style="list-style-type: none"> • TMDL developed under consent decree • FC pollution presented challenges for characterization and mitigation • Level of impairment high • Existing water plan agenda was in place prior to TMDL 	<ul style="list-style-type: none"> • TMDL developed under consent decree • FC pollution presented challenges for characterization • Level of impairment low • Existing water plan agenda was in place prior to TMDL • Existing NPS programs were ongoing in watershed 	<ul style="list-style-type: none"> • TMDL developed under consent decree • Existing water plan agenda was in place prior to TMDL

Appendix K

CALLEGUAS CREEK, CALIFORNIA, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek ¹

Background	EPA Region	Region IX
	State	California
	Pollutant(s)	Nitrogen Compounds
	Year Listed/Approved	1998; 2003
	Impaired Designated Use(s)	Warm aquatic life habitat; Primary/secondary contact recreation; Groundwater recharge
	Pollution Source Type	POTWs; Agricultural runoff; Municipal storm water

¹ Key summary phrases/words for each section are included in italics.

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek ¹

Stakeholder Involvement - TMDL Development	Number and Representation of Stakeholders ²	<i>Extensive; Diverse - federal, state, and local government; polluters; agriculture; water users; impacted parties, local interests</i>
		<ul style="list-style-type: none"> • Regional Water Quality Control Board – Los Angeles (RWQCB)* • Larry Walker & Associates (LWA)* • Camrosa Water District (CWD)* • Calleguas Municipal Water District • Pleasant Valley County Water District • United Water Conservation Water District • Ventura County Waterworks District No. 1 • Zone Mutual Water Company • Fox Canyon Groundwater Management Agency • County of Ventura/Watershed Protection District (WPD)* • Cities of Camarillo, Moorpark, Simi Valley, and Thousand Oaks • California Department of Parks & Recreation • Conejo Recreation & Park District, Pleasant Valley Park & Recreation District, and Rancho Simi Recreation & Park District • Building Industry Association • Ventura County Economic Development Association • California Coastal Commission • California Department of Fish and Game • EPA Region IX • U.S. Army Corps of Engineers • U.S. Fish and Wildlife Service • Natural Resources Conservation Service • Ventura County Resource Conservation District • Association of Water Agencies of Ventura County Naval Air Warfare Center, Point Mugu • California Coastal Conservancy • Department of Water Resources • California Native Plant Society • California Wildlife Conservation Board • Environmental Defense Center • Santa Monica Mountains Conservancy • Surfrider Foundation • Heal the Bay (HTB)* • Caltrans

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Many of the stakeholders listed are represented on the Calleguas Creek Watershed Management Plan. Stakeholders marked with an “*” participated in an interview for this case study.

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek ¹

Leadership	<p><i>Bottom-up; Third party; Contractor</i></p> <ul style="list-style-type: none"> • The TMDL development process was convened by the Water Quality/Water Resources Subcommittee (WQWR) of the Calleguas Creek Watershed Management Plan (CCWMP).³ • The CCWMP obtained CWA Section 205(j) grant funding and hired (through the Calleguas Municipal Water District) a consulting firm, Larry Walker & Associates (LWA), to begin the process of developing the watershed TMDLs, beginning with Nitrogen. • LWA conducted monitoring and developed a linkage analysis that formed the basis of the TMDL technical report and implementation plan. • LWA submitted a workplan to the RWQCB staff early in the development process, but the agency did not have sufficient staffing resources to respond at that time. LWA proceeded with data collection without RWQCB approval of the workplan but eventually had to redo some sampling. • The RWQCB staff reviewed the final draft report submitted by LWA on behalf of the CCWMP and ultimately rewrote it to conform with agency requirements before presenting it to the full Board for approval.⁴
Deliberative Process	<p><i>Formal and informal collaborative; Consensus-based; Conflict</i></p> <ul style="list-style-type: none"> • Over the course of 18 months, LWA presented findings and analyses at meetings of the WQWR Subcommittee. The output from these meetings was circulated to other Subcommittees for QA/QC review. Also met informally with regulatory agencies to address their concerns. • Draft versions of the TMDL report were distributed to all CCWMP stakeholders and presented at meetings of the Steering Committee. LWA revised the draft based on comments received during the process. • There was some initial disagreement between POTWs and agricultural interests over the magnitude of the problem and source of nutrients. Agriculture assumed all pollution was coming from urban areas but bought-in to the process once they received evidence of its contribution. • Conflict arose between the RWQCB staff and LWA/CCWMP over technical approaches developed for the TMDL that were not consistent with existing policy. RWQCB agreed to negotiate on some issues but not others. The threat of EPA establishing the TMDL pushed both sides toward compromise. • The RWQCB staff made significant revisions to the structure of the LWA draft report; it created a separate TMDL staff report from the draft and attached the LWA/CCWMP report as an appendix, which further frustrated CCWMP stakeholders.

³ The CCWMP is a watershed initiative, which represents “with broad stakeholder participation and support...a long range comprehensive water resources strategy which is cost-effective and provides benefits for all participants” (*Draft Watershed Management Plan*, <http://www.calleguascreek.org/ccwmp/reviewdraft.asp>). Local wastewater dischargers and agricultural producers formed the CCWMP to address the impacts of TMDLs to be developed in the Calleguas Creek watershed in accordance with the schedule established in a 1999 consent decree. Local affected interests took action to develop TMDLs to circumvent involvement by the state or EPA. Currently, the CCWMP is comprised of a fixed-membership Steering Committee and six, open-membership subcommittees: Water Quality/Water Resources, Habitat/Recreation, Flood Protection and Sedimentation, Agriculture, Land Use, Public Outreach and Education, and Stakeholders Committee. For more information on the CCWMP, go to: <http://www.calleguascreek.org/ccwmp/index.asp>.

⁴ The Board-approved TMDL was used to amend the *Water Quality Control Plan for the Los Angeles Region (Basin Plan)* to achieve nutrient water quality standards in Calleguas Creek (TMDL Staff Report, 2002).

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek ¹

Stakeholder Awareness and Participation	<p><i>Early involvement by stakeholders; Frequent and active participation in all phases of development; Performed various roles; Limited access to draft TMDL</i></p> <ul style="list-style-type: none"> • CCWMP stakeholders participated mainly in reviewing and providing comments on the information presented by LWA; in general stakeholders placed trust in LWA to adequately address technical issues and did not raise concerns. • Members of the WQWR Subcommittee and Steering Committee assumed a more active role in the development process.⁵ • The CWD was awarded the grant funds that were eventually turned over to the Calleguas Municipal Water District for the purpose of hiring LWA. • POTWs, the VCWPD, and other stakeholders contributed sampling data used in the TMDL report; VCWPD also conducted storm water modeling that was used by LWA. • The RWQCB staff took a year to revise the draft report but gave CCWMP stakeholders only 45 days to review the changes before releasing the report for public comment.
Overall Satisfaction w/ TMDL	<p><i>Varied satisfaction with TMDL; Limited impact on NPS and algae</i></p> <ul style="list-style-type: none"> • Overall, stakeholders expressed some degree of satisfaction with the TMDL development process, resulting TMDL, and LAs; all identified at least one problem with the final product. • The RWQCB believes that although load reductions have been successful with point sources, the “jury is still out” as to whether the TMDL and implementation plan will achieve NPS load reductions. The LAs are sufficient to achieve the numeric water quality standard but it is not clear whether the numeric standard will also achieve the narrative standard, i.e., nutrient levels that do not cause algae blooms. • HTB and CWD both expressed frustration that the TMDL does not adequately address algae blooms and phosphate impairments. At the time stakeholders had difficulty defining impairments due to algae. The data was not available to support resolution of this issue in the TMDL. • LWA was pleased with end product although it would have preferred stakeholders provide more critical input, particularly on technical issues. • The VCWPD was very satisfied with the final TMDL, considering the disparate group of stakeholders; however, the agency also cited the need for more data to adequately characterize loading from certain reaches of the watershed and to develop effective solutions.
Knowledge of TMDLs/Watershed	<p><i>Influenced knowledge of watershed; Influenced knowledge of TMDLs</i></p> <ul style="list-style-type: none"> • The TMDL development process generated more refined technical information on the watershed; it also raised awareness among the key participants of the diversity of watershed concerns and interests upheld by various stakeholders. • Technical data helped to build recognition among CCWMP stakeholders that upstream discharges impact points downstream; facilitated a change in the perspective of agricultural interests regarding their contribution to nitrogen loadings. • LWA gained a better understanding of the complexities associated with TMDL development, particularly that consent decrees hinder the development of technically sound TMDLs by preventing the completion of work necessary to achieve solutions. Gained a better understanding of the role of monitoring and special studies in addressing uncertainty. • The VCWPD and CWD cited an increase in understanding of the TMDL process as implemented by the RWQCB and the constraints on the Board's involvement. • The VCWPD believes its involvement influenced other stakeholders' understanding and adoption of the watershed perspective.

⁵ A study published in 2005 by UCLA, *A Policy Review of the Toxicity TMDL for the Calleguas Creek Watershed* (Pendleton and Long, 2005), concluded that while the CCWMP is represented by a diversity of stakeholders in the region, more effort should be made to balance representation on the Steering Committee and Subcommittees currently comprised of impacted parties, such as agricultural interests and NPDES permit-holders. The study also recommends that CCWMP take steps to involve local citizen groups and develop a more effective system for conveying unbiased technical information on the TMDL process to the public at-large.

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek ¹

Behavior/Action	<p><i>Influenced deliberative process; Influenced interactions among stakeholders</i></p> <ul style="list-style-type: none"> • The TMDL development process changed the timing and quality of interactions between regulatory agencies and CCWMP stakeholders. • A more formal process has been established to guide negotiations and conflict resolution. RWQCB staff, LWA, and stakeholders meet regularly to discuss TMDLs. This has led to improved relations between the CCWMP and RWQCB staff and more productive deliberations. • The RWQCB is more dedicated to participating in the CCWMP at the start of TMDL development. The CCWMP stakeholder process led the RWQCB staff to consider a more holistic view of watershed protection, thereby granting LWA/CCWMP greater flexibility to focus on technologies and approaches able to reduce several pollutants at once.⁶
Suggestions	<p><i>Restructure comment period; Change bidding process</i></p> <ul style="list-style-type: none"> • CWD recommends that RWQCB allow CCWMP to conduct its peer review of the TMDL staff report concurrently with the public comment period. This would provide CCWMP with sufficient time to study the Board's revisions and help build camaraderie • The RWQCB wants to have input on the open bidding process used to select contractors.

