

APPENDIX 12

SEM-04-005: Coal Fired Power Plants

Filed January 18, 2005 in response to Secretariat's Determination of December 16, 2004.

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A. Summary of Response to Secretariat's Determination

In their original submission the Waterkeeper Alliance and Sierra Legal Defence Fund, on behalf of the submitting organizations, alleged a wide-scale, systemic breakdown in the U.S. government's statutory and regulatory mandate to address mercury emissions from coal-fired power plants as a non-point source of pollution under the CWA. The very nature of the allegations - that the U.S. government is failing to enforce its environmental laws with respect to mercury emissions from coal-fired power plants across all of the country's almost 1,100 utility units and impacting virtually every waterway in North America - makes it highly impracticable to cite and provide documentary evidence of every alleged violation of the CWA with respect to every facility. We have, however, provided detailed information relating to the coal-fired plants in ten specific states, which we submit as exemplary of the widespread and systemic problem that is being asserted.

The ten states we have targeted in our research represent almost 60% of the mercury emissions from coal-fired power plants.¹ These states include the Ohio Valley States, which we have chosen based on their proximity to Canada² and the prominence of their emissions, along with the other three top mercury emitters. Thus, we have chosen nine of the very worst polluters in the top ten plus Michigan, which ranks at number 13³ but is one of the Ohio Valley States. We focus on these ten states as exemplary or demonstrative of the larger problem of non-enforcement across the U.S.

The ten states are:

1. Alabama
2. Illinois
3. Indiana
4. Kentucky
5. Michigan
6. North Carolina
7. Ohio
8. Pennsylvania
9. Texas

¹ *Toxic Release Inventory (TRI)* data shows 57.2% for 2001 and 56.1% for 2002 for the coal-fired power plants from these ten states.

² A total of 38% of all mercury deposition in the heavily populated Great Lakes area of Canada originates from U.S. sources while 10% of such deposition across Canada as a whole comes from U.S. sources. Transboundary migration of mercury and other pollutants from U.S. coal-fired power plants to Canada negatively affects both the quality of Canada's natural environment and the health of Canadians. (Source: Environment Canada. *Submission to the EPA on Proposed National Emission Standards for Hazardous Air Pollutants etc.* March 30, 2004. See the EC website at <http://www.ec.gc.ca/mercury/en/mcepa.cfm>)

³ Michigan is the 13th largest emitter of mercury air emissions from electric utilities. Missouri ranked 10th at 3,084 lbs, followed by Georgia at 2,749 lbs and Wisconsin at 2,615 lbs.

10. West Virginia.

We generally list these states in alphabetical order, for ease in reference, as opposed to a ranking based on emissions.

Table 1: 2001 TRI⁴ Mercury and Mercury Compounds Emissions (in lbs.) to Air

State	Emissions of Hg and Hg Compounds ⁵ to Air from Electric Utilities	Emissions of Hg and Hg Compounds to Air from Other Sources	Total Emissions of Hg and Hg Compounds to Air	Emissions of Hg and Hg Compounds to Air from Electric Utilities as Percentage of State Total
Alabama	3,880	2,023	5,903	66
Illinois	4,012	1,969	5,981	67
Indiana	5,724	1,439	7,163	80
Kentucky	3,796	1,460	5,256	72
Michigan	2,736	1,144	3,880	71
North Carolina	2,956	1,208	4,164	71
Ohio	8,047	3,653	11,700	69
Pennsylvania	6,911	1,703	8,614	80
Texas	8,992	5,692	14,684	61
West Virginia	4,793	1,486	6,279	76
Total	51,847	21,777	73,624	70

Total U.S. mercury emissions from coal-fired plants are 90,692 pounds. Total U.S. mercury emissions to air are 150,212 pounds. These ten states represent 34% of total mercury emissions from all sources in the U.S. in 2001.

Table 1A: 2002 TRI Mercury and Mercury Compounds Emissions (in lbs.) to Air

State	Emissions of Hg and Hg Compounds to Air from Electric Utilities	Emissions of Hg and Hg Compounds to Air from Other Sources	Total Emissions of Hg and Hg Compounds to Air	Emissions of Hg and Hg Compounds to Air from Electric Utilities as Percentage of State Total
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⁴ Toxic Release Inventory (See <http://www.epa.gov/tri/>)

⁵ We recognise that preparing and comparing emissions data is sometimes challenging given that different record keepers use different elements of the data. For instance, some sources list only mercury discharges while other include "mercury and mercury compounds." Throughout our work we have made every possible effort within the 30-day extension to prepare this detailed information to carefully check our data, while acknowledging that inadvertent errors may have occurred.

Alabama	3,931	2,065	5,996	66
Illinois	4,318	1,366	5,684	76
Indiana	4,927	2,751	7,678	64
Kentucky	3,540	186	3,726	95
Michigan	2,589	787	3,376	77
North Carolina	3,434	1,321	4,755	72
Ohio	7,358	3,495	10,853	68
Pennsylvania	7,002	2,235	9,237	76
Texas	9,815	5,929	15,744	62
West Virginia	3,680	1,416	5,096	72
Total	50,594	21,551	72,145	70

Total US mercury emissions to air in 2002 from electric utilities amounted to 90,246 pounds. Total mercury emissions from all sources totalled 143,609 pounds. Thus the ten states represented 35% of the total U.S. emissions in 2002.

Table 2: 2001 TRI Mercury and Mercury Compounds Discharges (in lbs.) to Water

State	Discharges of Hg and Hg Compounds to Water from Electric Utilities	Discharges of Hg and Hg Compounds to Water from Other Sources	Total Discharges of Hg and Hg Compounds to Water	Discharges of Hg and Hg Compounds to Water from Electric Utilities as Percentage of State Total
Alabama	28	25	53	53
Illinois	5	11	16	31
Indiana	5	117	122	4
Kentucky	81	22	103	79
Michigan	19	4	23	83
North Carolina	14	5	19	74
Ohio	13	554	567	2
Pennsylvania	61	7	68	90
Texas	3	48	51	6
West Virginia	5	160	165	3

Table 2A: 2002 TRI Mercury and Mercury Compounds Emissions (in lbs.) to Water

State	Discharges of Hg and Hg Compounds to Water from Electric Utilities	Discharges of Hg and Hg Compounds to Water from Other Sources	Total Discharges of Hg and Hg Compounds to Water	Discharges of Hg and Hg Compounds to Water from Electric Utilities as Percentage of State Total
Alabama	2	34	36	6
Illinois	9	33	42	21
Indiana	2	115	117	2
Kentucky	65	13	78	83
Michigan	19	0	19	100
North Carolina	14	8	22	64
Ohio	8	9	17	47
Pennsylvania	65	6	71	92
Texas	14	38	52	27
West Virginia	5	35	40	13

In our original submission we provided a detailed analysis of the strong U.S. legislative scheme to protect U.S. water resources. Although individual states have a key role in developing standards to protect these waters and to take remedial action in the case of impairment, the U.S. EPA retains ultimate oversight power. In part, our petition asserted that the widespread mercury degradation of these waters --- despite the strong environmental laws --- in itself called for a response from the U.S. We supported our allegation with evidence about the U.S. water protection legal structure, widespread water impairment, the increasing nature of impairment, and the sources of mercury emissions.

In this response to the Secretariat's determination we provide additional and more detailed evidence to support our allegations.

For each of these states we provide:

- Details and analysis of available private remedies;
- Statistical data of direct discharges to water from coal-fired power plants;
- Charts which correlate designated uses of state waterways with mercury fish consumption advisories (FCA's);
- A list of the largest mercury emitting power plants in each state;
- A complete list of mercury-based FCA's from each of the ten mercury polluting states in the U.S.;
- An updated list of state-wide FCAs;

- A copy of each state's water quality standards, including its antidegradation policy and, where available, a list of designated uses of each waterway in the state and tier protection designations;
- A detailed review and analysis of state TMDL actions, including CWA § 303(d) mercury impaired waterways and preparation of TMDLs for mercury impaired waters.
- Press reports on EPA neglect in properly dealing with mercury emissions under the CAA to provide a context for the current allegations;

In addition, we have appended two *Clean Air Act (CAA) Title V permits*⁶ for coal-fired power plants currently operating in the U.S. These permits, which are issued under the CAA by the EPA or individual states (in the case of EPA-delegation), are purportedly designed to address harmful air emissions from utility units and are **typical** of those issued for coal burning facilities across the country. Neither permit places any restrictions on mercury emissions, nor does either permit make any mention of water quality standards or antidegradation. Submitters offer these permits as examples of standard CAA Title V permits.⁷ The failure to control mercury emissions under such permits is consistent with the EPA's recent statement that, "EPA is committed to **regulating and reducing power plant mercury emissions for the first time ever.**" (our emphasis)⁸

Submitters are unable to append CWA permits for each of these 480 facilities; however, we assert that the EPA has repeatedly acknowledged that CAA permits approved by EPA do not address mercury emissions from nonpoint sources such as air stacks from coal-fired power plants.⁹

⁶ See Appendix 12C.

⁷ Submitters are unable to append CAA permits for all 480 facilities in the U.S. In fact, we obtained these permits somewhat by chance. Generally, such permits must be obtained through freedom of information requests that would take more than 30 days to see fulfilled. When these permits are opened for public comment they are, however, posted on publicly accessible websites. It was during such an opportunity that we obtained copies of these permits.

We assert upon information and belief, that none of the permits issued to these facilities in the states cited above seek to control mercury emissions or address water quality standards and, therefore, fail to comply with applicable nonpoint source controls and antidegradation requirements under the CWA. This assertion is corroborated by the EPA's statement that coal-fired plants are not regulated for mercury emissions. See: <http://www.epa.gov/mercury/>

⁸ Source: EPA's mercury homepage at <http://www.epa.gov/mercury/> We recognize that some states, for instance, Maine, Massachusetts, New Jersey, and Connecticut have publicly committed to targeting emissions from coal-fired plants in the near future by state legislation. We have not reviewed the exact mechanism by which such action will take place although it appears that some technology-based controls may be imposed. Such state initiatives do not contradict our assertion of a failure of proper EPA enforcement based on its oversight authority. (Such technology based standards or BACT are considered comparable to BMPs under the CWA.) Isolated state action (often states that are not heavy emitters) does not diminish our argument of the EPA failure to enforce.

⁹ This point is implicit in the EPA statement that "On December 15, 2003, EPA signed its **first ever proposal** to substantially cut mercury emissions from coal-fired power plants." Source: <http://www.epa.gov/air/mercuryrule/basic.htm>

In some cases, the difficulty of providing further evidence of direct inaction by the US EPA is inherent in the problem of proving a negative. In other words, how does one prove that an agency did **not** do something? We know that the fact of weak controls on emissions of mercury from coal-fired power plants inevitably leads to degraded water. The main problem is not, however, the failure of the WQS but rather the controls on emissions that should allow a state to meet its standards.

We believe that the sum of the evidence presented creates, at the very least, a *prima facie* case that calls for an answer from the U.S. --- an answer that the EPA is in the best position to easily provide. If our assertion that Title V permits contain control mechanisms is incorrect, it would be easy for the EPA to provide refuting evidence in its response.

Table 3: State-wide FCAs in area of inquiry¹⁰

State	Mercury Point Source Air Emissions from Electric Utilities (lbs) ¹¹	Statewide Mercury FCAs for Lakes (07/2004) ¹²	Statewide Mercury FCAs for Rivers (07/2004)	Other Mercury FCAs (07/ 2004) ¹³
Texas	9,815 ¹⁴	No	No	13
Ohio	7,358	Yes	Yes	61
Pennsylvania	7,002	Yes	Yes	76
Indiana	4,927	No	Yes	171
Illinois	4,318	Yes	Yes	9
Alabama	3,931	No	No	17
W. Virginia	3,680	No	No	1
Kentucky	3,540	Yes	Yes	5
North Carolina	3,434	No	No	2
Michigan	2,589	Yes	No	92
Total	50,594 lbs			

¹⁰ This table updates Table 3 in our original petition and adds additional information for the ten states studied for this supplemental submission.

¹¹ United States, EPA TRI Explorer 2002 Data. See: <http://www.epa.gov/triexplorer/geography.htm>

¹² Data for columns 2-4 from EPA, National Listing of Fish and Wildlife Advisories Database, July 2004 (<http://134.67.99.49>)

¹³ This category includes state-wide advisories for coastal areas: Texas, Alabama and North Carolina.

¹⁴ Mercury emissions from Ontario's coal-fired power plants, which produce about 23% of the province's electric power supply, was:

2001: 581 kg (1281 lbs)

2002: 527 kg (1162 lbs)

Source: *National Pollutant Release Inventory* of Environment Canada In 2002, The Sierra Legal Defence Fund asked the provincial Ministry of Environment to investigate these emissions, alleging they violated the federal Fisheries Act. The Ministry declined citing the difficulty in proving conclusively in court the discharge of particular emissions to a particular water body. The Waterkeeper Alliance and others also unsuccessfully pursued a petition to the CEC for these emissions. Nonetheless, as a result of citizen action, the provincial government has committed to close all of the province's coal-fired power plants by 2007.

Note: A "state-wide" advisory covers all state waters; either all freshwater lakes and/or rivers or all estuarine/marine waters, or all state lands.

As noted in our covering letter, we ask that the period of our petition be expanded from 1993-2003 to 1993-December 31, 2004 so that the additional evidence uncovered in our inquiries pursuant to the Secretariat's Determination together with evidence not available at the time of our submission can be included.

We also suggest, although not as a primary piece of evidence of non-enforcement, that the conduct of the EPA towards the coal-fired power industry as demonstrated by its handling of the mercury rule-making process can properly be considered to give a factual context to the allegation of the EPA's failure to effectively enforce the CWA. In this regard, we note that it is well established that U.S. waters are impaired by mercury. Much of this mercury contamination is from airborne deposition, sometimes estimated to be as much as 99%.¹⁵ US coal-fired plants are the dominant source of this airborne contamination. The EPA was charged by Congress with creating a rule to deal with these emissions over a decade ago. The EPA delayed implementing this rule, according to many commentators because of its close relationship with the power industry¹⁶ --- until ordered by the courts to act.¹⁷ Thus, although the first line of defence against water impairment is state action, such action is partly rendered ineffective without federal action to deal with airborne pollution. A state may conceivably consider it futile to address the problem of its own coal-fired power plants when action against these plants will not reduce emissions emanating from other states. States, however, need not worry about federal action against them when it is widely recognised that the ultimate regulator is a primary promoter of business as usual by coal-fired power plants. In this latter context, we note that Canada's comments¹⁸ --- comments which are usually constrained by considerations of diplomacy --- on the proposed U.S. mercury rule were surprisingly frank about the failure of the EPA to take more effective and feasible action to reduce mercury emissions.