⁶ The consent decree put constraints on bundling, however, the RWQCB is now more willing to consider these approaches in the event it has the authority and flexibility to do so.
Calleguas Creek Nitrogen TMDL Summary 5 5/9/2006

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek

Implementation Planning Process	Process for Plan Development	<p><i>Plan prepared concurrently with TMDL; Legal requirement</i></p> <ul style="list-style-type: none"> • State law requires TMDL basin plan amendments be accompanied by implementation plans. • The implementation plan was developed by LWA following the TMDL deliberations. The draft plan was packaged together with the CCWMP draft TMDL report and later incorporated, as written, into the RWQCB's staff report. • LWA presented details on the plan at two meetings of the WQWR Subcommittee and sought input from the larger CCWMP stakeholder group. • The process undertaken to develop the TMDL and implementation plan took approximately 18 months.
	Stakeholder Involvement	<p><i>Formal and informal collaborative; Consensus-based; Limited</i></p> <ul style="list-style-type: none"> • Stakeholder opportunities to comment on the implementation plan paralleled those for the TMDL; however, stakeholder interest in the plan was eclipsed by controversy over the timing of the completion of the chloride TMDL. • Some stakeholders with technical expertise expressed concerns that the agricultural BMPs would not achieve LAs, but overall there were few comments on the plan. Most of the POTWs were already gearing up to implement BMPs so the plan was not controversial. Agricultural producers were too distracted by the Chloride TMDL to focus on the implications of the plan for their operations.
	Characteristics of Plan	<p><i>Description of BMPs; Project milestones; Follow-up monitoring and analysis; Responsible parties</i></p> <ul style="list-style-type: none"> • The plan includes the following elements: interim limits for POTWs; a strategy for addressing agricultural loads and the formation of a NPS oversight committee; a discussion of planned monitoring activities; a discussion of planned special NPS characterization studies; general descriptions of POTW and agricultural BMPs and associated costs; and a list of plan milestones and responsible parties. • State law does not require that implementation plans specify the exact BMPs to be implemented by each responsible party or the means to achieve compliance. • The plan requires responsible parties to submit workplans for their assigned implementation tasks to the RWQCB within a year of the effective date of the TMDL.
	Overall Satisfaction w/ Plan	<p><i>Overall satisfaction with implementation plan</i></p> <ul style="list-style-type: none"> • Most stakeholders expressed satisfaction with the plan. The primary responsibility for reducing nutrient loads falls to the POTWs, most of which have already scheduled or completed installation of required controls. • There is some concern that agricultural BMPs will not be sufficient to achieve reductions, particularly since the plan does not provide details on how and when BMPs are to be implemented. • LWA is frustrated that more complete data on agricultural BMPs was collected at the time the plan was developed; believes that the special studies are adding unnecessary costs. • The RWQCB is optimistic that an evaluation of agricultural BMPs will identify cost effective options; preliminary results are promising. The CSD does not share this optimism.
	Knowledge of TMDLs/Watershed	<p><i>Influenced stakeholder knowledge</i></p> <ul style="list-style-type: none"> • The implementation planning process changed the mindset of the various CCWMP stakeholders. Agricultural interests gained a greater understanding of the relationship between surface water and groundwater and the impacts of surface runoff on groundwater quality.

Nonpoint Source/Stormwater TMDL Case Summary

Calleguas Creek

	Behavior/Action	<p><i>Influenced scope and funding of monitoring; Influenced agricultural participation; Influenced development of plan</i></p> <ul style="list-style-type: none"> Stakeholders are attempting to integrate monitoring activities being conducted by separate agencies to increase effectiveness and reduce costs; the CCWMP is developing a structure to organize and fund all the related monitoring efforts. The stakeholder process prompted agricultural interest to take a more active role in identifying cost effective BMPs; producers have secured grant funds to sponsor the BMP evaluation and are considering making investments in new irrigation technologies. LWA now makes sure that implementation plans clearly state how allocations and BMPs will be incorporated into permits and agricultural waivers.
	Suggestions	<p><i>Increase resources; Obtain more input from agriculture; Expedite implementation planning; Conduct special studies prior to implementation</i></p> <ul style="list-style-type: none"> The RWQCB needs more resources to effectively track implementation. LWA recommends soliciting more input from agriculture. The stakeholder process needs to facilitate trust among agricultural producers and foster their active participation. CWD recommends initiating a discussion of implementation early in the TMDL development process to stimulate stakeholder interest and buy-in. HTB recommends that special studies and assessments be conducted before the TMDL is developed.
External Factors	Type of Pollutant	N/A
	Litigation or Consent Decree	<p><i>Consent decree influenced TMDL leadership; Set limits on bundling</i></p> <ul style="list-style-type: none"> A large number of the TMDLs cited in the consent decree are located in Los Angeles region watersheds. The schedule for TMDL development in the consent decree impacted the staffing resources available to the RWQCB; prompted CCWMP leadership on the Nitrogen TMDL.⁷ The consent decree limited the time available to collect essential data and put constraints on the adoption of multi-pollutant approaches, i.e., bundling, proposed by stakeholders.
	Degree of Impairment	N/A
	Existing Organizational Structure(s)/ Programs	N/A

⁷ The tight completion schedule established under the consent decree for the Chloride TMDL caught CCWMP stakeholders off guard. Actions taken by the RWQCB to modify this TMDL upset stakeholders and complicated the development process for the Nitrogen TMDL.

Appendix L

COTTONWOOD LAKE, SOUTH DAKOTA, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Cottonwood Lake ¹

Background	EPA Region	Region VIII
	State	South Dakota
	Pollutant(s)	Phosphorus/Sediment
	Year Listed/Approved	1998; 2001
	Impaired Designated Use(s)	Warm water marginal fish life propagation
	Pollution Source Type	Animal feeding operations (AFOs); Inadequate rangeland and cropland management practices; On-site septic systems (OSS)
Stakeholder Involvement - TMDL Development	Number and Representation of Stakeholders ²	<p><i>Limited; Homogeneous - mainly state and local government agencies</i></p> <ul style="list-style-type: none"> • Watershed Protection Program - South Dakota Department of Environment and Natural Resources (DENR) * • South Dakota Department of Game, Fish, and Parks • Central Plains Water Development District (CPWDD)* • Natural Resources Conservation Service (NRCS)* • Hand Conservation District (HCD)* • Faulk Conservation District • Spink Conservation District • Cottonwood Lake Association (CLA)*
	Leadership	<p><i>Shared leadership; State and local government</i></p> <ul style="list-style-type: none"> • Three stakeholders - DENR, CPWDD, and HCD, jointly led the TMDL development process. DENR initiated TMDL development in response to a consent decree but asked local agencies to assume the primary responsibility for managing the process. CPWDD agreed to be the lead agency; CPWDD in turn contracted out the administration functions to HCD, which became the project sponsor. • NRCS, which is co-located with CPWDD and HCD, also played a central role in the development process.
	Deliberative Process	<p><i>Informal collaborative</i></p> <ul style="list-style-type: none"> • DENR initially approached conservation districts for assistance with TMDLs. • CPWDD, NRCS, and DENR collaborated on a regular basis on all phases of TMDL development, including: planning, data collection, analysis, modeling, and production of the assessment report and implementation plan. • The draft TMDL assessment report was reviewed twice - first by DENR for data verification and second, by the HCD Board of Directors – before being released by DENR for public notice and comment.

¹ Key summary phrases/words for each section are included in italics.

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Stakeholders marked with an "*" participated in an interview for this case study.

Nonpoint Source/Stormwater TMDL Case Summary

Cottonwood Lake ¹

Stakeholder Involvement - TMDL Development	Stakeholder Awareness and Participation	<p><i>Limited access to draft TMDL; Comment only; Limited frequency and degree of participation</i></p> <ul style="list-style-type: none"> • In addition to conducting technical oversight, DENR also provided approximately 60% of the funding for the TMDL. Most of this money was distributed to CPWDD via grant funding awarded to HCD. • Outside of the core group of agencies, participation by other stakeholders in the development process and access to the draft and final TMDLs was limited. • CLA facilitated data collection efforts at the lake and provided funding for sampling efforts. CPWDD and DENR presented sampling results to the CLA membership. Members of the CLA Board were also invited to attend meetings at CPWDD. • Lakeshore residents participated in a survey conducted by CPWDD of OSS types. • CPWDD sent copies of the completed draft TMDL report to the CLA Board members and a notice to the membership at-large as well as agricultural producers in the watershed indicating that the draft TMDL was available for review. • No comments on the draft TMDL were received.
	Overall Satisfaction w/ TMDL	<p><i>Varied satisfaction with TMDL</i></p> <ul style="list-style-type: none"> • The core stakeholder group expressed satisfaction with the TMDL, given that it was one of the first TMDLs completed in SD and the goal was to simply to "get it done;" however, DENR believes that more sampling data should have been collected earlier to support the TMDL. • CLA expressed frustration with the process - felt that the funds invested in the TMDL assessment did not produce any actions to improve water quality in the lake.
	Knowledge of TMDLs/Watershed	<p><i>Process influenced knowledge of water quality and pollution source in watersheds; Influenced knowledge of TMDLs</i></p> <ul style="list-style-type: none"> • Data generated through the TMDL development process helped to raise the awareness of farmers and homeowners about their respective contribution to water quality degradation. • The core stakeholder group gained specific knowledge about water quality in the watershed and a better understanding about TMDLs overall.
	Behavior/Action	<p><i>Varied influence on agency activities; Expanded role of conservation districts</i></p> <ul style="list-style-type: none"> • DENR has not changed its approach to developing TMDLs; CPWDD and other conservation districts have expanded their agency function to include sponsorship of TMDL development and implementation projects.
	Suggestions	<p><i>Expedite TMDL approval process; Increase funding for TMDLs; Increase direct stakeholder involvement</i></p> <ul style="list-style-type: none"> • DENR notes that the TMDL approval process takes longer than it should due to EPA's requests for minor modifications. • NRCS recommends taking the time necessary to identify all the stakeholders and get them involved at the start of the process; the Cottonwood Lake TMDL process did not identify everyone with an interest in the watershed. • CLA feels strongly that the local interests should refrain from providing funding assistance for TMDLs unless the lead agency can provide assurances that proposed activities will be implemented.

Nonpoint Source/Stormwater TMDL Case Summary
Cottonwood Lake

Implementation Planning Process	Process for Plan Development	<p><i>Plan completed after TMDL; State practice</i></p> <ul style="list-style-type: none"> • DENR, NRCS, and CPWDD collaborated on developing the implementation plan during a six-eight month period following completion of the TMDL³; HCD was selected to serve as the project sponsor for the implementation phase. • There is no state law requiring the development of implementation plans; DENR, however, has urged completion of implementation plans to facilitate compliance in watersheds and to quantify water quality improvements. • The draft plan was sent first to the HCD Board, then to DENR for final review.
	Stakeholder Involvement	<p><i>Informal collaborative; Limited access to draft plan; Comment only</i></p> <ul style="list-style-type: none"> • As with the TMDL development process, stakeholders outside the core group did not have an opportunity to participate in the development of the implementation plan. • CPWDD solicited input early in the process from the CLA and agricultural producers on what practices they would be willing to implement; notified them about the completed plan and presented the project summary sheet at CPWDD meetings. • A public notice was also placed in the local papers inviting interested individuals to participate or contact CPWDD with questions. • CLA was named in the plan as a participant in a follow-up septic system study and bank stabilization activities (and as a funding source for these activities).
	Characteristics of Plan	<p><i>Description of BMPs; Funding sources and budget; Project milestones; Follow-up monitoring and analysis</i></p> <ul style="list-style-type: none"> • The project summary includes the following elements: descriptions of specific BMPs, their associated costs, and the names of parties/agencies responsible for implementing them; public outreach and educational activities to be conducted; a follow-up sampling and analysis plan for assessing the impact of septic systems on water quality; a table listing project milestones; and a detailed budget. • The plan also requires CPWDD to prepare semi-annual progress reports. • The overall time frame established for the project is five years.
	Overall Satisfaction w/ Plan	<p><i>Varied satisfaction with plan and outcomes</i></p> <ul style="list-style-type: none"> • The core stakeholder group expressed satisfaction with the plan; however, they acknowledge that implementation is behind schedule and LAs will not be achieved unless all BMPs are completed. • The agencies attribute the slow pace of implementation to lack of buy-in and participation by agricultural producers, limited funding for implementation, and a multi-year drought that has affected the economic feasibility of pursuing BMPs; CLA cites lack of follow-up by agencies.
	Knowledge of TMDLs/Watershed	<p><i>No influence on knowledge</i></p>
	Behavior/Action	<p><i>Influenced communication with agricultural producers</i></p> <ul style="list-style-type: none"> • NRCS has begun to emphasize the downstream impacts of upstream agricultural practices and conduct more outreach to farmers.

³The Cottonwood Lake/Lake Louise Watershed Improvement Project comprises implementation plans for both the Cottonwood Lake and Lake Louise TMDLs. Implementation plans for NPS TMDLs are developed under the auspices of DENR's Watershed Protection Program.

Nonpoint Source/Stormwater TMDL Case Summary

Cottonwood Lake

	Suggestions	<p><i>Make implementation mandatory; Increase funding; Involve agricultural producers in planning; Conduct more outreach and education</i></p> <ul style="list-style-type: none"> DENR believes that as long as the TMDL and implementation plan are voluntary, all the BMPs needed to achieve water quality standards in Cottonwood Lake will not be implemented; the watershed pollution mitigation programs in the TMDL implementation plan would likely have been developed without it, but are limited by the amount of funds available. NRCS recommends building in time for outreach to agricultural producers into the TMDL development and implementation planning process; public education about why the TMDL is needed and what farmers can do to help should be conducted at the beginning of the process.
External Factors	Type of Pollutant	N/A
	Litigation or Consent Decree	<p><i>Consent decree established the schedule for TMDL completion</i></p> <ul style="list-style-type: none"> The consent decree required DENR to complete TMDLs by 2007. The compressed time frame prompted the agency to ask local conservation districts to assume a prominent role in developing TMDLs
	Degree of Impairment	N/A
	Existing Organizational Structure(s)/ Programs	<p><i>Existing NPS/319 and watershed conservation programs</i></p> <ul style="list-style-type: none"> The DENR agency responsible for developing TMDLs, the Watershed Protection Program, is the South Dakota's NPS program. A primary function of the program, located in DENR's Division of Financial Assistance, is to distribute Section 319 funds for the implementation of local water pollution mitigation projects.

Appendix M

EAST POND, MAINE, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

East Pond ¹

Background	EPA Region	Region I
	State	Maine
	Pollutant(s)	Phosphorus
	Year Listed/Approved	1998; 2001
	Impaired Designated Use(s)	Water supply; Primary/secondary contact recreation
	Pollution Source Type	Shoreline residential and recreational development
Stakeholder Involvement – TMDL Development	Number and Representation of Stakeholders ²	<i>Extensive; Diverse - state and local government agencies, polluters, local interests</i> <ul style="list-style-type: none"> • Maine Department of Environmental Protection, Bureau of Land and Water Quality (DEP)* • Maine Association of Conservation Districts (MACD)³* • Kennebec County Soil and Water Conservation District (SWCD)* • Somerset County SWCD • Natural Resources Conservation District (NRCS) • Belgrade Regional Conservation Alliance (BRCA)⁴* • BRCA Conservation Corps (BCC) • East Pond Association (East Pond Assoc.) • Colby College (CC) • Town of Oakland • Town of Smithfield • Maine Department of Conservation - Forest Service • Maine Department of Agriculture • Maine Department of Inland Fisheries and Wildlife
	Leadership	<i>Top-down; Shared leadership - state government and contractor</i> <ul style="list-style-type: none"> • DEP led the TMDL development process; conducted lake monitoring, limnology studies, and load analysis. • Contracted with MACD and two sub-contractors to convene stakeholders, conduct a land use inventory, compile background data on the lake, develop a shoreline septic survey, assist DEP with drafting the TMDL report, and prepare an implementation plan; contractors were hired with Section 319 program funds.

¹ Key summary phrases/words for each section are included in italics.

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Stakeholders marked with an "*" participated in an interview for this case study.

³ The MACD is a non-profit organization that represents all of Maine’s 16 SWCDs.

⁴ The BRCA was initially formed as a land trust in 1988. In 1991, it expanded its mission to include watershed protection and now serves as the umbrella organization for the six individual lake associations of the Belgrade chain of lakes, including East Pond. BRCA sponsors the BCC, which employs students to conduct erosion-control projects free-of-charge for lake residents.

Nonpoint Source/Stormwater TMDL Case Summary

East Pond ¹

	Deliberative Process	<p><i>Formal and informal collaborative; Comment only</i></p> <ul style="list-style-type: none"> Presented details on the TMDL development process to stakeholders at an annual meeting of the East Pond Assoc. Approximately 50-60% of stakeholders attended this meeting. DEP distributed copies of the preliminary draft TMDL report to stakeholders for a two-week period. Stakeholder comments were incorporated into the draft before DEP released final draft for public notice.
Stakeholder Involvement - TMDL Development	Stakeholder Awareness and Participation	<p><i>Early involvement by stakeholders; Full awareness of TMDL; Access to draft and final TMDL; Performed various functions beyond comment role.</i></p> <ul style="list-style-type: none"> DEP and MACD contractors met informally with stakeholders early in the development process; contacted CC, BRCA, Kennebec SWCD, and lakeshore residents to solicit NPS data and watershed information on the lake. In addition to providing a forum for discussion of the TMDL at its meetings, the East Pond Assoc. also established a Septic Task Force to assist the completion of the shoreline septic survey and conducted public education about water quality in the lake.
	Overall Satisfaction w/ TMDL	<p><i>Varied satisfaction with TMDL</i></p> <ul style="list-style-type: none"> Stakeholders were most satisfied with the level of stakeholder participation in the development process and the ability of the TMDL to achieve LAs. DEP expressed satisfaction with the development of the shoreline septic survey and acknowledged the significant input from stakeholders. MACD was dissatisfied with lack of formality in the stakeholder process, although it was pleased with the level of outreach to local residents in the watershed. Kennebec SWCD expressed concern generally with the scientific basis for establishing the LAs, particularly for agriculture. The District did not have the expertise to challenge the science. The LAs established are the best that DEP could produce given the method used to generate export numbers for specific land uses. BRCA doubts that the TMDL will improve water quality solely through LAs at first given the accumulated load of Phosphorus residing in the lake's sediments; the issue is not whether the LAs will achieve water quality standards, but when.
	Knowledge of TMDLs/Watershed	<p><i>Process generated valuable data; Influenced knowledge of watershed; Influenced knowledge of TMDLs</i></p> <ul style="list-style-type: none"> Results of the shoreline septic survey increased knowledge of shoreline pollution, impacts from septic systems, and the complexity of Phosphorus loading. Given that the TMDL was one of the first on the 303(d) list to be completed, DEP and other stakeholders gained an understanding of TMDLs and the development process. This knowledge helped DEP and MACD to evaluate the elements of the process that worked and change those that did not.

Nonpoint Source/Stormwater TMDL Case Summary

East Pond ¹

Behavior/Action	<p><i>Influenced data collection and analysis; Influenced approach to TMDL development; Facilitated access to funding</i></p> <ul style="list-style-type: none"> • DEP is conducting a follow-up, bio-manipulation study to examine how to change the food web structure in the lake to reduce Phosphorus loadings from lake bottom sediments. • The septic model developed for the East Pond TMDL is now being used to assess loading from shoreline septic systems; The current method for conducting land use surveys relies more on GIS data rather than aerial photos and has led to more accurate load estimations for TMDLs. • The MACD Board of Directors established a more formal stakeholder process to ensure broader participation prior to the release of the draft for public comment. • To promote stakeholder interest and participation in the TMDL development process, assessment reports and implementation plans for subsequent phosphorus TMDLs have now been merged into a single phosphorus control action plan (PCAP). The PCAP prominently features implementation activities and organizes TMDL assessment data and analyses as appendices. • The TMDL increased BRCA's determination and ability to obtain Section 319 funding for NPS projects in the East Pond watershed.
Suggestions	<p><i>Improve scientific basis for load estimations</i></p> <ul style="list-style-type: none"> • The Kennebec SWCD recommends DEP further develop the science used to assign "export numbers", i.e., loadings for specific land uses.