B. Private Remedies

The Secretariat also believes the Submitters could provide additional information or clarification regarding whether private remedies available under the Party's law have been pursued, a factor relevant to the Secretariat's consideration of whether to request a response to a submission from the Party concerned.

¹⁵ The evidence from the Georgia EPA TMDL is that 99% of deposition was from airborne deposition. See Appendix 12G.

¹⁶ See Appendix 12J, *The Perfect Storm* and other press articles that may allow the CEC to make appropriate inquiries.

¹⁷ Ultimately the NRDC took the EPA to court over the EPA's failure since 1992 to pass a rule limiting mercury emissions.

¹⁸ See Appendix K, the Canadian submission to the US EPA on the proposed mercury rule.

Submitters private legal remedy options would include suing the CAA Title V permitting authorities for each of the permits that have been issued to currently operating coal-fired power plants. The basis of such a claim would be that such permits are illegal because they fail to address antidegradation of waterways. This would entail, however, that the Submitters would have to file and prosecute several hundred lawsuits across the country at a considerable expense of both time and money.

Alternatively, Submitters could pursue legal action against each state government for failing to implement adequate water quality standards and antidegradation provisions. Again, this would entail multiple lawsuits across the country to address a nation-wide, systemic problem.

Several attempts have been made by private citizens in U.S. courts to force both states and the EPA to effectively control nonpoint sources of pollution and atmospheric deposition of toxics and to better implement current requirements under WQS and TMDL processes. These attempts have met with mixed results, but have all proved typically complex and time consuming. For example, in Chemical Weapons Working Group v. United States Dep't of the Army, 111 F. 3rd 1485 (D. Utah, 1996), plaintiffs argued that a U.S. Army waste incinerator that was dumping toxic military pollutants into nearby waterways through atmospheric deposition was subject to CWA provisions that made it unlawful to discharge any "warfare agent" into navigable waters. In rejecting plaintiffs' position the Court stated, for purposes of CWA § 301(f), that these "stack emissions constitute discharges into the air - not water - and are therefore beyond § 301(f)'s reach." Id. at 1490.

With respect to TMDL's, private citizen attempts to get the states and the EPA to adhere to CWA § 303 requirements have been equally long and arduous. Beginning in the mid 1980's several lawsuits were filed in federal courts across the U.S. alleging:

- (1) the failure by states to perform any activities under § 303(d);
- (2) a state has engaged in some, but insufficient, activities to implement § 303(d);
- or
- (3) that EPA's has improperly listed impaired waters or approved TMDLs or improperly promulgated TMDLs.

Some of these attempts have been partially successful, while others have been dismissed outright. See Appendix 12A for an EPA table listing the results of these first TMDL litigation attempts over ten years along with summaries of TMDL and other litigation. We note that this litigation, often targeting the EPA, tends to strengthen our assertion that the EPA fails to effectively enforce the relevant CWA provisions. When the EPA does act, these cases suggest it is only the result of court ordered action.

One of the most significant concerns for any TMDL 303(d) private remedy is with the doctrine of "constructive submission." As explained in our submission, EPA is obligated to act under the CWA when a state fails to properly establish TMDLs. U.S. courts have

regularly held that in order for the EPA to act it must either disapprove of the state-submitted TMDL or the state must fail over a long period of time to submit any TMDL, which in effect is a constructive submission of no TMDL for a waterway. Where states are submitting some TMDLs the constructive submission doctrine does not apply and courts have held that the EPA does not have a mandatory duty under the CWA to establish TMDLs for the state. (see, eg. San Francisco Baykeeper v. Whitman, 297 F.3d 877 (9th Cir., 2002))

Today, despite over twenty years of litigation on many of these issues, most states are still failing to properly create TMDLs for many of their waterways and, even where TMDLs have been created, implementation plans may take decades before they start to control many pollutants, particularly mercury.

Obviously, any attempts to address mercury emission through TMDL litigation would itself be a great burden without necessarily dealing with the full extent of the problem.

In short, several, significant legal hurdles exist to seek redress for this pressing issue through private, legal remedies. Mercury contamination of waterways across North America is an immediate and major problem that is not optimally addressed through years of drawn-out legal battles, but should be remedied through the very types of processes the CEC was designed to implement.

In the case of NPDES permits that allow for direct discharges to water it would also be possible to sue permit holders or granting authorities but this would also be an extremely cumbersome process.

Ultimately our allegation of a failure of effective enforcement does not merely assert a failure based on any one of NPDES, antidegradation, WQS, or TMDL processes. Instead, we assert a widespread, systemic failure that is evidenced by the sum of the evidence of failures in these areas. Private remedies would have to target each of these areas individually to achieve an effective result.

We note that such a widespread violation as is alleged in our submission is the very type of comprehensive environmental enforcement breakdown that the CEC, with its wide ranging authority to request responses from offending signatories and compile comprehensive factual records, would be best suited to address. Also, attempts to induce a party to enforce its own environmental laws through domestic legal proceedings that take many years create economic benefits for the culpable party over long periods of time and undermine the intent of the NAAEC. Given the breadth and pervasiveness of the U.S. government's failure to properly regulate mercury emissions from power plants under the CWA and the conscious, repeated attempts by both the U.S. Congress and the administrative branch to insulate utility companies from having to implement pollution controls, it would be highly burdensome to attempt to remedy the issue through available private means.¹⁹

¹⁹ See for instance a collection of press reports noted in Appendix ____.

Thus, we respectfully submit that in the circumstances of this petition --- despite the availability of possible private remedies in complex and challenging circumstances--- an effective legal strategy to address this widespread problem could exhaust the resources of even the largest citizens' group or the strongest coalition thereof. We believe the option available pursuant to the NAAEC, especially given the important trade advantage that electrical power produced at the expense of the environment, is ideally suited to the citizen petition process.²⁰

C. NPDES

The Secretariat concluded in its determination that the Submission was sufficient with respect to its assertions respecting the failure to enforce NPDES permits for certain states and within certain parameters. The Secretariat concluded that with respect to the noted states the Submission properly directed the Secretariat to an appropriate database but that additional information would be of assistance. We provide this and other evidence respecting our initial assertions respecting the NPDES process.

We begin by noting West Virginia has declared a state-wide mercury advisory on its waters since the filing of our original submission.

We name in Appendix 12D all of the facilities in each of the ten states of our inquiry that discharge mercury directly to water. We have not been able to ascertain why such discharges are permitted, particularly in States with state-wide FCAs. In a few cases, mercury discharges to water exceed 50 pounds! These discharges, unlike air emissions, are neither diluted nor dispersed in air or on land where environmental damage might be lessened.

In cases where discharges are made directly to water bodies in States without state-wide advisories we were not able in each case to determine the name of the receiving water body. Where we determined the specific location of a plant it was not always possible to ascertain to which nearby water body the discharge was made. This would require a review of the applicable NPDES permit, to which we do not have ready access. Nonetheless, we believe we have provided a sufficient evidentiary basis from which additional inquiries by the CEC can be directed.

D. Antidegradation

- 1) *exceedances of water quality standards for mercury in particular Tier I, Tier II and Tier III water bodies subject to FCAs.*

²⁰ Although private citizen suits are available to U.S. citizens, the same remedies will not be as accessible -- if accessible --- to Canadian citizens.

Within each attached appendix are several examples wherein water quality standards have been exceeded across all tiers of water within each of the ten states. State water quality standards include the existing and designated uses of waterways that are created under the antidegradation provisions of the Act. *33 U.S.C. § 1251(a)(2)*. Every time a “fishable” waterway becomes subject to a mercury FCA and is no longer fishable it is, by definition, in exceedance of water quality standards for the pollutant for which the FCA was issued.²¹

For example, in **West Virginia** Category C waters are those that have been designated for “water contact recreation,” including fishing.²² West Virginia’s list of “water contact recreation” waterways consists of nine rivers, including large stretches of the Ohio and Potomac Rivers. Under the state’s own water quality standards these rivers should remain “fishable” under the clear application of state antidegradation provisions as explained in our original submission. However, West Virginia has recently effectively rescinded the designated (and existing) fishable use of these waterways by imposing a state-wide fish advisory for mercury contamination, thereby rendering all of its “water contact recreation” waterways no longer fishable. Likewise, **Pennsylvania** has designated all waterways in the state “F” for fishing, yet the EPA lists 89 of these same waterways under a FCA for mercury contamination.

In **Alabama**, fishable waters are designated under the term “fish and wildlife.” Alabama’s Water Quality Criteria § 335-6-11-.02 contains a list of state waterways; the “fish and wildlife” designation is applied to a majority of the rivers and waterways in the state. Therefore, under the CWA’s water quality standards and antidegradation provisions the majority of Alabama’s waterways must remain fishable. Yet, according to the EPA, fourteen of these same “fishable” waterways are now under a mercury FCA and are no longer fishable. (See Alabama’s list of mercury FCAs in Appendix 12B.)

The submitted documentation supports several more examples where fishable designated waterways across all tiers of protection are now under mercury FCAs and are no longer fishable in violation of water quality standards and the antidegradation provisions within each of these ten states. Rather than referencing each waterway, we have prefaced each state section in the appendix with a chart listing fishable designated waterways that are now under a mercury fish advisory. It follows that there are exceedances of WQS for each of these waterways where mercury FCA’s exist and fishable uses have been rescinded or lost in violation of the CWA.

²¹ The Florida atmospheric mercury study, for instance, says “[M]ercury-contamination fish consumption advisories represent an exceedance of water of water quality standards because a designated use for the Florida Everglades ecosystem is not being met.” (See Appendix ____, Executive Summary p.1)

²² One of the major difficulties in addressing state-by state water quality standards is that each state is free to invent its own nomenclature for tiered waterways, designated uses, etc. Many do not use “tier” designations. Some, like Ohio, place their waterways in categories called Limited Quality Waters, Superior High Quality Waters or Outstanding State Waters. Likewise, many states, like West Virginia couch their “designated uses” language not in terms such as “fishable” and swimmable” but in phrases such as “water recreation contact” which includes uses such as swimming and fishing. Submitters’ contentions apply to all such waterways, regardless of nomenclature.

Other WQS violations also exist across all tiers of protection. Each of the states cited above incorporate narrative criteria into their WQS. For example, **Alabama's** state WQS hold that “[s]tate waters shall be free from substances attributable to sewage, industrial wastes and other wastes in concentrations . . . which are toxic or harmful to human, animal or aquatic life commensurate with the designated use of such waters.” *Alabama Water Quality Criteria, Chapter 335-6-10-.06(c)*. Similarly, **Texas' WQS** demand that “[w]ater in the state shall be maintained to preclude adverse toxic effects on human health resulting from contact recreation, consumption of aquatic organisms, consumption of drinking water or any combination of the three.” *Texas Water Quality Standards § 307.6*. Both Alabama and Texas, two of the highest emitters of nonpoint source mercury pollution from coal-fired power plants in the U.S. have several waterways that are now subject to mercury fish advisories in violation of their respective water quality narrative standards. We attach documentation to support the allegation that each of these ten states exceed their WQS's narrative criteria regarding the addition of toxic mercury from power plants into local waterways, resulting in a significant human health threat and a continuing diminution in water quality.

- 2) *the nature of the alleged failure to ensure that particular state antidegradation policies and implementation methods meet federal requirements with regard to those water bodies, and*
- 3) *the actions the Submitters believe the United States is failing to effectively take with respect to particular states in which the Submitters believe antidegradation policies and implementation methods are in violation of the CWA.*

As stated in our original submission, the federal antidegradation policy mandates control of both point and nonpoint sources of pollution in both the creation of the state antidegradation policy and in its implementation. Submitters have appended examples of state WQS, including the antidegradation provisions and implementation plans for each of the ten states. It is incumbent on EPA to ensure that state WQS and antidegradation provisions provide for control of nonpoint sources of pollution like mercury from power plants. *See generally 33 U.S.C. § 1313(c)*. When state WQS and antidegradation policies and implementation plans are insufficient to protect water quality, the EPA is obligated under the CWA to step in and create standards which are protective and that put an end to the continuing degradation of the country's waterways. *Id.*

The EPA has approved each of the appended state WQS and the incorporated antidegradation provisions contained therein, yet these standards and implementation plans do nothing to control nonpoint source mercury pollution from utility units. It follows that the EPA is routinely signing off on state antidegradation policy and implementation procedures that illegally fail to control nonpoint sources of mercury from power plants.

In addition, we emphasize that the EPA maintains ultimate permitting authority under both the CWA and the CAA. If a state fails to properly administer a permitting program, then the EPA may revoke a state's permitting delegation and administer the program itself. As noted above, states are issuing CAA Title V permits to coal-fired utility units without addressing water quality standards or antidegradation provisions. For this reason, we allege that the state is failing to properly administer the permitting program and that these permits illegally violate provisions of the CWA.

- 4) *With respect to antidegradation requirements for Tier II water bodies, the Secretariat also requires more specific information identifying the Tier II water bodies with respect to which the Submitters believe the United States has failed to require BMPs for coal-fired power plants, as well as more information regarding the nature of the asserted failure: do the Submitters assert that the United States has taken no action, or that the United States has taken inadequate action, for example by either failing to identify the power plants that contribute to the degradation of water quality or not ensuring that identified sources employ BMPs?*

Submitters allege that the EPA has taken no action to control nonpoint mercury pollution from power plants, nor have they forced the states to take action to implement BMPs for mercury from utility units and protect Tier II waterbodies from continuing mercury degradation. In this context, as noted, it is difficult to prove what the EPA did **not** do. The attached appendices list several Tier II waterways in each of the ten states cited that are currently under a mercury FCA.²³ These waterways are named in the chart, which prefaces each state section in the appendix.