Nonpoint Source/Stormwater TMDL Case Summary

East Pond

Implementation Planning Process	Process for Plan Development	<p><i>Plan developed concurrently with TMDL; State requirement</i></p> <ul style="list-style-type: none"> • MACD prepared an implementation plan simultaneously with the development of the TMDL; the plan was published just before the final TMDL report as a deliverable for the Section 319 grant.⁵ • The TMDL report includes a brief description of previous and proposed implementation activities for various NPS and a follow-up monitoring plan. • DEP considers the implementation plan to be an integral part of the TMDL process and deems TMDLs alone as inadequate; once the TMDL is approved, the watershed receives a higher priority for BMP funding.
	Stakeholder Involvement	<p><i>Informal collaborative; Limited access to draft plan; Comment only</i></p> <ul style="list-style-type: none"> • MACD discussed the specifics of the plan on an informal basis with stakeholders and provided them copies of the draft for comment; did not conduct a formal public review process.
	Characteristics of Plan	<p><i>Description of BMPs; Existing external activities; Follow-up data collection and analysis; Responsible parties</i></p> <ul style="list-style-type: none"> • The implementation plan and the TMDL report contain the following implementation plan elements: descriptions of current and proposed BMPs and educational activities; descriptions of follow-up monitoring activities and septic survey; names of organizations responsible for implementing BMPs and related activities; sources of funding; and recommendations for expanding watershed planning efforts. • The plan incorporates ongoing NPS mitigation projects being conducted by BRCA, the BCC, the Kennebec SWCD, and the East Pond Assoc. Most of these BMPs have been supported with Section 319 funds. • The education activities proposed in the plan utilize existing training opportunities and outreach programs offered by DEP and the East Pond Assoc.⁶
	Overall Satisfaction w/ Plan	<p><i>Overall satisfaction with plan and planning process; Limited impact of BMPs; Limited stakeholder input</i></p> <ul style="list-style-type: none"> • Stakeholders overall expressed satisfaction with the plan and the responsibilities assigned to them. • Agreement that while BMPs will achieve LAs, they will be insufficient to restore water quality until the recycling of phosphorus from lake sediments is addressed. BRCA counters that its ongoing efforts to educate camp owners and mitigate runoff from camp roads will achieve LAs. • MACD suggested that because the implementation planning process did not seek formal comments from stakeholders, the plan did not carry enough weight.
	Knowledge of TMDLs/Watershed	<p><i>No influence on knowledge</i></p> <ul style="list-style-type: none"> • Stakeholders did not perceive a change in their knowledge resulting from the implementation planning process. For some the plan confirmed their knowledge and experiences of the watershed.

⁵ The implementation plan, "East Pond Watershed Inventory and BMP Recommendations: Final Report" was published in July 2001. The final TMDL report was published in September 2001.

⁶ These programs include DEP's Voluntary Contractor Certification Program, courses offered by DEP's Nonpoint Source Training Center for municipal officials and staff, and water quality workshops conducted jointly by the East Pond Assoc., BRCA, Kennebec SWCD, and DEP among others.

Nonpoint Source/Stormwater TMDL Case Summary

East Pond

	Behavior/Action	<i>Influenced availability of funding; Influenced implementation planning process; Influenced elements of plan</i> <ul style="list-style-type: none"> • Momentum generated by the development of the TMDL and implementation plan raised awareness about eligible projects which in turn, facilitated BRCA's ability to compete for and secure Section 319 grant funds. • MACD has formalized stakeholder participation in the development of PCAPs, which combine assessments and implementation plans for TMDLs into a single document, to provide for broader involvement in the process.
	Suggestions	<i>No other suggestions</i>
External Factors	Type of Pollutant	<i>N/A</i>
	Litigation or Consent Decree	<i>Consent Decree</i> <ul style="list-style-type: none"> • MDEP established its TMDL list for lakes in response to a consent decree but not the completion schedule. The agency had a goal to complete them more quickly but data requirements for watershed modeling limited completion to every two to three years.
	Degree of Impairment	<i>N/A</i>
	Existing Organizational Structure(s)/ Programs	<i>Existing water quality planning agenda; Existing 319/NPS and watershed conservation programs</i> <ul style="list-style-type: none"> • BRCA has received Section 319 funds since 1999 to conduct watershed surveys and remediation projects, with assistance from the BCC, along the Belgrade Lakes chain that includes East Pond. In 2001, it completed a watershed management plan for the upper watershed, based on the TMDL assessment. • Most of the BMPs and activities prescribed in the implementation plan are ongoing projects initiated by the SWCDs, BRCA, BCC, and the East Pond Assoc. prior to the development of the TMDL.

Appendix N

GRAND RIVER, MICHIGAN, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Grand River ¹

Background	EPA Region	Region V
	State	Michigan
	Pollutant(s)	E. Coli (EC)
	Year Listed/Approved	2002; 2003
	Impaired Designated Use(s)	Total body contact recreation
	Pollution Source Type	Wastewater; Urban stormwater; Agricultural runoff; Illicit sewer connections
Stakeholder Involvement – TMDL Development	Number and Representation of Stakeholders ²	<i>Limited; Homogeneous – state and local government, polluters (POTWs)</i> <ul style="list-style-type: none"> • Water Bureau, MI Department of Environmental Quality (MDEQ)* • City of Jackson • Blackman, Bunkerhill, Grass Lake, Henrietta, Ingham, Leoni, Leslie, Napoleon, Onondaga, Parma, Rives, Sandstone, Spring Arbor, Summit, Stockbridge, and Tompkins Townships • Jackson County Drain Commission* • Grand River Environmental Action Team
	Leadership	<i>Top-down; State government</i> <ul style="list-style-type: none"> • MDEQ executed all phases of the EC TMDL development process, including, the collection of sampling data and the preparation of the submittal report.³
	Deliberative Process	<i>Not collaborative</i> <ul style="list-style-type: none"> • MDEQ posted the draft TMDL on the agency’s website and convened a public meeting at which the draft EC TMDL was presented along with the draft DO and AL TMDLs. • MDEQ did not receive any comments on the EC TMDL.

¹ Key summary phrases/words for each section are included in italics.

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Stakeholders marked with an "*" participated in an interview for this case study.

³ MDEQ developed separate Dissolved Oxygen (DO) and Aquatic Life (AL) TMDLs for the Grand River at the same time as the EC TMDL. All three TMDLs were submitted to EPA under a single cover letter.

Stakeholder Involvement - TMDL Development	Stakeholder Awareness and Participation	<p><i>Limited access to draft TMDL; Comment only</i></p> <ul style="list-style-type: none"> • The public meeting was held at the offices of the Jackson County Drain Commission during the 30-day public notice period. • Stakeholders invited to the meeting included municipal entities and permit-holders in the watershed plus public interest and other watershed groups; municipalities were mostly concerned about the financial impacts of the TMDL for stormwater programs. • Stakeholders did not receive a copy of the draft TMDLs to review in advance of the meeting. • MDEQ also presented the TMDL at a meeting of the Upper Grand River Watershed Planning Initiative Steering Committee.⁴
	Overall Satisfaction w/ TMDL	<p><i>Overall satisfaction with the TMDL</i></p> <ul style="list-style-type: none"> • MDEQ did not encounter any difficulties developing the TMDL, but expressed disappointment that there was not greater public interest and involvement in the TMDL process. • The achievement of water quality standards for EC is a possibility, assuming the controls on POTWs and stormwater identified in the TMDL are implemented. The complexity of sources, particularly agricultural runoff and stormwater, will have an impact on water quality outcomes.
	Knowledge of TMDLs/Watershed	<p><i>Influenced knowledge of watershed and pollution sources</i></p> <ul style="list-style-type: none"> • MDEQ gained an understanding of the watershed and the complexity of PS versus NPS pollution.
	Behavior/Action	<p><i>Used to target resources; Influenced approach to stakeholder participation</i></p> <ul style="list-style-type: none"> • MDEQ has prioritized the award of Section 319 grants to entities located in watersheds for which TMDLs have been developed.; the agency has also been working on a process to improve public participation and obtain stakeholder involvement at the start of the TMDL development process.
	Suggestions	<p><i>Utilize stakeholder knowledge in monitoring activities</i></p> <ul style="list-style-type: none"> • MDEQ wants to solicit stakeholder assistance with selecting monitoring stations; stakeholders often have local knowledge of the watershed that can inform sampling efforts.

⁴ The Grand River Inter-County Drainage Board (GRICDB) convened the Upper Grand River Watershed Planning Initiative in 2000 as a collective response to anticipated NPDES permit requirements for watershed communities subject to Federal Phase II stormwater regulations. The GRICDB, led by the Jackson County Drain Commission, formed a Steering Committee comprised of all local jurisdictions and other stakeholders in the watershed. Although intended initially as a means to involve Phase II communities in developing a general NPDES permit application, the Initiative evolved into a comprehensive watershed planning process. The Steering Committee applied for, and received a Section 319 Watershed Planning Grant in 2001. These funds were used to launch a broad public participation process leading to the development of the Upper Grand River Watershed Management Plan (UGRWMP) and the establishment of the Upper Grand River Watershed Council. The Plan was finalized in December 2003 and is available at the MI DEQ website: <http://www.deq.state.mi.us/documents/deq-ess-nps-wmp-upper-grand.pdf>

Nonpoint Source/Stormwater TMDL Case Summary

Grand River

Implementation Planning Process	Process for Plan Development	<i>No plan developed; Existing external planning agenda</i> <ul style="list-style-type: none"> MDEQ did not develop an implementation plan for any of the Grand River TMDLs, however, all three informed the water quality assessment and BMP recommendations included in the UGRWMP.⁵
	Stakeholder Involvement	N/A
	Characteristics of Plan	N/A
	Overall Satisfaction w/ Plan	N/A
	Knowledge of TMDLs/Watershed	N/A
	Behavior/Action	N/A
	Suggestions	N/A
External Factors	Type of Pollutant	N/A
	Litigation or Consent Decree	<i>Consent decree established timetable for completing TMDLs</i> <ul style="list-style-type: none"> The consent decree established very strict schedules for completing TMDLs; MDEQ had a very short period of time in which to complete the Grand River TMDLs. The compressed timetable and limited staffing levels (2.5 FTEs) impeded MDEQ's ability to involve stakeholders in the TMDL development process in a meaningful way.
	Degree of Impairment	N/A

⁵ The UGRWMP includes the following elements: a public outreach and education plan; recommendations for land use policy, water resource policy, wetlands protection and restoration, and soil erosion and sedimentation control; descriptions of NPS BMPs by subwatershed, including separate sections listing BMPs for implementation of the EC, DO, and AL TMDLs; a summary of NPDES Phase II Stormwater permit requirements; and an Upper Grand River Action Plan. The Action Plan links each of the recommendations to specific tasks, key players, associated capital and annual costs, output measures, an implementation schedule, and available resources.