We also attach two sample CAA Title V permits that clearly show that there are no control technologies being mandated to reduce nonpoint source mercury pollution from coal-fired power plants, much less BMPs as required under the antidegradation provisions of the CWA.²⁴

We allege that all coal-fired power plants that operate in the ten states referenced in the appendix contribute to the continuing degradation of local waterways in violation of antidegradation requirements. Studies referenced by Submitters in the original submission²⁵ show that deposition of mercury from local air emission sources have a significant impact on local waterways.

²³ Again, many states do not refer to their Tier II waters as Tier II waterways. Several states designate such waterways as "High Quality Waters," "Exceptional Waters," or some other designation.

²⁴ In this context we reiterate the statement from the EPA in the context of its mercury rule-making process. "EPA is committed to **regulating and reducing power plant mercury emissions for the first time ever.**" (our emphasis)²⁴ <http://www.epa.gov/mercury/>

²⁵ The Florida Everglades study, Appendix 12F (and fully reproduced in the original petition).

We also note that under the CWA's WQS provisions and applicable case law, when alleging that a polluting activity is negatively impacting water quality standards, the burden rests on the governmental agency to show that the activity is not having any detrimental effect on water quality and not on the plaintiff to show that it is.²⁶ If the U.S. takes the position that its coal-fired power plants are not contributing to the continuing mercury degradation of waterways across the country and North America (notwithstanding massive FCAs), we believe it must prove so by submitting relevant air modeling or other evidence to meet its burden under the CWA.

E. TMDLs

To trigger the process under Articles 14 and 15, the Submitters must provide additional and more specific information regarding which states the Submitters believe have failed to adopt, in the manner required, TMDLs addressing air emissions from coal-fired power plants and regarding the nature of those alleged failures with respect to particular states.

As stated above, designated uses of waterways are part of a state's water quality standards program. Therefore, every time that a state issues a FCA on a "fishable" waterway there exists a violation of the state water quality standard and that waterway must be placed on the 303(d) list and a TMDL must be established for that waterway. Likewise, where narrative water quality standards concerning toxic pollutants and human health exist, such as those cited above, wherever mercury FCA's exist the state has failed to meet its water quality standards and the 303(d) TMDL provision of the CWA is triggered. If a state fails to take appropriate action, then the EPA must do so.

We have carefully reviewed the websites of the environmental departments of each state for information relating to TMDLs. We have cross-referenced the 303(d) listing of impaired waters with the list of waterbodies subject to an FCA, reviewed the EPA approval, and determined what if any TMDLs are planned or have been prepared for mercury impaired water bodies.

Generally, we have found that 303(d) lists, although often not complete, do to a large extent list FCA impaired water bodies but that there is little if any follow through by states or the EPA in terms of moving even to the stage of listing such waters for TMDL preparation. In our original submission we had asked the CEC to review whether 303(d) lists were appropriately listing waters impaired by mercury.

²⁶ . . . it is the proponent of a permit who bears the burden of showing that a discharge *will comply with* all applicable standards, not the opponent of a permit who must show that a discharge *will violate* applicable requirements. *Oklahoma v. EPA*, 908 F.2d 595 (10th Circuit, 1990)

With the exception of North Carolina, we found little evidence of TMDLs that had been prepared for water bodies that had been impaired by atmospheric mercury pollution. In cases where we did find TMDLs for mercury-impaired waters further inquiry generally confirmed that the source of mercury contamination was a local one as opposed to the widespread problem of airborne mercury deposition. We could not find an example --- among the hundreds of mercury-impaired waters --- of a control program for non-point mercury sources and therefore no evidence of any action against coal-fired power plants. Indeed, despite the prevalence of atmospheric emissions of mercury from coal-fired power plants we were hard-pressed to find any state attention to coal-fired power plants and more importantly, no evidence of an EPA response to such state failures.

In one case outside of our area of inquiry we found an example of a TMDL that had been prepared by the EPA. This example suggested an exception to our general findings. Further inquiry confirmed that this TMDL was the result of a settlement agreement in Georgia between the EPA and private parties that resulted from litigation.²⁷ However, this TMDL identifies airborne mercury deposition as the overwhelming source of the water contamination. The study pointed out that 99% of mercury deposition was from airborne sources.²⁸ The TMDL does not outline any non-point source control program against coal-fired power plants.

The Georgia TMDL also suggests the predicament of state-prepared TMDLs addressing the widespread problem of mercury impairment. In the absence of a national program to control airborne sources of mercury TMDLs to address the contamination of water bodies in states is unlikely to fully address the problem. This will be especially so in states that are downwind of mercury emission sources. This also presents a plausible explanation for the EPA's failure to effectively enforce the provisions of the CWA against states.

The EPA has been unwilling to act against coal-fired power plants to reduce their mercury emissions despite the ongoing poisoning of U.S. water bodies. In this context it is not surprising that the EPA to seek an alternative route to carry out its statutory duties to protect U.S. waters whether through forcing state action on TMDLs or other

²⁷ See Appendix 12G or http://www.epa.gov/Region4/water/tmdl/georgia/ochlockonee/final_tmdls/OchlockoneeHgFinalTMDL.pdf
See also: <ftp://ftp.dep.state.fl.us/pub/labs/assessment/mercury/tmdlreport03.pdf>

²⁸ A pilot study in Florida fully included in our original submission also found similarly high levels of airborne mercury emissions. The Florida DEP study (Appendix 12F at p.ii) found that “over 95% of the mercury load to the Everglades each year comes from atmospheric deposition.” The same study found that “a reduction of about 80% of current total annual mercury atmospheric deposition rates would be needed for the mercury concentrations in a 3-year old largemouth bass at WCA 3A-15 to be reduced to less than Florida’s present fish consumption advisory action level of 0.5mg/kg ...” Again, this study does not outline any non-point source control program aimed at coal-fired power plants. The report does however confirm that even eliminating all point source emissions would not deal with the problem of mercury contamination.

mechanisms under the CWA. Ultimately, the EPA's failure to act on mercury emissions from coal-fired power plants subverts the CWA's TMDL process by thwarting any serious effort by a state to prepare and implement an effective TMDL.

The Florida pilot study by the EPA on atmospheric mercury pollution acknowledges that "TMDL-type analysis for determining needed reductions in atmospherically derived pollutants have rarely been done ...",²⁹

In the state-by-state analysis below we generally provide website links to supporting documentation. In the case of Michigan we also provide the corresponding paper version documents for easier reference.

A Department of Energy study³⁰ appears to provide contradictory evidence respecting our assertion of EPA indifference to atmospheric emissions, we note in opposition, however, the dearth of evidence about actual TMDL preparation and non-point source control programs.

1. Alabama

The state of Alabama is home to nine coal-fired power plants.³¹ They are largely responsible for Alabama's sixth place ranking for point source mercury air emissions.³² Combined they reportedly released 3,391 lbs of mercury into the air.³³

The Alabama Department of Health has issued fish consumption advisories (FCA) for mercury for 21 different bodies of water.³⁴ This includes a statewide mercury advisory for their entire coastal area.³⁵ The Department of Health issues two types of advisories: a

²⁹ See Appendix 12F, p. 2, Executive Summary. (At: <http://www.epa.gov/owow/tmdl/madpp.html>) We were not able to find the results of a similar study that was apparently carried out by the EPA. See also <ftp://ftp.dep.state.fl.us/pub/labs/assessment/mercury/tmdlreport03.pdf> The study suggests that the dearth of TMDLs was "due to the data needs and technical complexity of developing and linking atmospheric and aquatic cycling models."

³⁰ See Appendix 12H or <http://www.netl.doe.gov/publications/proceedings/00/app-rvr00/FEELYPNL.PDF>

³¹ http://www.catf.us/publications/fact_sheets/children_at_risk/Alabama_Kids_Facts.pdf

³² EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

³³ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>.

Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 5,307 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000.

http://www.catf.us/publications/fact_sheets/children_at_risk/Alabama_Kids_Facts.pdf.

³⁴ <http://www.adph.org/RISK/Alabama%20Fish%20Cons%20Advisories%20March%202004.pdf>

³⁵ http://www.uspirg.org/reports/fishingfortrouble04/Fishing_for_Trouble2004.pdf

'limited consumption advisory',³⁶ and a 'no consumption advisory',³⁷. The vast majority of mercury FCA are 'no consumption advisories'.³⁸

Of the 21 water bodies under a FCA, 18 appeared on the draft 2004 Alabama 303d list as mercury impaired waters.³⁹ The draft 303d list included one additional creek that was not present on the FCA list.

The 303d list includes a column that describes the potential sources of the water impairment. In the case of mercury-impaired waters, the source of the contamination is described as "unknown source".⁴⁰ There is no mention of atmospheric deposition or coal-fired power plants as potential sources of mercury contamination.

The draft 2004 303d list also includes a draft TMDL date schedule column. The Alabama's TMDL website also contains a 2003-2004 TMDL schedule.⁴¹ A search on the TMDL website reveals that there are no approved TMDLs for mercury or mercury impaired waters.⁴² However, the draft 2004 303(d) list indicates that draft TMDLs are scheduled for the mercury impaired waters of Big Escambia Creek and Little Escambia Creek in 2001, Cold Creek Swamp in 2003, and Opossum Creek in 2004.⁴³ Furthermore, the Tentative TMDL Schedule for 2003-2004 indicates that a draft mercury TMDL would be developed for Cold Creek Swamp and Fish River for the end of 2003.⁴⁴

The draft 2004 303d list provides additional draft TMDL dates for other mercury impaired water bodies (although it is not clear whether the TMDL would target mercury or another pollutant). The vast majority of draft TMDLs for mercury impaired waters are due in 2007 and the remaining in 2008, 2009 and 2011. Although, the 303d list ranks the water bodies as high, medium and low priority there does not appear to be a correlation between the priority ranking and the date set for a draft TMDL.⁴⁵ Many of the other water bodies with approved TMDL in place have a low priority rank on the 303d list.

Many of these TMDLs actions by the State of Alabama are a result of consent decree and consequent settlement agreement after a citizen group launched a civil action against the

³⁶ Women of reproductive age and children less than 15 years old should avoid eating certain fish from these areas. Other people should limit their consumption of the particular species to one meal per month.

³⁷ Recommends that everyone avoid eating the named species of fish in the defined area.

³⁸ <http://www.adph.org/RISK/Alabama%20Fish%20Cons%20Advisories%20March%202004.pdf> Of the 24 mercury FCA issued, 20 are 'no consumption' advisories.

³⁹ <http://216.226.179.150/publicnotice/feb/TMDLList2004.xls>

⁴⁰ <http://216.226.179.150/publicnotice/feb/TMDLList2004.xls>

⁴¹ <http://216.226.179.150/waterdivision/wquality/tmdl/wqtmldinfo.htm#State>

⁴² <http://216.226.179.150/waterdivision/wquality/tmdl/wqtmldinfo.htm>

<http://216.226.179.150/waterdivision/wquality/tmdl/TMDLSch03-04.xls>

⁴³ <http://216.226.179.150/publicnotice/feb/TMDLList2004.xls>

⁴⁴ <http://216.226.179.150/waterdivision/wquality/tmdl/TMDLSch03-04.xls>

⁴⁵ Water bodies ranked high, medium and low all have a draft TMDL date of 2007. Furthermore, the type of fish consumption advisory i.e. no consumption advisories, do not appear to influence the priority ranking.

USEPA in 1998 to compel the USEPA to identify impaired waters for listing under s.303d of the CWA and to establish TMDLs for those waters.⁴⁶

The Alabama Department of Environment Management does not address the issue of coal fired power plants and mercury contamination on their website.

2. Illinois

Illinois is ranked fifth among states with mercury air emissions from electric utilities.⁴⁷ According to the Clean Air Task Force⁴⁸, there are 24 coal-fired power plants in Illinois. The total number of lake acres/river miles under a mercury fish consumption advisory (FCA) is 3,898/0 respectively.⁴⁹ The total reported release of mercury into the air by electric utilities was 4,318 lbs in 2002.⁵⁰

The Illinois Fish Contaminant Monitoring Program (IFCMP) has issued a statewide mercury fish consumption advisory (FCA) for predator fish in Illinois waters.⁵¹ The Special Mercury Advisory places more restrictive meal consumption limits on fish found in ten bodies of waters in order to protect the most sensitive populations⁵² from the adverse health effects of contaminated fish. Although the State recognizes that coal fired power plants are a source of mercury, they have not targeted power plants in their mercury reduction programs.⁵³

The 2004 Illinois Fish Advisories⁵⁴, identifies ten bodies of water that are under a mercury FCA. These are the same bodies of waters identified in the Special Mercury Advisory. The following is a list of the bodies of waters: Arrowhead Lake, Campus Lake, Cedar Lake, Devil's Kitchen Lake, Kinkaid Lake, Lake in the Hills, Midlothian Reservoir, Ohio River, Rock River (Rockford to Milan Steel Dam). All ten of these

⁴⁶ <http://www.adem.state.al.us/WaterDivision/WQuality/TMDL/consdecr.pdf>

⁴⁷ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

⁴⁸ http://www.catf.us/publications/fact_sheets/children_at_risk/Illinois_Kids_Facts.pdf

⁴⁹ http://www.catf.us/publications/fact_sheets/children_at_risk/Illinois_Kids_Facts.pdf

⁵⁰ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>. Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 6,312 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000.

http://www.catf.us/publications/fact_sheets/children_at_risk/Illinois_Kids_Facts.pdf

⁵¹ <http://www.idph.state.il.us/envhealth/fishadv/specialmercury.htm>

⁵² Pregnant or nursing women, women of childbearing age and children younger than 15 years of age are advised to eat no more than one meal per week of predator fish or one meal a month under the special mercury advisory.