Nonpoint Source/Stormwater TMDL Case Summary

Grand River

Existing Organizational Structure(s)/ Programs	<p><i>Existing watershed planning agenda; Not focused exclusively on TMDLs; Influenced by TMDLs</i></p> <ul style="list-style-type: none">• The Upper Grand River Watershed Planning Initiative preceded the development of the TMDLs; however, the final TMDLs contributed data to the watershed assessment portion of the UGRWMP and influenced understanding of the water quality problems in the River among Initiative stakeholders.• Recommendations in the UGRWMP were configured to reduce impairments identified in the TMDLs.• While the TMDLs provided the needed justification for local governments to expend funds and effort toward BMP implementation, these mitigation efforts would not be carried out in the absence of NPDES Phase II Stormwater permit requirements. For example, the EC TMDL documented exceedances of the EC standard in the River and identified illicit connections as likely sources of bacterial contamination; the Phase II Stormwater regulations require NPDES permit-holders to develop a program for the detection and elimination of illicit connections.
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Appendix O

MIDDLE RIO GRANDE, NEW MEXICO, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Middle Rio Grande ¹

Background	EPA Region	Region VI
	State	New Mexico
	Pollutant(s)	Fecal Coliform (FC)
	Year Listed/Approved	2000; 2002
	Impaired Designated Use(s)	Limited warm water fishery; Irrigation; Livestock watering; Wildlife habitat; Secondary contact
	Pollution Source Type	Municipal stormwater; POTWs; Agricultural runoff; Wild birds

¹ Key summary phrases/words for each section are included in italics.

Nonpoint Source/Stormwater TMDL Case Summary

Middle Rio Grande ¹

Stakeholder Involvement - TMDL Development	Number and Representation of Stakeholders ²	<p><i>Extensive; Diverse – state, tribal, and local governments, federal agencies, polluters, environmental groups, consultants</i></p> <ul style="list-style-type: none"> • EPA Region VI (EPA)*⁺ • NM Environment Department, Surface Water Quality Bureau (NMED)*⁺ • NM Department of Forestry⁺ • Middle Rio Grande Council of Governments (MRGCOG)⁺ • Middle Rio Grand Conservancy District⁺ • The Star Group • Karpoff & Associates (K&A)*⁺ • URS Corporation⁺ • Sigler Environmental⁺ • Sandia Pueblo⁺ • Isleta Pueblo⁺ • Pueblo of Santa Ana⁺ • Cañon de Carnue Land Grant⁺ • Tree New Mexico⁺ • Albuquerque Metropolitan Arroyo and Flood Authority⁺ • Southern Sandoval County Arroyo and Flood Control Authority⁺ • Sandoval County Extension Service • Ciudad Soil and Water Conservation District (CSWCD)⁺ • Sandia Water Commission • Elephant Butte Irrigation District • City of Albuquerque⁺ • City of Rio Rancho⁺ • Town of Bernalillo • Bernalillo County⁺ • New Mexico Environmental Gross Receipts Tax Advisory Board⁺ • University of New Mexico • Natural Resource Conservation Service (NRCS)⁺ • U.S. Army Corps of Engineers⁺ • U.S. Geological Survey⁺ • Kirkland Air Force Base⁺ • Intel Corporation

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Stakeholders marked with an “*” participated in an interview for this case study. Stakeholders marked with a “+” are current or former members of the Middle Rio Grande-Albuquerque Watershed Advisory Group (MRG-AAG).

Nonpoint Source/Stormwater TMDL Case Summary

Middle Rio Grande ¹

Stakeholder Involvement - TMDL Development	Leadership	<p><i>Top-down; State government</i></p> <ul style="list-style-type: none"> NMED convened the TMDL development process, conducted data collection and analysis, and prepared the TMDL report.
	Deliberative Process	<p><i>Formal; Minimally collaborative</i></p> <ul style="list-style-type: none"> NMED conducted a three-phase process to involve the public in monitoring efforts and evaluating the river's quality, as required by the NM TMDL program. MRGCOG was contracted to facilitate a series of public meetings and document public participation as part of this process. Stakeholders were invited to ask questions at each meeting and their comments were recorded. NMED also solicited written comments on the draft TMDL from stakeholders during the 30-day public notice period. NMED notes that there was a significant amount of informal discussion among stakeholders during the later meetings. NMED also collaborated with the many Tribes located in the watershed in order to resolve jurisdictional issues.
	Stakeholder Awareness and Participation	<p><i>Early involvement by stakeholders; Limited access to draft TMDL; Comment only</i></p> <ul style="list-style-type: none"> A total of five public meetings were held. At the initial three, NMED introduced the TMDL development process; at the fourth, NMED presented water sampling data; at the fifth public meeting (which coincided with the beginning of the 30-day public notice period), NMED released the final draft TMDL. The purpose of the initial meetings was to get public input on water sampling locations and to solicit locally-generated watershed data. All meetings ended with a question and answer session. The initial meetings drew a large contingency of stakeholders, including Tribes, and concerned citizens. The fourth and final meetings drew a smaller group of stakeholders with technical expertise. EPA did not attend meetings but was kept informed of NMED activities during the TMDL development process. The Region worked closely with NMED to ensure that the final TMDL would be approved and able to be implemented.
	Overall Satisfaction w/ TMDL	<p><i>Overall satisfaction with TMDL</i></p> <ul style="list-style-type: none"> Acknowledgement of the challenges posed by FC pollution in urban stormwater, given uncertainty of sources and the impact of permitted discharges. NMED and EPA believe that the TMDL will achieve load allocations, although it may take a while to implement. NM has since switched from a FC standard to E. coli, which may have an impact on control strategies implemented.
	Knowledge of TMDLs/Watershed	<p><i>Influenced knowledge of urban stormwater; Influenced knowledge of TMDLs</i></p> <ul style="list-style-type: none"> NMED gained a better understanding of the complexities of urban stormwater, which differs in character from rural runoff, particularly due to impervious surfaces. NMED also learned how to involve a greater diversity of stakeholders, particularly polluters, i.e., municipal permittees.
	Behavior/Action	<p><i>Did not influence behavior or actions</i></p>
	Suggestions	<p><i>No changes recommended</i></p>

Nonpoint Source/Stormwater TMDL Case Summary

Middle Rio Grande

Implementation Planning Process	Process for Plan Development	<p><i>Plan developed after TMDL; Legal requirement; Third-party convener</i></p> <ul style="list-style-type: none"> • Within a year following the approval of the TMDL, NMED issued an RFQ for the development of a Watershed Restoration Action Strategy (WRAS) for the Middle Rio Grande - Albuquerque Reach watershed.³ • The CSWCD was awarded grant funding through the Section 319 program to establish a recognized local watershed advisory group to develop the WRAS. CSWCD hired a consultant, K&A, to facilitate the public outreach component of the planning process and another to draft the WRAS. • The MRG-AAG utilized two recent, surface water quality studies, in addition to the TMDL, to inform the planning and development of the WRAS.⁴ • The WRAS is currently in draft form and is subject to further revision and modification.⁵
	Stakeholder Involvement	<p><i>Formal and informal collaborative; Advisory; Facilitated</i></p> <ul style="list-style-type: none"> • The MRG-AAG is comprised of stakeholders involved in the TMDL development process; meetings are held monthly. • In addition to the MRG-AAG, CSWCD also sought to solicit input from a variety of "underrepresented" community stakeholders. The facilitator attended meetings of neighborhood associations, development corporations, university students, humane societies and other groups to present the results of the Source Tracking Study and discuss implementation planning activities. Comments from these meetings were brought back to the MRG-AAG for consideration and incorporation into the draft WRAS.
	Characteristics of Plan	<p><i>Goals and objectives; Description of BMPs; Implementation strategies; Planning timeframe</i></p> <ul style="list-style-type: none"> • The final TMDL report provides, general descriptions of stormwater BMPs and cost estimates in addition to a list of stormwater management measures for FC that may be adopted by a stormwater management program under Phase II. It also describes NM's comprehensive surface water quality strategy and the Source Tracking Study. • The draft WRAS builds on the general discussion of stormwater BMPs in the TMDL and describes existing projects being utilized by local governments and water districts in the watershed. • In lieu of providing details on specific implementation projects, the draft WRAS establishes a three-phase implementation approach to be conducted over a 10-year span. The approach emphasizes activity in three areas - education and outreach, engineering and systems, and enforcement and regulation.⁶

³ Development of watershed restoration action strategies is a key element of the NMED's Watershed Protection Program (319 Program).

⁴ These are the *Middle Rio Grand Microbial Source Tracking Study* released in 2005 and the *Albuquerque Antibiotic Resistance Analysis of Contamination in Storm Water Final Report* released in 2002. The Source Tracking Study was proposed in the final TMDL report, completed in 2002.

⁵ This case study relied on information contained in the February 10, 2006 version of the draft Middle Rio Grande-Albuquerque Reach Watershed Restoration Action Strategy (WRAS). The most recent version of the WRAS is available at the CSWCD website: <http://www.ciudadswcd.org/WRAS3-23.pdf>.

⁶ Phase One (2006-2008) objectives focus on establishing public outreach programs, conducting additional research, establishing numerical targets for monitoring. Phase Two (2008-2011) objectives focus on developing public school curricula, coordinating data sharing and stormwater management across jurisdictions, and implementing select BMPs. Phase Three (2011-2016) objectives focus on evaluating performance milestones for previous phases and incorporating watershed improvement mechanisms into existing planning policies.