⁵³ <http://www.epa.state.il.us/mercury>

⁵⁴ <http://www.idph.state.il.us/envhealth/pdf/fishadvisorychart04.pdf>

water bodies appear on the Illinois 2004 Section 303(d) Listed Waters (303d List).⁵⁵ Furthermore, the 303d identifies additional water bodies as being mercury impaired that are not part of the Special Mercury Advisory. These include: Illinois River, Kankakee River, DesPlaines River, Salt Creek, Little Calumet River North and South, Pettibone Creek, Chicago River, Wabash River and Ramsey River.⁵⁶

The Illinois 303d list includes columns for the potential causes of impairment. The list outlines various codes for different contaminants which includes two codes for mercury (numeric standard and statistical guidelines). The list also includes a column for the potential sources of impairment both point and non-point sources. Although, the list outlines a detailed inventory of sources of pollutants there is no category for coal-fired power plants or electric utilities.⁵⁷ In every instance where a body of water was listed as impaired by mercury, one of the potential sources of the impairment was listed as “source unknown”. In most cases, “source unknown” was the only item listed the column.⁵⁸

The EPA website indicates that none of the mercury impaired waters have an approved TMDL.⁵⁹ This is confirmed by the Illinois TMDL website.⁶⁰ Although there are four TMDLs⁶¹ that have been prepared or are in the process of being prepared for water bodies that are contaminated by mercury, none of the reports address the mercury impairments, and instead focus on the other causes of impairments to that water body.⁶² The explanation given for not addressing mercury contamination is that “mercury contamination is considered to be an interstate and international issue caused primarily by air deposition.”⁶³ The Big Muddy River TMDL report states that the mercury TMDL will be addressed in a regional TMDL by the USEPA and not at the state level.⁶⁴ Coal fired power plants are not mentioned as a potential source of contamination. The USEPA approved TMDL for Salt Creek does not mention mercury or coal fired power plants in its report in spite of the fact that Salt Creek does appear in the Illinois 303d list and the TMDL Report summary as mercury impaired.⁶⁵

⁵⁵ There are some discrepancies between the lists posted on the EPA and Illinois websites. This may be because EPA posts the 2002 303d list on their site. Several of the water bodies listed in the special mercury advisory do not appear in the EPA 2002 303d list but all appear in the Illinois 2004 303d List.

⁵⁶ One possible for this may be that these rivers have defined FCAs for PCBs and may fall under the state-wide advisory for mercury but do not require a special advisory.

⁵⁷ Categories listed include: agriculture, silviculture, construction, urban runoff/storm sewers, resource extraction, land disposal, hydrologic/habitat modification, habitat modification, marinas and recreational boating, other, source unknown.

⁵⁸ In water bodies where the only impairment was mercury (and sometimes PCBs), the source was always listed as “unknown”.

⁵⁹ http://oaspub.epa.gov/waters/state_rept.control?p_state=IL

⁶⁰ <http://www.epa.state.il.us/water/tmdl/tmdl-reports.html>

⁶¹ Three of these water bodies were included in the Special Mercury Advisory (Campus Lake (in process), Cedar Lake (in process), Kinkaid Lake (unapproved)) and the four appeared on the 303d list of waters impaired by mercury (Salt Creek (approved)).

⁶² See for example the TMDL reports for Kinkaid Lake, Cedar River, Campus River and Salt Creek.

⁶³ See description of Kinkaid Lake in the Big Muddy River TMDL report submitted to USEPA for approval May 2004. <http://www.epa.state.il.us/water/tmdl/report/big-muddy-one/big-muddy-draft-tmdl.pdf>

⁶⁴ <http://www.epa.state.il.us/water/tmdl/report/big-muddy-one/big-muddy-draft-tmdl.pdf>

⁶⁵ <http://www.epa.state.il.us/water/tmdl/report/salt-creek/salt-creek.pdf>

3. Indiana

Indiana is the fourth worst emitter of mercury air emissions from electric utilities.⁶⁶ The state of Indiana has 24 coal burning power plants.⁶⁷ The total reported releases by coal-fired power plants of mercury into the air was 4,927 lbs in 2000.⁶⁸

The 2004 FCA relating to a mercury advisory applies to 15 lakes and reservoirs and 26 streams and rivers.⁶⁹ These bodies of water appear on the Final 303(d) list for 2004⁷⁰. There are 12 bodies of water classified as "Group 5" for which no fish in these waters are to be consumed.⁷¹ According to the EPA, there are 524 impairments regarding FCAs in Indiana⁷² for mercury. There are no approved TMDLs by the EPA for this contaminant.⁷³

Using data from the 303(d) list for 2004 and comparing it to the TMDL Reports, the parameters of concern do not include mercury at all. Most of the TMDL reports focus exclusively on E. coli bacteria and/or other contaminants. In fact, there are only 13 TMDL reports in total provided by IDEM.

Moreover, the TMDL development schedule for the 2002 303(d) pertaining to mercury includes the Grand Calumet River.⁷⁴ Although this body of water was given a range of development from 1998-2004, currently there is no TMDL for it. There is one for Little Calumet, which also has an FCA for mercury, but only pertains to E. Coli, dissolved oxygen, cyanide and pesticides.

4. Kentucky

Kentucky is the eighth largest emitter of mercury air emissions from electric utilities.⁷⁵ There are 22 coal-fired power plants in the state of Kentucky.⁷⁶ The total reported air releases of mercury by power plants in the state was 3,540 lbs.⁷⁷

⁶⁶ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions.

⁶⁷http://www.catf.us/publications/fact_sheets/children_at_risk/Indiana_Kids_Facts.

⁶⁸ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions.

⁶⁹<http://www.in.gov/isdh/dataandstats/fish/2004/index.htm>

⁷⁰<http://www.in.gov/idem/water/planbr/wqs/tmdl/tmdldocs.html>

⁷¹<http://www.in.gov/isdh/dataandstats/fish/2004/group5.htm>

⁷²http://oaspub.epa.gov/pls/tmdl/waters_list.impairments?state=IN&p_impid=55

⁷³http://oaspub.epa.gov/waters/state_rept.control?p_state=IN#WBTYPE

⁷⁴<http://www.in.gov/idem/water/planbr/wqs/sched.pdf>

⁷⁵ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

⁷⁶ http://www.catf.us/publications/fact_sheets/children_at_risk/Kentucky_Kids_Facts.pdf

⁷⁷ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>.

On April 11, 2000, the Kentucky Division of Water issued a statewide fish consumption advisory (FCA) because of low levels of mercury (0.12 ppm) found in fish tissue sampled in Kentucky waters. The advisory recommends that women of childbearing age and children six years and younger not eat more than one meal per week of freshwater fish caught in Kentucky waters because of the presence of mercury.⁷⁸ Five ponds on the West Kentucky Wildlife Management Area (McCracken County) are also under a FCA because of mercury from unknown sources.⁷⁹

The draft 2004 Kentucky 303d list identifies 24 different water bodies as being impaired by mercury (the Ohio River has multiple listings).⁸⁰ The EPA in 2001 issued a draft mercury water quality criterion expressed as a methylmercury concentration in fish tissue of 0.3 ppm. Therefore, for purposes of 305(b) and 303(d) reporting, waters were not considered impaired unless fish exhibited mercury tissue concentrations of at least 0.3 ppm.⁸¹ The 303d list uses fish consumption as a category to assess the attainment of the fishable goal of the Clean Water Act.

The primary potential sources for mercury impairment were listed as either unknown or atmospheric deposition. The draft 2004 Kentucky 303d list, does attempt to describe causes and sources of the impairments based on the judgments and observations of field biologists. However, the report states that all causes may not be evident in the field, and there may be other causes contributing to use impairment that are not listed. The report then says sources are more fully identified once the impaired waters are 303(d)-listed, TMDL sampling is conducted, and a more comprehensive look is taken at activities and land uses within the watershed.⁸² This would appear to be the main justification for not recognizing coal-fired power plant's contribution to mercury impairments of Kentucky waters.

Since the majority of mercury-impaired waters are given a second priority listing, there are no approved TMDLs or TMDLs-in-development that address the mercury contamination in any of Kentucky's waters. Two mercury impaired water bodies are in the process of having TMDLs developed for pollutants other than mercury.

Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 3,746 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000.

http://www.catf.us/publications/fact_sheets/children_at_risk/Kentucky_Kids_Facts.pdf

⁷⁸ <http://www.water.ky.gov/sw/advisories/fish.htm>

⁷⁹ <http://www.water.ky.gov/sw/advisories/fish.htm>

⁸⁰ http://www.water.ky.gov/NR/rdonlyres/E7D19E45-3775-42D5-A1C9-680F59B67993/0/2004_draft_303d.pdf

⁸¹ This in contrast to the FCA limits of 0.12 ppm. Draft 2004 303d list
http://www.water.ky.gov/NR/rdonlyres/E7D19E45-3775-42D5-A1C9-680F59B67993/0/2004_draft_303d.pdf

⁸² http://www.water.ky.gov/NR/rdonlyres/E7D19E45-3775-42D5-A1C9-680F59B67993/0/2004_draft_303d.pdf

Although, coal-fired power plants are the largest contributor of mercury in the environment, there is no discussion of coal-fired powers on the state website or in the 303d list.

3. Michigan

Michigan is the thirteenth highest emitter of mercury air emissions from electric power plants.⁸³ There are 20 coal-fired power plants in the state.⁸⁴ The total reported release of mercury into the air by the power plants totaled 2,581 lbs in 2002.⁸⁵

Michigan has a Statewide FCA for mercury for its lakes as of July 2004. The 2004 Michigan Family Fish Consumption Guide, produced by the Michigan Community Health Department, specifies which lakes have FCAs. Michigan also has a Statewide FCA for mercury for its rivers as of July 2004.

As of May 2002, Michigan reported 139 river miles as mercury impaired, while reporting 887,019 lake acres as impaired.⁸⁶ In the Michigan TMDLs the problems that are being dealt with are mainly E coli, biota, and phosphorus.

The 2002 303(d) list does specify numerous waterbodies that require TMDLs, thus the EPA failure does not mainly relate to its approval of a 303(d) list that is deficient in identifying waterbodies that do not meet WQS. The 2002 report does note that waters that are listed as mercury FCAs are placed on the nonattainment list. The document says, in its Attachment 1,:

5. Waterbodies with Fish Consumption Advisories are placed on the Nonattainment List.
6. Inland lakes and impoundments with fish tissue levels averaging greater than 0.3 mg/kg (based on at least five fish of a given species) for mercury are placed on the Nonattainment List as "Mercury Lakes."

Of the TMDLs submitted to the USEPA, only one is for mercury (Attachment 5 and Appendix 12). Of greater interest is the fact that virtually all TMDLs for mercury have been deferred to dates far off into the future. The 2002 Michigan document, in fact, says that the USEPA has offered to take the lead in preparing the TMDLs for mercury. This is why 158 TMDLs (more than the combined total of 2002-2008) are planned for

⁸³EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

⁸⁴ http://www.catf.us/publications/fact_sheets/children_at_risk/Michigan_Kids_Facts.pdf

⁸⁵ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>. Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 2,624 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000.

http://www.catf.us/publications/fact_sheets/children_at_risk/Michigan_Kids_Facts.pdf

⁸⁶ http://www.catf.us/publications/fact_sheets/children_at_risk/Michigan_Kids_Facts.pdf

preparation in 2011, presumably with a far later date for implementation. The document says:

Most TMDLs are scheduled following Michigan's five-year rotating watershed assessment approach. There were some exceptions for the following reasons:

.

The USEPA has offered to take the lead on developing the mercury TMDLs and requested that these TMDLs be scheduled at the end of the process due to the complexity of the problem. A total of 154 mercury TMDLs are scheduled in 2011.

...

TMDLs for problematic organic chemicals with primarily atmospheric sources (PCB, chlordane, DDT, and dioxin), are generally scheduled in later years (starting in 2008) to allow the collection of additional information based on low level analysis and source determination.

The 2002 report notes that six waterbodies had been delisted based on dealing with mercury contamination. In the first case, "Sediment Cleanup: Unnamed Tributary to Wolf Creek (210422A)" the problem is obviously not airborne deposition or contamination from a coal-fired plant. In the other cases, "Fish Consumption Advisory Change: Cisco Lake (221205D), Ford/Belleville Lake (061203N), Kent Lake (061206R), Portage Lake (081802B), and Portage Lake (061205J)" it appears that these problems did not deal with TMDLs related to airborne deposition. Further investigation into Portage Lake suggests the problem was a land-based source i.e. in the soil (other than coal-fired). See http://www.michigan.gov/deq/0,1607,7-135-3307_3662-14425--,00.html. In the remaining cases, given the clear evidence that mercury contamination is only scheduled to be raised in 2011, it is reasonable to assume that these TMDLs dealt with identified point sources of discharge as opposed to atmospheric deposition from coal-fired plants. Additional evidence corroborates this view.⁸⁷

Although there are dozens of TMDLs, as listed below in Appendix 12E, there is only one TMDL for mercury. In that case,⁸⁸ (see Appendix 12E for the TMDL for Hammell Creek) the source of the mercury was known to be from an abandoned mine. Thus even though the State has a state-wide mercury advisory for both its lakes and rivers it has not, save in one case where the precise point source was known, developed any TMDLs to target mercury from airborne emissions. No cases could be found where any action was taken against coal-fired power plants, indeed no reference to coal-fired power plants could be found in the TMDL documentation.

The update to the 2002 303(d) list has only two TMDLs that mention mercury. In both those cases the status is noted as "Modified: Mercury removed from problem." Presumably, this simply means that mercury was being eliminated from the TMDL for

⁸⁷ This was the import of an email communication with a Michigan Department Aquatic Biologist in the Surface Water Assessment Section. Further details are available on request.

⁸⁸ See Appendix 12E for the TMDL for Hammell Creek.

reasons other than remediation given that the "current category" is still noted as "5" i.e. "WQS Nonattained and Requires TMDL." There is also a reference on the Michigan DEQ website for one of these two sites namely White Lake, which suggests that the source of the problem was sediment, as opposed to airborne deposition. See <http://www.michigan.gov/deq/0,1607,7-135--55599--,00.html> In the case of the other lake, Goose Lake, we could find no documents on the Michigan website.

On the Updated 2002 303(d) list (Appendix XV in that document), none of the **approved** TMDLs are for mercury. On the "Schedule for TMDL Development" (Attachment 3 to that document) only 2 waterbodies contaminated by mercury are mentioned. The first is Hammell Creek, where the source is an abandoned mine site, and the second is Carp Creek. The remaining scheduled TMDLs are for 2011.

The 2004 report only notes only approved TMDL for mercury, which related to Hammell Creek where the source was an abandoned mine site. (See: <http://www.deq.state.mi.us/documents/deq-wd-swqas-intrepapp10.pdf>)

We were not able to find a single existing TMDL for mercury that in any way addresses mercury from coal-fired power plants, or non-point sources in general.