Nonpoint Source/Stormwater TMDL Case Summary

Middle Rio Grande

	Overall Satisfaction w/ Plan	N/A
	Knowledge of TMDLs/Watershed	<i>Influenced knowledge of implementation planning</i>
	Behavior/Action	N/A
	Suggestions	N/A
External Factors	Type of Pollutant	<p><i>Bacteria</i></p> <ul style="list-style-type: none"> • Current NPDES permit-holders and Phase II communities have raised concerns about the TMDL and proposed implementation strategies to achieve reductions in FC contamination. • Strategies identified in the TMDL for reducing FC levels in stormwater may not be cost-effective. These stakeholders argue that expensive structural BMPs required under NPDES permits are not capable of eliminating FCs from river water. • They also deem achievement of the more stringent Tribal FC standards established for the same segment of river to be impracticable (see Existing Organizational Structures/Programs, below). • NM's switch from an FC standard to E.Coli may have implications for the implementation of BMPs.
	Litigation or Consent Decree	N/A
	Degree of Impairment	N/A
	Existing Organizational Structure(s)/ Programs	<p><i>Existing external planning agenda; Existing 319/NPS and watershed conservation programs</i></p> <ul style="list-style-type: none"> • Historical and jurisdictional issues in the watershed have influenced stakeholder participation in the TMDL development and implementation planning processes. A number of federally recognized Tribes have reservation lands that span the watershed or border the river. A controversy erupted in the 1990s when local jurisdictions with NPDES permits filed suit against Tribes that had established water quality standards more stringent than Federal standards. Communication between Tribes and other impacted parties in the watershed broke down, leading to antipathy and mistrust. A Middle Rio Grand Water Quality Standards Work Group (WQSWG) was formed in 2001 to address gaps in knowledge impacting the development of standards and raise awareness of Tribal sovereignty. • The activities of the WQSWG helped to reestablish communication among the various interests and paved the way for future stakeholder collaboration during the development of the TMDL and WRAS. • The development of the WRAS constitutes an NPS implementation project under NM's Watershed Protection Program. This program provides Section 319 grant funding to support the formation of local watershed groups to develop and implement NPS management measures.

Appendix P

NOOKSACK RIVER, WASHINGTON, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River ¹

Background	EPA Region	Region X
	State	Washington
	Pollutant(s)	Fecal Coliform (FC)
	Year Listed/Approved	1996; 2000
	Impaired Designated Use(s)	Shellfish cultivation in Portage Bay; Class A waters
	Pollution Source Type	Dairy farms; Animal feeding operations (AFOs); On-site septic (OSS) systems; Publicly-owned Treatment Works (POTWs); Stormwater
Stakeholder Involvement - TMDL Development	Number and Representation of Stakeholders ²	<p><i>Extensive; Diverse - federal, state, local, and tribal governments, agriculture; polluters, impacted parties, local interests represented</i></p> <ul style="list-style-type: none"> • Watershed Restoration Unit, EPA Region X (EPA)* • Natural Resources Department (NRD), Lummi Indian Nation* • Nooksack Tribe* • Water Quality Program, WA Department of Ecology (Ecology)* • Bellingham Field Office, WA Department of Ecology (Ecology) • Office of Food Safety and Shellfish, WA Department of Health (DOH)* • WA State Department of Agriculture (WSDA)* - did not participate in the TMDL Technical Advisory Committee • Portage Bay Shellfish Protection District (PBSPD)³ * • Whatcom Conservation District (WCD)* • Natural Resources Conservation Service, USDA (NRCS) - did not participate in the TMDL Technical Advisory Committee • Whatcom County Health Department (WCHD) • Whatcom County Public Works (WCPW) • Whatcom County Planning and Development Services (WCPDS) • Whatcom Chapter, WA Dairy Federation* (WCDF) • Cities of Lynden, Everson, and Ferndale • Northwest Indian College* (NWIC) • Western Washington University (WWU)

¹ Key summary phrases/words for each section are included in italics.

² We define the term “stakeholder” more broadly to include any individual, group, or agency that has a personal, legal, economic, or institutional interest in the administration, implementation, or outcome of a process. Stakeholders marked with an "*" participated in an interview for this case study.

³ The Portage Bay Shellfish Protection District was formed in 1998 by Whatcom County in response to the downgrade and closure of the Lummi shellfish beds in Portage Bay by DOH two years prior. State law requires the establishment of these special districts within 180 days of a downgrade or closure of shellfish beds. Membership in the PBSPD Advisory and Implementation Committees is comprised of stakeholders identified by DOH with an interest in the development of the Shellfish Closure Response Plan, including the Lummi Nation, Ecology-Bellingham Field Office, WCDF, NWIC, WCD (facilitator), Whatcom County, and NRCS among others.

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River ¹

Stakeholder Involvement - TMDL Development	Leadership	<p><i>Top-down; State government; Promoted development of TMDL; Affected stakeholder buy-in during implementation phase</i></p> <ul style="list-style-type: none"> Ecology convened the TMDL development process and took the lead in all phases: 303(d) listing, overseeing data collection; modeling; coordination and facilitation of the technical advisory committee; public education; preparation of the TMDL evaluation and submittal reports; preparation of the Summary Implementation Strategy (SIS) and Detailed Implementation Plan (DIP). All the stakeholders commented positively on Ecology's effective leadership during the development of the TMDL. The Nooksack Tribe and Lummi Nation expressed frustration, however, that Ecology did not demonstrate more leadership during the implementation planning phase. Despite the legal requirement to develop a SIS/DIP for the TMDL, the Tribes had to exert pressure on Ecology to make it a priority and obtain support from other stakeholders.
	Deliberative Process	<p><i>Formal and informal collaboration; Advisory; Consensus-based process; Open communication</i></p> <ul style="list-style-type: none"> Ecology established a technical advisory committee (TAC) to provide input on both the TMDL evaluation report and the submittal report. The TAC was comprised primarily of stakeholders from the PBSPD. Ecology presented sampling data and modeling results to the TAC at monthly meetings. A major issue confronting the TAC was establishing a TMDL target for the lower river basin that would protect shellfish in Portage Bay. The Tribes and DOH favored use of the more conservative marine FC criterion while the WCDF and other stakeholders opposed it. Ecology conducted a Monte Carlo analysis that determined that the geometric mean count for Class A waters would not be adequate to protect shellfish. The modeling approach used by Ecology ultimately generated a target geometric mean that was acceptable to all stakeholders. Most stakeholders feel that Ecology was responsive to their comments and concerns and believe the deliberative process leading to the development of the TMDL submittal report was transparent and collaborative.
	Stakeholder Awareness and Participation	<p><i>Early involvement by stakeholders; Frequent and active participation in all phases of development; Full access to the draft and final TMDL; Performed various functions beyond advisory role</i></p> <ul style="list-style-type: none"> EPA participated in meetings of the TAC. It became involved with the TMDL partly in response to a petition submitted by the Lummi Nation to initiate inspections of dairy farms discharging waste to the Nooksack River following the downgrade and closure of the shellfish beds.⁴ WCD facilitated the development of the Shellfish Closure Response Plan prior to the formation of the TMDL TAC. The impacted parties and other stakeholders had already been invited to participate in the PBSPD so they were on-board when Ecology commenced with the development of the TMDL. Ecology first met informally with the Nooksack Tribe and Lummi Nation to obtain assistance with redesigning the sampling and quality assurance plan for the TMDL, then convened the TAC. Both Tribes, the DOH, and the NWIC assisted Ecology with the collection of sampling data. Additional watershed data were obtained from the U.S. Geological Survey, WWU, and the WCD.

⁴EPA's inspections ultimately led to the passage of the state Dairy Nutrient Management Act (DNMA) and the implementation of a dairy inspection and enforcement program by Ecology in accordance with the Act.

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River ¹

Stakeholder Involvement - TMDL Development	Overall Satisfaction w/ TMDL	<p><i>Varied satisfaction with the TMDL and load allocations</i></p> <ul style="list-style-type: none"> In general, the state agencies and Tribes expressed satisfaction with the final TMDL and the belief that the load allocations will ultimately achieve water quality targets. Ecology, although satisfied with the TMDL indicated that in hindsight it would have done some things differently. The Lummi Nation wanted a much larger margin of safety but was "willing to live with" the value chosen; expressed satisfaction with the final TMDL despite its imperfections. WCDF was not satisfied with the TMDL, in particular the targets and the load allocations established for dairy farms. WCDF is of the opinion that the allocations of zero established for dairy farms are unacceptable and unapproachable given the probability of accidents and malfunctions; however, it set its reservations aside during the TMDL development process and agreed to a compromise.
	Knowledge of TMDLs/Watershed	<p><i>Process generated valuable data; Influenced knowledge about water quality in watershed; Influenced knowledge of TMDLs;</i></p> <ul style="list-style-type: none"> State agencies' knowledge and understanding of bacterial contamination and water quality in the watershed was "profoundly influenced by the TMDL"; EPA noted gains in understanding of the watershed function and loading from a scientific perspective; monitoring and modeling provided a means of quantifying the targets that they initially anticipated were needed. WCDF also gained a better understanding of water quality in the watershed as well as the importance of comprehensive and frequent monitoring given the fluctuations in FC concentrations. The Tribes, NWIC, and the WCD already had extensive knowledge about the watershed but gained insight into the TMDL process and the challenges associated with developing and implementing a TMDL within a very large, complex watershed. The process raised the profile of Tribal concerns among stakeholders.
	Behavior/Action	<p><i>Used to broker funding; Influenced agency emphasis and decisions; Influenced dialogue with and behavior of polluters</i></p> <ul style="list-style-type: none"> EPA, Ecology, the WCD, and the WCDF indicated that the water quality and source data generated as part of the TMDL were influential in helping to build relationships with dairy farmers and convince them to change their practices and comply with the DNMA. The TMDL prompted the DOH to become more active in making the case for setting targets below the Class A waters criteria to protect shellfish beds. Implementation of the TMDL does not directly involve the Lummi Nation, however, the Tribe has worked to keep the TMDL "on the radar screen" in order to secure funding for follow-up monitoring efforts being conducted upstream from the reservation.. EPA is promoting the collaborative approach that worked so well for the Nooksack TMDL.
	Suggestions	<p><i>Focus on urban sources; Streamline process to solicit stakeholder input earlier; Emphasize collaborative approach</i></p> <ul style="list-style-type: none"> Most of the stakeholders indicated that they would not change the way the TMDL was developed., however, there were a few suggestions.: Ecology acknowledges the need to focus more on the impacts from urban nonpoint sources, e.g., stormwater, which have not been well characterized. The Lummi Nation recommends soliciting stakeholder involvement earlier in the process. The Tribes had requested the opportunity to participate at the formative stages of developing the TMDL but were not invited to participate until sampling had already begun. The Nooksack Tribe notes that early use of data collected by Tribes and third parties can help streamline the process.