Sources of Information:

CLEAN WATER ACT SECTION 303(d) LIST, MICHIGAN SUBMITTAL FOR YEAR 2002 MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY SURFACE WATER QUALITY DIVISION, APRIL 2002, STAFF REPORT, see: http://www.deq.state.mi.us/documents/deq-swq-gleas-303_d_Rpt2002b.pdf

Water Quality and Pollution Control in Michigan: 2004 Sections 303(d) and 305(b) Integrated Report, Michigan Department of Environmental Quality and Water Division, Revised May 2004, see: http://www.michigan.gov/deq/0,1607,7-135-3313_3686_3728-12711--,00.html

2004 Michigan Family Fish Consumption Guide, Michigan Department of Community Health, Environmental & Occupational Epidemiology Division, see http://www.michigan.gov/mdch/0,1607,7-132-2944_5327-13110--,00.html

6. North Carolina

North Carolina, home to 14 coal-fired power plants⁸⁹, is the ninth largest emitter of mercury air emissions from electric utilities in the US.⁹⁰ Combined, these electric

⁸⁹http://www.catf.us/publications/fact_sheets/children_at_risk/North_Carolina_Kids_Facts.pdf

⁹⁰ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

utilities reportedly released 3,434 lbs of mercury into the air.⁹¹ The total lake acres/river miles under mercury fish consumption advisory (FCA) is 306,584/37,600 respectively.⁹²

The North Carolina Division of Public Health has issued a statewide mercury FCA.⁹³ They advise sensitive populations to refrain from eating certain species of fish caught south and east of Interstate 85 (I85), and to eat no more than two meals of other fish per week.⁹⁴ The rest of the population should eat no more than one meal per week of specified fish caught south and east of I85 and to eat up to four meals per week of other fish.⁹⁵ The FCA mercury fact sheet acknowledges that mercury is released into the air, water and land by coal-fired power plants and that mercury released into the air can fall directly into water bodies thereby contaminating fish.⁹⁶

The 2004 North Carolina draft 303d list indicates that several watersheds suffer from mercury impaired waters.⁹⁷ In particular, the Cape Fear River Basin, Chowan River Basin, Lumber River Basin, Neuse River Basin, Pasquotank River Basin, Roanoke River Basin, Tar Pamilco River Basin, White Oak River Basin and Yadkin River Basin all contain water bodies that are impaired by mercury.⁹⁸ Approximately 27 different water bodies in these various basins are affected by mercury, including the Atlantic Ocean.⁹⁹ Many of these water bodies have multiple impaired water listings for mercury. These impaired water bodies are listed as category 4a or 5. Category 4a waters have a completed and EPA approved TMDL but water quality standards have not yet been achieved. The mercury impaired waters of the Lumber River Basin fall under this category.¹⁰⁰ These rest of the mercury impaired waters of the other river basins are listed as category 5, which means that they are impaired for their designated use by a pollutant and the proper technical conditions exist to require a TMDL be completed.¹⁰¹

The 303(d) list also includes a column that describes the potential sources of the pollutant impairing the water. For the vast majority of mercury-impaired water bodies, this column was left blank. In the case of the Chowan River and water bodies in the Roanoke River Basin, the source of the mercury contamination was listed as atmospheric deposition.¹⁰²

⁹¹ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>

⁹² http://www.catf.us/publications/fact_sheets/children_at_risk/North_Carolina_Kids_Facts.pdf

⁹³ <http://www.epi.state.nc.us/epi/fish/current.html>

⁹⁴ <http://www.epi.state.nc.us/epi/fish/current.html>

⁹⁵ <http://www.epi.state.nc.us/epi/fish/current.html>

⁹⁶ <http://www.epi.state.nc.us/epi/fish/mercuryhealthfacts.html>

⁹⁷ <http://h2o.enr.state.nc.us/tmdl/documents/2004IRCategories4-7.PDF>

⁹⁸ <http://h2o.enr.state.nc.us/tmdl/documents/2004IRCategories4-7.PDF> (draft 303d)

⁹⁹ <http://h2o.enr.state.nc.us/tmdl/documents/2004IRCategories4-7.PDF>

¹⁰⁰ <http://h2o.enr.state.nc.us/tmdl/documents/2004IRCategories4-7.PDF>

http://h2o.enr.state.nc.us/tmdl/documents/2004IntegratedReporttext_001.pdf (303d report)

¹⁰¹ http://h2o.enr.state.nc.us/tmdl/documents/2004IntegratedReporttext_001.pdf (303(d) report)

¹⁰² <http://h2o.enr.state.nc.us/tmdl/documents/2004IRCategories4-7.PDF>

North Carolina has prepared a mercury TMDL report for the Lumber River Basin (35 segments).¹⁰³ The EPA approved this document on October 15, 2000.¹⁰⁴ It focuses on both point and non-point sources of mercury contamination. The TMDL endpoint is determined by the concentration of mercury in fish tissue. This area has been under FCAs for mercury since 1994 when mercury levels in fish tissues exceeded federal and state levels of 1mg/kg. The TMDL report discusses mercury cycling in the environment and how mercury in the atmosphere can be deposited to land and water through wet or dry deposition. The Lumber and Waccamaw River Watershed have ideal factors for the production of methylmercury.¹⁰⁵

The TMDL report also discusses sources of mercury emissions. It talks about anthropogenic and atmospheric sources generally without discussing the specific contribution by coal-fired power plants. Atmospheric regional models estimated that in North Carolina the average annual total mercury deposition ranged from 10-30 ug/m².¹⁰⁶ Local scale models predicted that 7-45% of locally emitted mercury would be deposited within 50 km of a hypothetical facility. The remaining mercury may be transported over great distances and be deposited in areas without local point emission sources.¹⁰⁷ Table 5 of the report lists local facilities with 1996 estimates of mercury stack emissions greater than 10 lbs/year. The list does not include coal-fired power plants although in 2000, all 14 reported releasing at least 42 lbs of mercury into the air.¹⁰⁸ Furthermore, several coal-fired power plants are located in or near the counties of this river basin.

Rainwater data demonstrates that a major source of mercury into the Lumber and Waccamaw River Basins is from atmospheric deposition and there is a local source influence on atmospheric mercury vapor levels.¹⁰⁹ In determining the maximum allowable mercury loads, the Mercury Cycling Model was used, which accounts for atmospheric deposition of mercury. Maximum allowable mercury loads during summer conditions were calculated for a variety of waters in the Lumber and Waccamaw River Watersheds—these loads ranged from 0.02-6 g/day.¹¹⁰ Monitoring suggests that atmospheric mercury concentrations at Waccamaw State Park can be interpreted from both a global pool and local sources of mercury.¹¹¹

The report stresses that North Carolina cannot alone eliminate atmospheric deposition of mercury over surface waters especially if the sources come from outside the state.¹¹² The

¹⁰³ http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm Only a draft version of the TMDL is available on the website.

¹⁰⁴ http://oaspub.epa.gov/pls/tmdl/waters_list.tmdl_report?p_tmdl_id=1560

¹⁰⁵ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf They have high levels of organic carbon, low pH, in summer lower dissolved oxygen levels and higher temperatures.

¹⁰⁶ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹⁰⁷ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹⁰⁸ http://www.uspirg.org/reports/childrenatrisk5_02/NC-052002.pdf

¹⁰⁹ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹¹⁰ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹¹¹ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹¹² http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

report states that current and future NPDES point sources in the Lumber and Waacamaw River Watersheds should not be allowed to increase the total mercury already present in the system. During this permit cycle, limits will be issued to facilities that have detected mercury in effluent in recent years. Other facilities may be asked to monitor effluent for mercury. Sixty percent of allowable load would be allocated to nonpoint sources, including atmospheric deposition and runoff and the remaining 40% will be allocated to point sources.¹¹³

Category 5 waters, those that require a TMDL, are at different stages in the TMDL development process. The 303d report highlights waters that will have a draft TMDL prepared for 2006. North Carolina is prioritizing waters impaired due to bacteria for TMDL development. However, the schedule includes Phelps Lake in the Pasquotank River Basin, Cashie River in the Roanoke River Basin, and Ledbetter Lake in the Yadkin-Pee Dee River Basin as waters scheduled for TMDL development by early 2006.¹¹⁴ The report does note that TMDLs for waters not listed in the schedule may also be developed during this time.

The draft mercury TMDL in the Cashie River in the Roanoke River Basin has been completed and is posted for comments.¹¹⁵ The TMDL endpoint is the removal of the FCA (target of 0.4 mg/kg mercury tissue residue criterion in a 40 cm largemouth bass). Point sources contribute to less than 1% of mercury present in the river. The vast majority of this watershed load is a result of atmospheric deposition.¹¹⁶ The report discusses near-field atmospheric deposition and identifies coal-fired power plants as a significant potential point sources of airborne mercury.¹¹⁷ Table 2-5 lists facilities releasing mercury emissions within 200 miles of the Cashie River. Nine coal-fired power plants appear on this list.¹¹⁸

TMDL linkage analysis of atmospheric mercury loading and fish tissue residue concentration predicted that a reduction of 73% in the existing rate of mercury loading will be needed to achieve water quality and fish tissue targets for the river.¹¹⁹ The TMDL for Cashie River is 535 g/yr with a load allocation of 431 g/yr (nonpoint sources), wasteload allocation of 8 g/yr and a margin of safety of 96 g/yr.¹²⁰ However, a specific load allocation was not assigned to coal-fired power plants.¹²¹

¹¹³ http://h2o.enr.state.nc.us/tmdl/Docs_TMDL/mercury%20submittal%20draft.pdf

¹¹⁴ http://h2o.enr.state.nc.us/tmdl/documents/2004IntegratedReporttext_001.pdf

¹¹⁵ http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm

¹¹⁶ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>

¹¹⁷ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>

¹¹⁸ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>

¹¹⁹ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>.

¹²⁰ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>. The existing load for the river was 1,994 g/yr.

¹²¹ <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>. Loads were assigned to other uses including: water, forests/wetlands, agriculture, residential/urban, transitional, other.

The river possesses characteristic favourable for the production of methylmercury. Although, reductions to atmospheric depositions of mercury will reduce the mercury in the environment, the report states that the most promising strategy to reduce mercury is to promote management practices that reduce erosion.¹²² The report explains that reduction in atmospheric deposition will eventually reduce mercury from the environment but the response may be very slow. Education and recycling programs that reduce mercury releases may have a positive effect but not on a significant magnitude. It is not known how to reduce mercury methylation in swamp waters. Therefore, the report argues that reduction of sediment loading is the most promising option.

North Carolina also lists two special studies on mercury on their website.¹²³ The first is the 2002-2003 NC Eastern Regional Mercury Study that will attempt to answer questions that will be used for future TMDLs and water quality standards.¹²⁴ The second special study is the METAALICUS: Mercury Experiment To Access Atmospheric Loading In Canada and the United States.¹²⁵ The report portion of the draft 2004 303d list also describes North Carolina's Nonpoint Source Management Program. This program does not address mercury emissions from coal-fired power plants.¹²⁶

7. Ohio

Ohio is the second greatest emitter of mercury air emissions from electric utilities.¹²⁷ According to the Clean Air Task Force, there are 27 coal fire power plants in Ohio.¹²⁸ The total reported mercury released into the air by power plants is 7,353 lbs in 2002.¹²⁹ The total number of lake acres/river miles under a mercury fish consumption advisory (FCA) is 188,461/29,113.¹³⁰

¹²² <http://h2o.enr.state.nc.us/tmdl/documents/CashieRiverTMDLV157-27-04.pdf>

¹²³ <http://h2o.enr.state.nc.us/tmdl/SpecialStudies.htm#Mercury>

¹²⁴ http://h2o.enr.state.nc.us/tmdl/Docs_SpecialStudies/mercury%20interim%20handout_v2.pdf. Goals include: to determine levels of ambient mercury in the surface water system; to estimate site-specific total mercury:methyl mercury (THg:MeHg) translators to evaluate water quality criteria; to develop site-specific water to fish bioaccumulation factors (BAFs); and to determine levels of mercury in treatment plant effluent.

¹²⁵ http://www.biology.ualberta.ca/old_site/metaalicus//metaalicus.htm **METAALICUS is a whole-ecosystem experiment in which mercury inputs to a headwater lake and its watershed will be increased experimentally to better understand atmospheric mercury deposition**

¹²⁶ http://h2o.enr.state.nc.us/tmdl/documents/2004IntegratedReporttext_001.pdf

¹²⁷ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions.

¹²⁸ http://www.catf.us/publications/fact_sheets/children_at_risk/Ohio_Kids_Facts.pdf

¹²⁹ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>. Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 7,725 lbs of mercury was emitted by coal fired plants in 2000. These numbers were calculated by applying mercury emissions rates to the heat input reported in the EPA issued Emissions Monitoring System (EMS) for 2000.

[/www.catf.us/publications/fact_sheets/children_at_risk/Ohio_Kids_Facts.pdf](http://www.catf.us/publications/fact_sheets/children_at_risk/Ohio_Kids_Facts.pdf)

¹³⁰ http://www.catf.us/publications/fact_sheets/children_at_risk/Ohio_Kids_Facts.pdf

Ohio has had a state-wide FCA for mercury since 1997 to protect women of child bearing age and children under the age of six.¹³¹ These sensitive populations are advised not to eat more than one meal per week of any species of fish caught from any body of water in Ohio unless there is a more restrictive advisory issued. For less sensitive populations in Ohio, less strict fish advisories have been issued. In addition, The 2005 Ohio Sport Fish Consumption Advisory-Limit Meals identified 54 bodies of water in Ohio where fish are contaminated by mercury and advised to limit fish consumed from these bodies of water to one meal per month.¹³²

Many of the 54 bodies of waters identified by the FCA appear on the 2004 Ohio 303d list (approximately 37).¹³³ However, the EPA's website only identifies two bodies of water in the 303d list as being impaired by mercury—Chagrin River (headwaters to downstream Aurora Branch) and Walnut Creek¹³⁴ (headwaters to downstream Sycamore Creek). Neither of these water bodies have a TMDL, although Ohio's TMDL website states one is being prepared for Chagrin River.

Ohio has 15 US EPA approved TMDLs, nine are for water bodies that have a FCA for mercury although the TMDL is for impairments other than mercury.¹³⁵

Only two TMDL reports mention mercury contamination in water bodies. The Sandusky River TMDL report¹³⁶ identifies mercury contamination as a cause of impairment in this water body. The highest level was downstream from the Bucyrus wastewater treatment plant at 0.701 mg/kg, a level which can cause aquatic life toxicity. The other source for mercury identified in the report is combined sewer overflows. The report does not identify coal-fired power plants as a potential source for the mercury pollution. Although the report urges serious commitments be made to address mercury impairment and its resulting health concerns, the report does not specifically outline a TMDL standard for the reduction of mercury.

The Little Miami River TMDL includes as an appendix the Pollutant Load Analysis for Little Beaver Creek.¹³⁷ This is not considered to be a formal TMDL report for Little Beaver Creek but rather an informational analysis, which includes TMDL endpoints. The Pollutant Load Analysis states the mercury is one of the greatest threats to aquatic health of the creek. The mercury is attributed to pollution from urban, industrial runoff and spills, storm water runoff and effluent from the Montgomery County Waste Water

¹³¹ <http://www.epa.state.oh.us/dsw/fishadvisory/statewide.html>

¹³² <http://www.epa.state.oh.us/dsw/fishadvisory/limitmeals.html>

¹³³ http://www.epa.state.oh.us/dsw/tmdl/2004IntReport/final_2004IR_appB_2.pdf

¹³⁴ http://oaspub.epa.gov/waters/region_rept.control?p_region=5. Walnut Creek is not identified as having mercury contaminated fish in the Ohio FCAs. However, since it is part of the Scioto River basin it may be included in its FCA.

¹³⁵ <http://www.epa.state.oh.us/dsw/tmdl/#TMDL%20Projects>

¹³⁶ http://www.epa.state.oh.us/dsw/tmdl/Sandusky_upper_final_Report.pdf

¹³⁷ <http://www.epa.state.oh.us/dsw/tmdl/LittleMiamiRiverUpperTMDL.html>;
<http://www.epa.state.oh.us/dsw/tmdl/ULMRAppF.pdf>

Treatment Plant (MCWWTP). The TMDL endpoint for mercury is RM 4.40. The report acknowledges that mercury may occur from anthropogenic emissions (i.e. coal-fired power plants) that are released into the atmosphere and can return to land via wet and dry deposition. The report states the only location where mercury exceeded the TMDL endpoint is downstream the MCWWTP and entry point of the North Branch tributary. The mercury loads in MCWWTP effluent was 67.5 lb/yr between 1990-1995 and 0.00 lb/yr 1995-1999. There was no changes in treatment processes to account for the reduction in mercury, however, changes to dental and medical practices may account for the decrease.¹³⁸ Coal fired power plants are not discussed as a source of mercury contamination of this water body.

The US EPA prepared the 2004 Mahoning River TMDL report. Although, a FCA for mercury is in place for this river, there was no mention of mercury in the report.

8. Pennsylvania

Pennsylvania is the third largest emitter of mercury air emissions from coal-fired power plants.¹³⁹ There are 23 coal-fired power plants in this state.¹⁴⁰ The total lake acres/river miles under fish consumption advisory (FCA) is 5,537/0 respectively.¹⁴¹ The total report release of mercury air emissions from electric utilities totaled 6,986 lbs in 2002.¹⁴²

The *Pennsylvania Fish Guide* shows FCAs for waterbodies in the State. There is a state-wide FCA. "There are a total of 1,042 miles of streams in Pennsylvania listed as having human health-related problems and 511,033 acres of lakes not attaining human health standards. The impairment in Presque Isle Bay accounts for 481,918 of those acres." Pennsylvania, has not issued FCAs for Lake Erie and Presque Isle Bay. (See <http://www.dep.state.pa.us/dep/deputate/pollprev/p3erie/HowMercurygetsintofish.html>)

The Department's 2002 303(d) list shows impaired water bodies. (See <http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303-2002/303d-Report.htm>) Water bodies impaired because of FCAs are listed in section 2 as "Human health uses." The 2002 report notes that,

¹³⁸ Limitations in detecting small amounts of mercury should be noted.

¹³⁹ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>.

¹⁴⁰ http://www.catf.us/publications/fact_sheets/children_at_risk/Pennsylvania_Kids_Facts%20.pdf

¹⁴¹ http://www.catf.us/publications/fact_sheets/children_at_risk/Pennsylvania_Kids_Facts%20.pdf

¹⁴² EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>. Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 9,130 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000. http://www.catf.us/publications/fact_sheets/children_at_risk/Pennsylvania_Kids_Facts%20.pdf

In Schedule 2, part A, of the 2002 reports, list all impaired water bodies for human uses ie based on FCAs in the State. See http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303-2002/pdf/303d-02_S2A.pdf In this report, mercury is mentioned on almost 60 State Water Plans. In every case, the source of mercury is listed as unknown. The data source is fish tissue sampling. In a number of cases, the contaminant in question is PCBs. In about 10 cases the year of listing was 1996, although none of these are for mercury. In the remaining cases the year of listing was 1998 and (predominantly) 2002. **There is not a single case where any of the noted waterbodies are being targeted for a TMDL.**

In the 2002 report's Section 2, Part B, "**303(d) List of Streams and Source of Impairments with Approved TMDLs Human Health**" (see http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303-2002/pdf/303d-02_S2B.pdf **there is not a single approved TMDL that deals with mercury.** (The approved plans are for chlordane and PCBs. In each case the source is listed as unknown.)

Section 2, Part C, deals with impaired human uses for lakes. (See http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303-2002/pdf/303d-02_S2C.pdf) In almost 30 cases or virtually all of the listings mercury is the noted contaminant. In each case, the priority is listed as high. In each mercury case the data source is noted as a FCA, while the source of the contaminant is noted as atmospheric deposition. In two cases the year listed is 1996 with the remaining cases listed in 2002.

Section 2, Part D, 2002 List of Lakes and Sources of Impairment with Approved TMDLs Human Health, (see: http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303-2002/pdf/303d-02_S2D.pdf) shows that not a single TMDL has been approved for mercury (nor is there any evidence that the EPA has prepared such a TMDL.) Indeed, this section shows only a single TMDL, which is for PCBs.

A 2003 Department slide show about *Pennsylvania's TMDL Program* (see: http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/TMDL/TMDL_Slides.pdf) suggests that TMDLs are being prepared based on FCAs. This document says that 100 significant lakes would be assessed within 10 years, that TMDLs for all 1996 303(d) listed waters (575 segments) would be prepared within 10 years for non-mining contaminated water bodies. In addition, TMDLs for newly listed waters (403 in 1998) would be prepared. The categories for TMDL development are shown as point source only contamination, FCAs, lakes, acid mine drainage, and non-point source impairment. The document acknowledges that not many streams are contaminated only due to point sources. Under a slide entitled "Fish Consumption Advisories" it is acknowledged that allocations are appropriately made to both point and non-point sources, however, the only contaminants that are noted are "PCBs and Chlordane." A commitment is made to produce 448 TMDLs between 1998 and 2007 for non-mining discharges. 62 TMDLs had been prepared and approved by 2001. Of the 84 TMDLs from the 1996 list that had been approved, none were prepared for mercury. (PCBs are mentioned, which suggests that

mercury would similarly be mentioned had it been addressed.) Mercury is not mentioned in the slide presentation.

There is one mention of mercury in the Department's 2004 update on its six year plan for TMDLs. This is in Table 2 for proposed non-mining TMDLs for 2005 for Lake Wallenpaupack where the source is listed as "Atmospheric Deposition" and the cause is listed as Mercury. The document suggests this lake was first listed on the 1996 list. We could find no additional documentation relating to this TMDL.

Oddly, a Department Fact Sheet on *Watershed Management and TMDLs* (see: <http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/Facts/fs2248.htm>) does not even mention mercury, even though there is a discussion of both FCAs and nonpoint sources. The latter discussion focuses on how nonpoint source allocations are determined. The discussion of FCAs refers only to chlordane and PCBs. "The overall goal of a **PCB/chlordane** TMDL is to achieve the fishable/swimmable goal of the Clean Water Act."

The document notes that TMDLs must be developed for several categories, including:

- point sources (permitted sewage and industrial discharges);
- nonpoint sources (agriculture and urban runoff);
- lakes;

It is unclear whether the causes listed in parentheses are exhaustive, but oddly airborne deposition --- a very significant non point source --- is not mentioned.

This document also has a useful discussion of the TMDL requirements, stating:

**TMDL Statutory and Regulatory Requirements –
§ 303(d) Clean Water Act and 40 C.F.R. § 130.7**

Clean Water Act Section 303(d) establishes the Total Maximum Daily Load (TMDL) program. The purpose of the TMDL program is to identify sources of pollution and allocate pollutant loads in places where water quality goals are not being achieved. The requirements of the TMDL program under the Act and EPA's implementing regulations at 40 C.F.R. S 130.7 are described below.

- States must develop lists of waters for which technology-based or other required pollution controls are not stringent enough to meet water quality standards.
- States must establish priority rankings for waters on the lists based on severity of pollution and uses to be made of the water bodies, such as recreation or fishing.
- States must target those waters for which TMDLs will be developed over the next two years.
- States must submit lists of waters to EPA every two years by April 1 of even numbered years.
- States must develop TMDLs. TMDLs specify a pollutant budget that must be achieved to meet state water quality standards and allocates pollutant loads among pollution sources in a watershed, e.g., point and nonpoint sources.

- EPA must approve or disapprove State lists and TMDLs within 30 days of final submission, and EPA must establish lists of waters and TMDLs when EPA disapproves.

Sources:

Pennsylvania Department of Environmental Protection: *2002 Section 303(d) List of Impaired Waterbodies*, See

<http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/303d-Report.htm>

Section 2, part A of this list is all impaired water bodies for human uses ie based on FCAs in the State. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/pdf/303d-02_S2A.pdf

Section 2, part B, of this list is the approved TMDLs from part A. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/pdf/303d-02_S2B.pdf

Section 2, part C, is lakes with impaired uses for humans, ie FCAs. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/pdf/303d-02_S2C.pdf

Section 2, part D, is a list of lakes with impaired human uses for which TMDLs have been approved. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/pdf/303d-02_S2D.pdf

Addendum B to the 2002 document entitled, How 1996 303(d) Records **Not** Impacted By Abandoned Mine Drainage (AMD) are Listed in 2002. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/303d-Report.htm#2002_List

Addendum C to the same document: Addendum (C) Lookup Table:

How Records Appearing for the First Time on the 1998 303(d) are Listed in 2002. See

http://www.dep.state.pa.us/dep/deputate/watermgmt/wqp/wqstandards/303-2002/PDF/303d-02_AddenC.pdf

Department of Environmental Protection, Commonwealth of Pennsylvania
Public Health Advisory - 2004: See:

<http://www.dep.state.pa.us/dep/deputate/watermgmt/Wqp/WQStandards/FishAdvis/fishadv isory04.htm>

TMDL summary sheet on Pennsylvania DEP website listing available documents. See:

http://www.dep.state.pa.us/watermanagement_apps/tmdl/

Bureau of Water Supply and Wastewater Management, *Pennsylvania DEP's Six-Year Plan for TMDL Development*, Updated March 2004 See:
http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/TMDL/TMDL_6yearplan.

Pennsylvania DEP: *Pennsylvania's TMDL Program*, 2003, See:
http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/TMDL/TMDL_Slides.pdf

Pennsylvania DEP, *Watershed Management and TMDLs*, See:
<http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/Facts/fs2248.htm>

9. Texas

Texas emits the greatest amount mercury air emissions from coal-fired power plants.¹⁴³ There are nineteen coal-fired power plants in the state of Texas.¹⁴⁴ The total lake acres/river miles under mercury fish consumption advisory (FCA) is 10,028/0 respectively.¹⁴⁵ The total reported air releases of mercury by the power plants was 9,815 lbs in 2002.¹⁴⁶

The Texas Department of Health has issued one ban¹⁴⁷ (upper Lavaca Bay) and eleven mercury FCAs for water bodies in Texas (B.A.Steinhagen Lake, Big Cypress Creek, Caddo Lake, Gulf of Mexico, Lake Daingerfield, Lake Kimball, Lake Meredith, Lake Pruitt (Black Cypress Creek), Lake Ratcliff, Sam Rayburn Reservoir (Angelina R.), Toledo Bend Reservoir) including statewide advisories for their entire coastal areas.¹⁴⁸

All of these water bodies appear in the draft 2004 Texas 303d list as mercury impaired waters.¹⁴⁹ All the mercury impaired waters are listed as Category 5C¹⁵⁰ and given a rank of "D"¹⁵¹. This translates to mean that additional data and information is needed before a TMDL is created. There are no immediate plans to create TMDLs for mercury for any of

¹⁴³ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds, electric utilities, point source air emissions. www.epa.gov/triexplorer/geography.htm

¹⁴⁴ http://www.catf.us/publications/fact_sheets/children_at_risk/Texas_Kids_Facts.pdf

¹⁴⁵ http://www.catf.us/publications/fact_sheets/children_at_risk/Texas_Kids_Facts.pdf

¹⁴⁶ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds, electric utilities, point source air emissions. www.epa.gov/triexplorer/geography.htm

¹⁴⁷ <http://www.tpwd.state.tx.us/publications/annual/fish/bans-advisories.phtml> A ban prohibits the possession of all species of fish and crabs. An advisory recommends limits on the amount of fish consumed for certain species.

¹⁴⁸ <http://www.tpwd.state.tx.us/publications/annual/fish/bans-advisories.phtml>

¹⁴⁹ http://www.tnrcc.state.tx.us/water/quality/04_twqi303d/04_303d/04_303d.pdf

¹⁵⁰ Additional data and information will be collected before a TMDL is given for the urgency to initiate a TMDL.

¹⁵¹ For water bodies in Category 5C, a ranking of "D" has been assigned to indicate that additional data and information will be collected before a TMDL is scheduled.

the abovementioned water bodies. The draft 303d list also identifies Houston Ship Channel Tidal as mercury impaired although its FCA warns of dioxins, PCBs, and organochlorine pesticide contamination. Neither the 303d list nor the state environmental website discusses mercury contamination from coal-fired power plants as a potential source of mercury impairment to state water bodies despite the fact that Texas is the US' largest emitter of mercury from electric utilities.