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River

Implementation Planning Process	Process for Plan Development	<p><i>Plan completed after TMDL; Legal requirement; Set timeframe and required elements; Existing external planning agenda and activities</i></p> <ul style="list-style-type: none"> • Preparation of a SIS/DIP is specified in the MOA between EPA and Ecology. The MOA establishes the timeframe in which Ecology is required to complete DIPs as well as the specific elements that DIPs must include. • The TMDL submittal report included a SIS. Ecology anticipated being able to complete the DIP one year after the TMDL was submitted to EPA; the actual timeframe was 18 months. • The Shellfish Closure Response Plan developed by the PBSPD comprised the core of the SIS and the DIP; Ecology refined the strategy with the addition of schedules and performance measures for the implementation activities specified. • The Tribes felt that competing priorities at Ecology diverted attention away from the implementation planning process and completion of the DIP.
	Stakeholder Involvement	<p><i>Informal collaborative; Advisory; Reduced activity level</i></p> <ul style="list-style-type: none"> • Stakeholders who participated in the TMDL TAC also participated in the development of the DIP, although to a lesser degree. • The Tribes and the NWIC collaborated more directly with Ecology on the details of the DIP; other stakeholders reviewed and provided comment on the final draft. • Momentum slowed as the frequency of TAC meetings decreased (monthly to quarterly) and stakeholders began to experience fatigue and waning interest with the process; both a contributing factor to and result of the protracted timeframe.
	Characteristics of Plan	<p><i>Existing external activities; Inspection and enforcement, Follow-up monitoring; Performance evaluation; Responsible parties; Funding and budget</i></p> <ul style="list-style-type: none"> • The DIP includes the following elements: detailed descriptions of pollution sources; names of organizations responsible for pollution reductions; activities to be performed by responsible parties; available funding; implementation timetables; an ongoing monitoring plan; performance measures; and a description of the adaptive management approach developed to evaluate outcomes and direct future activities.⁵ • The DIP incorporates watershed protection initiatives and funding sources established independently of the TMDL.⁶

⁵ The adaptive approach described in the DIP is an iterative process that evaluates progress made toward meeting water quality targets and implementation goals on a quarterly basis. Outcomes in these two areas inform the subsequent scheduling, pace, and scope of implementation.

⁶ These include the NPDES General Permit for Dairies, enforcement of the Dairy Nutrient Management Act, enforcement of the Critical Areas and Manure Management Ordinances by WCPDSS, ongoing management of the OSS program by WCHD, revision of municipal stormwater plans per the recommendations of the Puget Sound Action Team, and ongoing technical assistance and educational programs conducted by the WCD and NRCS. Funding assistance for implementation has been provided by Ecology (Section 319 funds, Centennial Clean Water Fund, and State Revolving Loan Fund), EPA, NRCS, Whatcom County, WCD, WA State University Cooperative Extension.

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River

Implementation Planning Process	Overall Satisfaction w/ Plan	<p><i>Satisfaction with plan varies; Uneven progress; Limited funding; Influenced by external events</i></p> <ul style="list-style-type: none"> • With a few exceptions, most stakeholders are satisfied with the collaborative process leading to the development of the DIP and the plan's components. Most believe the activities specified in the plan, if implemented, will achieve water quality targets. • The Tribes, while satisfied with the DIP, believe the process should have been assigned a higher priority and completed sooner. • Ecology expressed frustration that the DIP does not have "teeth" and has not been executed well, despite early reductions achieved. • By 2002, interim targets were being met. In 2003, however, the state legislature transferred inspection and enforcement authority under the DNMA from Ecology to WSDA resulting in a reduction in inspections of dairy farms and referrals for technical assistance.⁷ • Apart from the legal requirements imposed by the NPDES program, the DNMA, and local ordinances, the DIP itself has no binding authority. • Responsible parties have not been meeting performance goals and funding designated for comprehensive monitoring is lapsing. Ecology attempted to reconvene the advisory group to revise the plan and implementation schedule but there was a lack of commitment on the part of the stakeholders.
	Knowledge of TMDLs/Watershed	<p><i>No influence on knowledge</i></p> <ul style="list-style-type: none"> • Parties to the development to the DIP did not perceive a change in their knowledge resulting from the planning process.
	Behavior/Action	<p><i>Influenced scope, duration, and funding of monitoring; Did not influence implementation activities</i></p> <ul style="list-style-type: none"> • The DIP has not influenced the implementation of source control measures conducted independently of the TMDL as a function of existing agency initiatives and on-going responsibilities.⁸ • The DIP specifies ambient monitoring to be conducted by NWIC at an expanded number of stations. Grant funds leveraged by the TMDL will support expanded monitoring for another 12-18 months.
	Suggestions	<p><i>Expedite implementation planning; Secure adequate funding; Establish authority</i></p> <ul style="list-style-type: none"> • Both Tribes want to see a higher priority given to the TMDL implementation planning process. The Nooksack Tribe recommends assigning the responsibility for the completion of the DIP to a single person; the Lummi Nation wants EPA to assume a greater role in promoting and funding implementation. • The WCD and NWIC have concerns about how the DIP can be carried out without adequate funds to sustain monitoring and implementation activities over time. The simple act of naming implementing agencies in the DIP work plan does not guarantee unlimited agency funding. • Ecology requires more authority to effect compliance with the DIP.

⁷ WSDA took over responsibility for dairy inspections from Ecology in 2003 after the state legislature cut Ecology's budget. Prior to the transfer, WSDA had not been a party to the development or implementation of the TMDL. Initially, WSDA assigned only a part-time inspector to the program. TMDL stakeholders attribute the rise in FC levels and repeat closure of shellfish beds in Portage Bay to a reduction in inspections and referrals that immediately followed the transfer. WSDA now employs the equivalent of one, full-time inspector; however, given its historical relationship with agriculture, WSDA is finding it difficult to balance its new regulatory function with industry promotion. Under the WSDA, the inspection program has become more technically oriented toward changing management processes with an emphasis on education and training.

⁸ These measures include NPDES permit requirements for AFOs and POTWs, enforcement of the DNMA provisions, enforcement of local ordinances, and BMPs promoted through existing federal, state, and local conservation, health, and public works programs.

Nonpoint Source/Stormwater TMDL Case Summary

Nooksack River

External Factors	Type of Pollutant	<p><i>Bacteria</i></p> <ul style="list-style-type: none"> Ecology was not very knowledgeable about the relationship between FC contamination and water quality degradation in Portage Bay prior to the TMDL. The agency developed a statistical modeling approach using Monte Carlo analysis to more accurately determine FC targets that would go beyond the Class A waters standard to achieve protection for the shellfish beds. More data on FC contamination from other sources that have not been well characterized, including urban stormwater and non-dairy runoff (e.g., hobby farms and wildlife), will be needed once compliance with the DNMA is achieved.
	Litigation or Consent Decree	<p><i>Tribal petition and Memorandum of Agreement</i></p> <ul style="list-style-type: none"> The petition submitted in 1996 by the Lummi Nation requesting EPA to carry out inspections of dairy farms in the Nooksack Basin influenced the TMDL development and implementation planning process. The involvement of EPA spurred the passage of the DNMA in 1998 and the subsequent implementation of a new dairy inspection program by Ecology. Inspections conducted first by EPA and then by Ecology prompted the dairy farmers and other stakeholders to participate in the development of the TMDL as well as the PBSPD; enforcement of the DNMA is an essential component of the DIP. A Memorandum of Agreement (MOA) signed by Ecology and EPA in 1997 established the schedule under which TMDLs would be developed as well as requirements guiding the preparation and composition of DIPs.⁹
	Degree of Impairment	<p><i>High degree of impairment; Influenced TMDL development and implementation plan</i></p> <ul style="list-style-type: none"> The high degree of impairment led to the downgrade and eventual closure of the Portage Bay shellfish beds and the establishment of the PBSPD. The activities of the PBSPD dovetailed with the TMDL process, influencing the composition, buy-in, and activity level of stakeholders on the TAC; the availability of watershed data used in the TMDL assessment; the modeling approach used to establish water quality targets and load allocations; and the composition of the DIP. The shellfish bed closure also indirectly influenced the passage of the DNMA and the incorporation of its requirements into the DIP.
	Existing Organizational Structure(s)/ Programs	<p><i>Existing water quality planning agenda ; Existing compliance and enforcement program</i></p> <ul style="list-style-type: none"> As mentioned previously, the TMDL development and implementation planning processes dovetailed with and were influenced by two events precipitated by the downgrade and closure in 1996 of the Lummi shellfish beds in Portage Bay: the establishment of the PBSPD and the enactment and enforcement of the DNMA.

⁹ The Memorandum of Agreement Between the United States Protection Agency and the Washington State Department of Ecology Regarding the Implementation of Section 303(d) of the Federal Clean Water Act (October 29, 1997) is located at: <http://www.ecy.wa.gov/programs/wq/tmdl/303moa12.pdf>.

Appendix Q

TURKEY CREEK, KANSAS, CASE STUDY

Nonpoint Source/Stormwater TMDL Case Summary

Turkey Creek ¹

Background	EPA Region	Region V
	State	Kansas
	Pollutant(s)	Fecal Coliform (FC) ²
	Year Listed/Approved	1998; 2002
	Impaired Designated Use(s)	Secondary Contact Recreation
	Pollution Source Type	Unpermitted livestock operations; Rural homesteads and farmsteads
Stakeholder Involvement - TMDL Development	Number and Representation of Stakeholders	<i>Limited; Homogenous - mainly state government agencies</i> <ul style="list-style-type: none"> • Kansas Department of Health and Environment (KDHE), Bureau of Water, Watershed Planning Section • KDHE, Bureau of Water, Watershed Management Section (319 Program) • Kansas Water Office (KWO)³ • State Conservation Commission (SCC) • Neosho Basin Advisory Committee (NBAC) – comprised of representatives from various water interests and "at large" members within the Neosho River Basin⁴ • Woodson County Conservation District (WCCD) – interviewed but not a participant in process
	Leadership	<i>Top-down; State government</i> <ul style="list-style-type: none"> • The KDHE Bureau of Water convened the TMDL development process. • KDHE conducted all phases of TMDL development: 303(d) listing, all monitoring and assessments, data analysis, and TMDL submittal report preparation.