The USEPA website and the Texas TMDL website show that no TMDLs have been prepared for mercury impaired waters.¹⁵² One TMDL project was prepared for Lavaca Bay.¹⁵³ The findings from the research conducted into mercury contamination in the bay concluded that of the 70 samples taken only one marginally exceed the human health criterion for saltwater fish of 25.0 ng/l of mercury in water.¹⁵⁴ Based on these results the TCEQ will recommend de-isting mercury in water for Lavaca Bay in the 2004 Texas Water Quality Inventory and 303d list.¹⁵⁵ However, the current draft of the 303d list still has Lavaca Bay listed as mercury impaired, and the Texas Department of Health still has a fish consumption ban in place for Lavaca Bay on account of mercury contamination.

It is unclear why there is a discrepancy over the mercury content of these waters. However, it should be noted that the mercury in fish and crab tissue is being addressed by the Superfund Program.¹⁵⁶ The Superfund project between the EPA and Alcoa sets out selected remedial actions that will be taken by Alcoa to address the major sources of mercury contamination.¹⁵⁷ This program likely explains the decrease of mercury in the water column in the bay and the decision not to issue a TMDL to address the issue of mercury currently present in fish tissue.

10. West Virginia

West Virginia is the seventh largest emitter of mercury air emissions from electric utilities.¹⁵⁸ There are 14 coal-burning power plants in West Virginia.¹⁵⁹ The total reported power plant releases of mercury was 3,680 in 2002.¹⁶⁰

¹⁵² http://oaspub.epa.gov/waters/state_rept.control?p_state=TX

<http://www.tnrcc.state.tx.us/water/quality/tmdl/sumtable.html>

¹⁵³ <http://www.tnrcc.state.tx.us/water/quality/tmdl/lavacabay.pdf>

¹⁵⁴ <http://www.tnrcc.state.tx.us/water/quality/tmdl/lavacabay.pdf>

<http://www.tnrcc.state.tx.us/water/quality/tmdl/LavacaBayHgFinalReport.pdf>

http://www.tnrcc.state.tx.us/water/quality/tmdl/counties_2.html

¹⁵⁵ <http://www.tnrcc.state.tx.us/water/quality/tmdl/lavacabay.pdf>

¹⁵⁶ <http://www.tnrcc.state.tx.us/water/quality/tmdl/lavacabay.pdf>

¹⁵⁷ <http://www.tnrcc.state.tx.us/water/quality/tmdl/lavacabay.pdf>

<http://www.tnrcc.state.tx.us/permitting/remed/superfund/alcoaa.html>

¹⁵⁸ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds, electric utilities, point source air emissions. www.epa.gov/triexplorer/geography.htm

¹⁵⁹ http://www.catf.us/publications/fact_sheets/children_at_risk/West_Virginia_Kids_Facts.pdf provides a list of these plants.

¹⁶⁰ EPA Tri Explorer 2002 Data, Geography State Report for Mercury and Mercury Compounds released from electric utilities as point source air emissions. <http://www.epa.gov/triexplorer/geography.htm>.

The West Virginia Department of Human Health and Resources **has issued a general advisory for all West Virginia waters as a result of mercury contamination.**¹⁶¹ **A specific advisory for the year 2005 has been issued for 11 bodies of water as a result of mercury levels in fish found in these waters.**¹⁶² **As a result, residents of West Virginia are cautioned to limit their consumption of locally caught fish. In some bodies of water, such as the Kanawha River, residents are advised not to consume specified species of fish.** Approximately six of the waters with a mercury FCA appear on the Final 2004 303d list as mercury impaired waters.¹⁶³ However, the list includes several additional water bodies that are not mentioned in the FCA. The list includes a column describing the sources of the impairment. For the water bodies identified as mercury impaired the sources of the contamination was listed as unknown.¹⁶⁴

The 303d list also states when a TMDL for the water bodies is expected to be completed. All the mercury impaired waters are scheduled to have a TMDL between 2014-2018.¹⁶⁵ The West Virginia Department of Environmental Protection website reports the completion of 18 TMDLs for varying watersheds within West Virginia¹⁶⁶. There are no TMDLs for mercury for any of the mercury impaired waters.¹⁶⁷

Analysis of TMDL findings

In our search of the ten States we have not found, with the exception of North Carolina, any mercury TMDL that has been prepared for a mercury impaired water body that directly addresses nonpoint releases from coal-fired power plants --- despite the large number of waterbodies under FCAs and the large number of waterbodies listed on 303(d) lists as mercury impaired. While it is true that the reason for these failures are diverse --- in the case of Pennsylvania no explanation is given and in the case of Michigan the EPA has offered to assist in preparing plans in 2011 --- the systemic nature of the failure of effective enforcement is shown by the almost total absence of action and more importantly, the concomitant failure by the EPA to take action.

Different reports indicate different amounts of mercury emissions being released into the environment. For example, the Clean Air Task Force, reports that 4,746 lbs of mercury was emitted by coal fired plants in 2000. They calculated their numbers by applying mercury emissions rates to the heat input reported in the EPA Continued Emissions Monitoring System (CEMS) data for 2000.

http://www.catf.us/publications/fact_sheets/children_at_risk/West_Virginia_Kids_Facts.pdf

¹⁶¹ <http://www.wvdhhr.org/fish/current.asp>

¹⁶² <http://www.wvdhhr.org/fish/current.asp>

¹⁶³ [http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303\(d\)_List_and_Supplements_Only.pdf](http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303(d)_List_and_Supplements_Only.pdf)

¹⁶⁴ [http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303\(d\)_List_and_Supplements_Only.pdf](http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303(d)_List_and_Supplements_Only.pdf)

¹⁶⁵ [http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303\(d\)_List_and_Supplements_Only.pdf](http://www.wvdep.org/Docs/7707_EPA_Approved_2004_303(d)_List_and_Supplements_Only.pdf)

¹⁶⁶ http://www.wvdep.org/item.cfm?ssid=11&sslid=188#303_d

¹⁶⁷ <http://www.wvdep.org/alt.cfm?asid=46>

In the ten states we did not find a single TMDL that has been implemented for a mercury impaired water body that directly addressed nonpoint source releases of mercury from coal-fired power plants. Although North Carolina's mercury TMDL did not address coal-fired power plants directly, this TMDL demonstrates that it is possible for states to develop a TMDL that addresses mercury from atmospheric deposition and assign a TMDL endpoint and load allocation for mercury. The absence of TMDLs for mercury-impaired waters in the context of hundreds of mercury impaired waters is strong evidence of EPA indifference to the problem of mercury emissions from coal-fired power plants.

State action as in the case of North Carolina is not necessarily evidence of EPA enforcement action. In fact, we believe that this state action simply suggests the fact of a state following through on its statutory requirements. We note, however, that where states do not act, there is no corresponding EPA enforcement to force action.

As mentioned, the absence of State action is explicable. It is known that the EPA is to regulate emissions to air of mercury from coal-fired power plants. The EPA has effectively deferred any serious attempt to regulate such emissions. States therefore need not worry about being called to account for their failure to prepare TMDLs because the EPA is in fact the source of the problem. In other words, the EPA, according to the evidence we provide, ultimately gives tacit approval for the failure of State TMDL action because it must acknowledge that States will not be able to deal seriously with the problem until the EPA regulates emissions from coal fired power plants.

An EPA news release¹⁶⁸ (Appendix 12I) reports that in "2001 and 2002 combined, more than 5,000 TMDLs were approved or established under the current TMDL rule. The number of TMDLs approved or established annually has steadily increased in the last four years jumping from 500 in 1999 to nearly 3,000 in 2002." Nonetheless we did **not find an implemented mercury TMDL that focused on coal-fired power plants as a major source of mercury contamination of state waters.**

One TMDL in Georgia had been prepared for a mercury contaminated water body as the result of a settlement agreement in a civil action started against the EPA.

We agree that a party may be entitled to prioritize how it deals with the implementation of action on environmental issues. However, we have found no evidence of such prioritization but only a deferral of any TMDLs that might address mercury impairment and coal-fired power plants. In the case of mercury, which the EPA has recognised as a potent neuro toxin --- and one that would be expected to be given high priority given the danger to America's children --- it would be surprising if an official decision has been made across the nation to deal with this pollutant at some distant future date.

F. Conclusions

¹⁶⁸ Appendix 12I, EPA News Release, 03/13/2003.

The U.S. has a strong legislative scheme designed to protect the waters for which Americans are so rightly proud. We assert that the EPA has failed to effectively enforce the Clean Water Act against coal-fired power plants thereby allowing the degradation of these waters.¹⁶⁹

The evidence we present is based on failures by the EPA with respect to mercury that enters U.S. waters indirectly from the air and directly from point sources. This failure to evidenced by a lack of enforcement action respecting control measures necessary under WQS and antidegradation provisions of the CWA, improper NPDES permits for direct discharges of mercury to water, and the failure to force TMDL remediation for impaired waters.

The focus of our petition --- and the basis of any legitimate complaint to the CEC under s. 14 --- is that in cases where states have failed to act, the EPA has not exercised the enforcement power that emanates from its oversight authority against states.

We have found isolated examples of state efforts to protect or remediate its water bodies against atmospheric mercury contamination from coal-fired power plants. Such action is not necessarily evidence of EPA enforcement action since effective state action does not call for an EPA response or intervention.

We believe the evidence of non-enforcement is shown not from a failure to act in one particular area of the CWA but rather that the evidence when taken together shows a systemic failure by the U.S. to enforce laws for the protection of American waters. Each area of evidence is not to be weighed in isolation to see if it amounts to non-enforcement, rather the evidence of non-enforcement in all areas of the CWA against coal-fired power plants is to be weighed together to determine whether there is a failure of effective enforcement.

The evidence of the EPA's failure to deal directly with mercury emissions from coal-fired power plants under the CAA corroborates our other evidence of the EPA's failure to effectively enforce the CWA against coal-fired power plants. This failure under the CAA also subverts the various protection and remediation measures under the CWA. In the context of this failure under the CAA, there is arguably little state benefit from an environmental perspective to deal with coal-fired plants in circumstances where mercury emissions in neighbouring states continue unabated. This explains rather than justifies state inaction and provides the factual context for the EPA's failure to enforce.

¹⁶⁹ Given the proximity of many of the US's largest coal-fired plants to Canada, it is arguable that in this case the trade advantage that is gained by the failure of effective enforcement is at partly at the expense of Canada's environment (38% of airborne deposition in the Great Lakes Area of Canada is from US sources), one of the countries which also suffers the trade disadvantage. We note that given the migration of mercury to Canada, it may be argued that the U.S. gains a trade advantage over Canada not merely by sacrificing its own environment but also that of Canada.

The evidence we did find on government action against coal-fired plants is generally future promised action. It may provide some comfort to Americans and America's trading partners that action will be taken in ten or twenty years. When the victims of mercury pollution are infants and unborn children then they sacrifice their proper development to this contaminant. One may reasonably ask whether a distant future action in fact amounts to non-enforcement. If action is promised in 2050 does this provide solace to one's trading partners who suffer a trade disadvantage for 45 years. If 2050 effectively amounts to non-enforcement then does 2018 amount to non-enforcement? And if 2018 effectively means non-enforcement then can the same be said of 2011, especially when the toxic in question causes serious health risks.¹⁷⁰

We believe the sum of the evidence presented above provides a sufficient evidentiary basis for our assertion of a widespread failure by the U.S. EPA to effectively enforce the provisions of the CWA against coal-fired power plants. We also believe that a CEC factual record is the most effective tool to bring this failure to the attention of the NAFTA parties so that action may eventually be taken to remediate U.S. water bodies from their unfortunate degradation.

¹⁷⁰ Take for instance a case where Ontario closes its coal-fired power plants in 2007. If Ontario takes this action and its power prices rise because renewable power does not hide so-called externalities then Ontario will be at a disadvantage to US power producers for four years between 2007 and 2011. The promise of future action does not much blunt the force of a current trade disadvantage. The NAAEC does not put less value on trade disadvantages only because at some time in the future the disadvantage may be addressed.

Supporting Documents

Appendix 12A: Private Remedies

**A.1: TMDL Litigation by State (Source:
<http://www.epa.gov/owow/tmdl/lawsuit1.html>)**

October 1, 2004

23 STATES IN WHICH EPA IS UNDER COURT ORDER OR AGREED IN CONSENT DECREE TO ESTABLISH TMDLs IF STATES DO NOT ESTABLISH TMDLs

Alabama (1998; 5 yr schedule)	Mississippi (1998; 10 yr schedule)
Alaska (1992; no schedule)	Missouri (2001; 10 yr schedule)
Arkansas (2000; 10 yr schedule)	Montana (2000; 7 yr schedule)
Calif. (LA) (1999; 13 yr schedule)	Nevada (2002; one TMDL by 2005)
Calif. (North Coast) (1997; 11 yr schedule)	New Mexico (1997; 20 yr schedule)
Delaware (1997; 10 yr schedule)	Ohio (2004; 4 yr schedule)
District of Columbia (2000; 7 yr schedule)	Oregon (2000; 10 yr schedule)
Florida (1999; 13 yr schedule)	Pennsylvania (1997; 12 yr schedule)
Georgia (1997; 7½ yr schedule)	Tennessee (2001; 10 yr schedule)
Iowa (2001; 9 yr schedule)	Virginia (1999; 12 yr schedule)
Kansas (1998; 10 yr schedule)	Washington (1998; 15 yr schedule)
Louisiana (2002; 10 yr schedule)	West Virginia (1997; 10 yr schedule)

STATES WITH A PENDING CASE IN WHICH PLAINTIFFS HAVE FILED LITIGATION SEEKING TO COMPEL EPA TO ESTABLISH TMDLs

None

17 STATES (15 ACTIONS) DISMISSED WITHOUT ORDERS THAT EPA ESTABLISH TMDLs (SOME CASES WERE RESOLVED WITH SETTLEMENT AGREEMENTS OR EPA COMPLETED ALL COURT-ORDERED OBLIGATIONS AND CASE DISMISSED)

Arizona (EPA completed all consent decree obligations; decree terminated July 17, 2000)

California (9th Circuit affirmed dismissal, 2002)

California (Newport Bay) (EPA completed consent decree obligations; decree terminated 2003)

Colorado (Joint Motion for Administrative Closure filed August 24, 1999; parties signed

settlement agreement in which EPA agreed to establish TMDLs if State did not)

Hawaii (EPA completed all consent decree obligations; decree terminated December 9, 2002)

Idaho (EPA Motion to Dismiss granted 1997; settlement agreement signed 2002)

Lake Michigan (WI, IL, IN, MI) (Scott case -- final order 1984; related NWF case challenging EPA actions in response to Scott order -- case dismissed 1991)

Minnesota (Dismissed 1993)

Maryland (Dismissed 2001)

New Jersey (Dismissed 2002)

New York (EPA Motion to Dismiss granted on all but one claim May 2, 2000)

North Carolina (Joint Stipulation of Dismissal filed June 1998; EPA agreed by letter to ensure development of a TMDL for the Neuse River by date certain)

Oklahoma (Tenth Circuit upheld dismissal of case on August 29, 2001)

South Dakota (Dismissed without prejudice on August 27, 1999)

Wyoming (Dismissed 2003)

**A.2: Coal-Fired Power Plant Civil Judicial Complaints (Source:
<http://www.epa.gov/compliance/resources/cases/civil/caa/coalcp.html>)**

Coal-Fired Power Plant Civil Judicial Complaints

On November 3, 1999, the Department of Justice and the Environmental Protection Agency announced the filing of civil complaints against seven electric utility companies operating coal-fired power plants in the Midwest and Southeast, charging that their plants illegally released massive amounts of air pollutants over a period of several years and contributed some of the most severe environmental

problems facing the United States today. The companies involved are American Electric Power Company, Cinergy, FirstEnergy, Illinois Power, Southern Indiana Gas & Electric Company, Southern Company and Tampa Electric Company. These complaints were subsequently amended in some cases.