¹ Key summary phrases/words for each section are included in italics.

² KDHE simultaneously listed and developed the FC TMDL and a Dissolved Oxygen (DO) TMDL for Turkey Creek; however, KDHE only prioritized the DO TMDL for implementation. We reference the DO TMDL in this summary to help provide context for discussing the existing state water planning processes utilized for implementing higher priority TMDLs.

³ The Kansas Water Office coordinates the state water planning process and develops the Kansas Water Plan, which is revised and approved annually by the Kansas Water Authority (KWA), the regulatory body established within the KWO. The KWA is responsible for advising the Governor, the Legislature, and the Director of the KWO on water policy issues and approving administrative regulations and legislation proposed by the KWO. It is comprised of government appointees and representatives from water user categories, conservation agencies, watershed districts, and the general public. (For more details on the state water planning process, see the KWO website, <http://www.kwo.org>.)

⁴ Basin Advisory Committees serve as a link between the KWO, the KWA, and the public. Similar in composition to the KWA, each BAC consists of an 11-member committee representing each of the following six water user categories: domestic; municipal; other public water supplier; industrial; irrigation; and recreation, fish and wildlife; and five "at large" members selected according to user category, geographic distribution and other criteria at the discretion of the BAC (KWO). More information on BACs is available at the KWO website: http://www.kwo.org/BACs/Basin_Advisory_Committees.htm.

Nonpoint Source/Stormwater TMDL Case Summary

Turkey Creek ¹

Stakeholder Involvement - TMDL Development	Deliberative Process	<p><i>Formal, advisory process; Minimally collaborative; Existing external water quality planning agenda</i></p> <ul style="list-style-type: none"> • As part of the state water planning process, KWO facilitated the presentation of the Turkey Creek TMDLs before the NBAC. • KDHE presented the draft TMDLs at three NBAC meetings; discussed the data substantiating the impairment and the basis for designating the FC and DO TMDLs and “Medium” and “High” Priority, respectively. • NBAC reviewed the TMDLs and ultimately endorsed the “High Priority” implementation status recommended for the DO TMDL and the “Medium Priority” implementation status recommended for the FC TMDL (requiring no implementation).⁵ • Two additional public hearings were held.
	Stakeholder Awareness and Participation	<p><i>Advisory role; Limited access to draft TMDL; Limited frequency and degree of participation during development</i></p> <ul style="list-style-type: none"> • The NBAC membership does not currently include local representative from the counties in the Turkey Creek watershed.⁶ Other local stakeholders, e.g., the WCCD did not participate in BAC meetings or have an opportunity to review copies of the draft Turkey Creek TMDLs outside of the public comment period. It did not have knowledge of the TMDLs until the SCC sent them a map of the watershed with impaired segments delineated. • The NBAC is also responsible for addressing other water concerns in the Neosho Basin in addition to TMDLs; the NBAC attempts to establish priorities for implementation among TMDLs and these other concerns as reflected in the Neosho Basin section of the Kansas Water Plan. The NBAC generally does not offer commentary on the load allocations and other technical components of the TMDL.
	Overall Satisfaction w/ TMDL	<p><i>Varied satisfaction with TMDL</i></p> <ul style="list-style-type: none"> • KDHE expressed satisfaction with the TMDL to the extent that it met the requirements of the consent decree, was not challenged on its technical aspects, and will yield results.⁷ • The NBAC believes that the TMDL process has done as well as expected with limited resources; takes input from stakeholders and tries to balance level of impairment with competing priorities. • The WCCD does not believe that TMDL adequately linked impairment to agricultural sources in Woodson County.
	Knowledge of TMDLs/Watershed	<p><i>Process influenced expectations; No increase in knowledge</i></p> <ul style="list-style-type: none"> • KDHE noted that the process was lacking as a means for building knowledge on the linkages between impairment and nonpoint pollution sources; the timeframe established under the consent decree did not provide an opportunity to generate sufficient data. • The process heightened expectations among the NBAC members for what comes next, i.e., results and measures of performance.

⁵ TMDLs designated as “High Priority” have been incorporated into the basin sections of the Kansas Water Plan and have been scheduled for implementation during 2003 – 2007. Implementation status of “Medium Priority” TMDLs will be reevaluated by the BACs starting in 2008 upon consideration of additional water quality data gathered through 2007. Impaired segments for TMDLs designated as “Low Priority” will continue to be monitored and will have their impaired status reevaluated for inclusion on the 2006 303(d) list. (Obtained from the KDHE website: <http://www.kdheks.gov/tmdl/nevewaprior.htm>.)

⁶ A list of NBAC members is located at KWO website: http://www.kwo.org/BACs/NEO/Tbl_NEO_Member_Web_kf.pdf.

⁷ As a “Medium Priority”, however, the FC TMDL will not be reconsidered for implementation until 2008.

Nonpoint Source/Stormwater TMDL Case Summary

Turkey Creek ¹

Stakeholder Involvement - TMDL Development	Behavior/Action	<p><i>Used to set priorities; Used to target resources; Influenced approach for developing subsequent TMDLs</i></p> <ul style="list-style-type: none"> • Agreement among agency participants that the TMDL development process in Kansas has helped them to establish priorities for their agency work, e.g., target 319 and cost-share funding for TMDL-related BMPs. • For KDHE’s Watershed Planning Section, the engagement with the NBAC has helped them to make decisions about what constitutes significant impairment with regard to FC contamination; the process has helped to delist waterbodies that are not designated as “High Priority”. It has led them toward a water quality improvement strategy. • For KDHE’s Watershed Management Section (319 Program), TMDLs have created a sense of urgency and have provided specific numerical targets that are “scientifically documentable.” They have also increased the program’s ability to target and grow funds for implementation activities. • KWO recently initiated a public-private watershed restoration and protection initiative that sets local watershed priorities and builds watershed plans from the ground up; may eventually dovetail with the TMDL development process. KDHE’s Watershed Management Section is taking the lead on developing in a watershed restoration and protection strategy, or WRAPS, for the Upper Neosho River Basin, which includes Turkey Creek and will address all the pollutants for which impairments have been documented in the TMDLs.⁸
	Suggestions	<p><i>More direct stakeholder involvement; Conduct more in-depth data gathering and analysis</i></p> <ul style="list-style-type: none"> • KDHE wants to develop TMDLs with more in-depth analysis of source loading and linkages, relying more on stakeholders to decide priorities and set numeric targets. • WCCD has concerns that the 303(d) listing and TMDL do not reflect accurate monitoring data. Recommends that impairments be based on comprehensive monitoring.

⁸ Through the WRAPS process, local stakeholders identify watershed concerns, set watershed goals (which may include water quality protection along with restoration of impairments), establish an action plan, and secure targeted funding and technical assistance to implement specified actions (WRAPS brochure, date?). Given the emphasis of WRAPS on implementation, it is not certain if TMDLs would be developed as a function of assessing watershed conditions or whether developed TMDLs would be used by stakeholders to inform the goal-setting process.

Nonpoint Source/Stormwater TMDL Case Summary

Turkey Creek

Implementation Planning Process	Process for Plan Development	<p><i>"Medium Priority" implementation status; No plan developed; Implementation deferred</i></p> <ul style="list-style-type: none"> TMDLs for FC and DO impairments in Turkey Creek were developed and presented to the NBAC simultaneously, however, only the DO TMDL was recommended as a "High Priority" for implementation and inclusion in the Neosho Basin section of the Kansas Water Plan; no implementation plan was developed for the FC TMDL. KDHE did prepare a plan for the DO TMDL concurrently with the development of the TMDL itself; KDHE anticipates that many of the implementation activities proposed will also indirectly address FC nonpoint source pollution.
	Stakeholder Involvement	N/A
	Characteristics of Plan	N/A
	Overall Satisfaction w/ Plan	N/A
	Knowledge of TMDLs/Watershed	N/A
	Behavior/Action	N/A
	Suggestions	N/A
External Factors	Type of Pollutant	<p><i>Bacteria</i></p> <ul style="list-style-type: none"> Only two out of 22 samples showed FC levels higher than standard. The FC standard in place at the time the TMDL was developed was based on single sample measurements. KS now bases the standard on the geographic mean for E. Coli, in accordance with national guidance. KDHE expects that this will increase data collection requirements. Data collected under new standard may result in more frequent detection of bacteria in Turkey Creek and may influence subsequent designation of impairment and implementation priority recommendations.
	Litigation or Consent Decree	<p><i>Consent decree established timetable and schedule for development and approval</i></p> <ul style="list-style-type: none"> Under the terms of the consent decree, KDHE had a year to develop all the TMDLs in the Neosho Basin, including Turkey Creek. Time constraints influenced the integration of TMDL development process into the KS Water Planning Process headed by the KWA and administered by the KWO. Time constraints also curtailed data collection and analysis.
	Degree of Impairment	<p><i>Low degree of impairment; Influenced implementation</i></p> <ul style="list-style-type: none"> Data indicating a low level of impairment let KDHE to recommend the TMDL be designated a "Medium Priority" for implementation. KDHE will conduct additional monitoring for bacteria in Turkey Creek through 2007, which may show an increase in impairment. Changes in the water quality standard for bacteria (from FC to E. Coli) may also provide evidence of more significant impairment.
	Existing Organizational Structure(s)/ Programs	<p><i>Existing water quality planning agenda; Existing 319/NPS and watershed conservation programs; Not focused exclusively on TMDLs</i></p> <ul style="list-style-type: none"> TMDL development in KS has been integrated into the state's water planning process under supervision of the KS Water Authority. Approved, "High Priority" TMDLs are incorporated into specific Basin Plan TMDL subsections within the KS Water Plan. Implementation planning and NPS implementation strategies for high priority TMDLs are carried out by the KDHE Watershed Planning and Watershed Management Sections, respectively; SCC designates funding for BMPs in response to high priority TMDLs.