Complaints

- [Alabama Power Company; Georgia Power Company; and Southern Company Services, Inc.; subsidiaries of the Southern Company, filed in Georgia](#) (PDF, 61 KB)
- [American Electric Power Service Corp., Indiana Michigan Power Co., d/b/a; American Electric Power Ohio Power Company, d/b/a; American Electric Power Appalachian Power Company, d/b/a; American Electric Power Cardinal Operating Company; and Central Operating Company](#) (PDF, 62 KB)
- [Cinergy Corporation; PSI Energy, Inc.; Cincinnati Gas & Electric Company](#) (PDF, 44KB)
- [Illinois Power Company](#) (PDF, 42KB)
- [Ohio Edison Company, Pennsylvania Power Company, subsidiaries of First Energy Corporation](#) (PDF, 42KB)
- [Southern Indiana Gas and Electric Company](#) (PDF, 42KB)
- [Tampa Electric Company](#) (PDF, 31KB)
- [Alabama Power Company, Filed in Alabama](#) (PDF, 71KB)
- [Duke Energy Corporation](#) (PDF, 109KB)

Amended Complaints

- [Georgia Power Company Amended Complaint](#) (PDF, 57KB)
- [Illinois Power Company, Dynergy Midwest Generation, Inc. Amended Complaint](#) (PDF, 53KB)
- [Ohio Edison Company, Pennsylvania Power Company Amended Complaint](#) (PDF, 53KB)
- [Southern Indiana Gas and Electric Company Amended Complaint](#) (PDF, 51KB)

A.3: Summary of TMDL Litigation as of Aug.13, 1997¹⁷¹

STATES WITH RESPECT TO WHICH EPA IS CURRENTLY UNDER COURT
ORDER TO ESTABLISH TMDLs IF STATES DO NOT ESTABLISH TMDLs

¹⁷¹ Source: U.S. Environmental Protection Agency, Office of Water, TMDL Litigation, August 1997

Oregon (1986 consent decree)
Alaska (1992 court order)
Georgia (1996 court order)
California (North Coast) (1997 consent decree)
Pennsylvania (1997 consent decree)
Arizona (1997 consent decree)
New Mexico (1997 consent decree)
West Virginia (1997 consent decree)

STATES WITH RESPECT TO WHICH PLAINTIFFS HAVE FILED LITIGATION
SEEKING TO COMPEL 303(d) LISTS AND/OR TMDLs

New York
New Jersey
Delaware (consent decree filed with court 8/97)
North Carolina
Alabama
Louisiana
Kansas
Montana
Wyoming
California (Newport Bay)*
Washington
Oregon
Idaho

* Complaint voluntarily dismissed pending settlement discussions

STATES WITH RESPECT TO WHICH NOTICES OF INTENT TO SUE HAVE
BEEN FILED

Alabama (pending notices in addition to complaint *filed* 3/97)

Florida

Mississippi

Colorado

Maryland

Oklahoma

EARLY TMDL CASES THAT HAVE BEEN DISMISSED

Lake Michigan I (WI, IL, IN, MI) (Scott v. City of Hammond 530 F. Supp. 288 (N..D. Ill. 1981)), *affd in part, rev'd in part*, 741 F.2d 992 ((7th Cir. 1984))

Lake Michigan II (related case challenging EPA actions in response to Scott order, case dismissed 1991)

Minnesota (dismissed 1993)

Appendix 12B: State by State Materials for Antidegradation and WQS Argument including in each case:

Water Use Designations and Definitions, Antidegradation Designated Uses (Tiers), and Waters under FCAs and selected comparative water use designations

Ranked Facilities for Mercury Air Emissions (from Environmental Defence: Scorecard) in pounds of air releases

Waterbodies under Mercury FCA (from US EPA)

Supporting Materials including WQS, Antidegradation Policy, Water Use Designations and Statewide Criteria, Designated Use Defined, Waters and Designated Uses, Special High Quality Waters List

Alabama		
Alabama's Water Use Classifications (Alabama Department of Environmental Management, Water Division, Water Quality Program, Chapter 335-6-10):	Abbreviation:	Specific Water Quality Criteria- Best Usage of Waters (335-6-10.9)
Outstanding Alabama Water	OAW	Activities consistent with the natural characteristics of the waters.
Public Water Supply	PWS	Source of water supply for drinking or food-processing purposes
Swimming and Other Whold Body Water Contact Sports	S	swimming and other whole body water contact sports
Shellfish Harvesting	SH	propagation and harvesting of shellfish for sale or use as food product
Fish and Wildlife	F&W	fishing, propagation of fish, aquatic life, and wildlife, and any other usage except for swimming and water contact sports or as a source of water supply for drinking or food processing purposes
Limited Warmwater Fishery	LWF	agricultural irrigation, livestock watering, industrial cooling...
Agricultural and Industrial Water Supply	A&I	agricultural irrigation, livestock watering, industrial cooling...
Alabama Waterbodies under Mercury Fish Consumption Advisory	Water Use Classification of Alabama Waterbodies under Mercury Fish Consumption Advisory	
Big Escambia Creek	F&W	
Chickasaw Creek	LWF/ F&W	

Cold Creek Swamp	PWS/ F&W	
Conecuh River	LWF/ F&W	
Escatawpa River	S/ F&W	
Fish River	S/ F&W	
Fowl River	S/ F&W	
Little Escambia Creek	S/ F&W	
Middle River	F&W	
Mobile River	PWS/ F&W/LWF	
Opossum Creek	A&I	
Styx River	F&W	
Tensaw River	OAW/S/F&W	
Tombigbee River	S/F&W	
Valley Creek	S / F&W	
Yellow River	F&W	

Illinois		
Illinois Waterbody Use Designations (Illinois Pollution Control Board Regulation 35 III.Adm. Code Part 303):	Abbreviation	Definition of Use Designations
Outstanding Resource Waters	ORW	An ORW is a surface water body or water body segment that is of exceptional ecological or recreational significance and must be designated by the Board. See 303.205 and 302.105(b).
High Quality Water	HQW	See Section 302.105(c), 303.205
General Use Waters		All waters of the State must meet the general use standards of Part 302 B
Public food Processing Water Supplies		
Underground Waters		

Secondary contact and Indigenous Aquatic Life Waters		Waters which are required to meet the secondary contact and indigenous aquatic life standards of Subpart D, Part 302, are not required to meet the general use standards or the public and food processing water supply standards of Subparts B and , Part 302
Illinois Waters Under Mercury Fish Consumption Advisory		
Statewide- All Rivers and Lakes		

Indiana		
Indiana Surface Water Use Designations for Non- Great Lakes (327 IAC 2-1-2)	Abbreviation	Best Use
Full Body contact recreational use		Surface waters of the state are designated for Full Body contact recreational use
Warm water aquatic community		All waters will be capable of supporting a well- balance warm water aquatic community
Public or industrial water supply		All waters used for public or industrial water supply must meet standards for those uses at the points were the water is withdrawn

		Exceptional Use- All waters which provide unusual aquatic habitat, which are an integral feature of an area of exceptional natural beauty or character, or which support unique assemblages of aquatic organisms may be classified for exceptional use.
Exceptional Use		
Agricultural Use		
		All waters in which naturally poor physical characteristics, naturally poor chemical quality or irreversible man-made conditions
Limited Use		
Indiana's Designated Exceptional Use Waterbodies (Non- Great Lakes) Under Mercury Fish Consumption Advisory (327 IAC 2-1-11(b))	Listed on FCA	
Big Pine Creek	yes	
Mud Pine Creek	no	
Fall Creek	yes	
Indian Creek	no	
Clifty Creek	no	
Bear Creek	no	
Rattlesnake Creek	no	
Bear Creek tributary	no	
Blue River	yes	
South Fork of Blue River	yes	
Lost River	no	
Indiana Surface Water Use Designations (Great Lakes) (327 IAC 2-1.5-5)		Definitions

		All surface waters of the state within the Great Lakes are designated for full body contact
Full body contact		
		All surface waters shall be capable of supporting a well-balanced warm water aquatic fishery
Warm Water aquatic fishery		
		All listed waters shall be capable of supporting natural reproduction of trout (where natural temp permits)
Trout Reproduction		
		All surface waters used for public water supply are designated as a public water supply
Public Water supply		
		All surface waters used for industrial water supply are designated as an industrial water supply
Industrial Water supply		
		All surface waters for agricultural purposes are designated as an agricultural use water
Agricultural		
Limited Use Waters		
Outstanding State Water Resource		see 327 IAC 2-1.5-2(63) Definitions
Indiana's Designated Outstanding State Resource Waters (Great Lakes) Under Mercury Fish Consumption Advisory (See 327 IAC 2-1.5-19(b))		
The Indiana portion of the open waters of Lake Michigan		

Kentucky		
Kentucky Surface Water Use Designations (401 KAR 5:026):		
	Abbreviation:	Definition
Outstanding State Water Resource	OSRW	if the water meets the requirements for an outstanding state resource water as provided in 401 KAR 5:031, Section 8, and if the surface water demonstrates national ecological or recreational significance
Exceptional Water	EW	see criteria at 401 KAR 5:-30(2)
Domestic water supply	DWS	means surface waters that with conventional treatment are suitable for human consumption through a public water system, culinary purposes, or for use in any food or beverage processing industry
Primary contact recreation	PCR	those waters suitable for full body contact recreation during the recreation season of May1- Oct 31 (401 KAR 5:002 Definitions)
secondary contact recreation	SCR	those waters suitable for partial body contact recreation, with minimal threat to public health due to water quality (401 KAR 5:002 Definitions)
Cold Water Aquatic Habitat	CAH	
Warm Water Aqatic Habitat	WAH	

Kentucky Waterbodies under Mercury Fish Consumption Advisories	Surface Water Use Designations for Kentucky's waterbodies under Mercury Fish Consumption Advisory	
Ohio River	OSRW, DWS, SCR, PCR, WAH	
Metropolis Lake	OSRW, SCR, PCR, WAH	
<i>Statewide- all waters and lakes</i>	OSRW, DWS, SCR, PCR, WAH, CAH, WAH	

Michigan		
Michigan's Designated Uses (R 323.1100)		Definition Designated Uses
<i>At minimum, all surface waters of the state are designated for, and shall be protect for all of the following uses (323,1100):</i>		
Agriculture		
Navigation		
Industrial Water Supply		
Public Water Supply		"Public water supply" means a surface raw water source that, after conventional treatment, provides a source of safe water for various uses, including human consumption, food processing, cooking and as a liquid ingredient in foods and beverages. (323.1044 Definitions)
Warmwater fishery		
Other indigenous aquatic life and wildlife		
Partial Body Contact Recreation		"partial body contact recreation" means any activities normally involving direct contact of some part of the body with water, but not normally involving immersion of the head or ingesting water, including fishing, wading, hunting and dry boating" (323.1044 Definitions)

Total Body Contact Recreation		<p>"Total body contact recreation" means any activities normally involving direct contact with water to the point of complete submergence, particularly immersion of the head, with considerable risk of ingesting water, including swimming"(323.1044 Definitions). All surface waters of the state are designated for, and shall be protected for, total body contact recreation from May 1- October 31 in accordance with the provisions of R 323.1062.</p>
<p>Michigan Waterbodies Under Mercury Fish Consumption Advisory</p>		
Statewide: All Lakes		

<p>North Carolina</p>			
<p>North Carolina's Waterbody Use Classifications (15A NCAC 02B .0101)</p>	<p>Abbreviation</p>	<p>Definitions of Use Classifications</p>	<p>Best Use Criteria of Classified Waters</p>
<p>Freshwater Classifications (15 NCAC 02B .0101(c)):</p>			

Class C-	C	Freshwaters protected for secondary recreation, fishing, aquatic life including propagation and survival, and wildlife. All freshwaters shall be classified to protect these uses at minimum.	Aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation, agriculture and any other usage except for primary recreation or as a source of water supply for drinking, culinary or food processing purposes.(15A NCAC 02B.0211)
Class B-	B	freshwaters protected for secondary recreation which includes swimming on a frequent or organized basis and all Class C uses.	Primary recreation and any other best usage specified by the "C" classification. (02B .0219)
Class WS-I	WS-I	public water supplies (15 NCAC 02B .0101)	A source of water supply for drinking, culinary, or located on land in public ownership, and any best usage specified for Class C waters (02b .0212)
Class WS-II	WS-II	public water supplies	A source of water supply for drinking, culinary, or food-processing purposes for those users desiring maximum protection for their water supplies where a SW-I classification is not feasible and any best usage specified for Class C waters (02B .0214)

			A source of water supply for drinking, culinary or food-processing purposes for those users where a more protective WS-I or WS-II classification is not feasible and any other best usage specified for Class C waters.
Class WS-III	WS-III	public water supplies	
Class WS-IV	WS-IV	public water supplies	02B .0216
Class WS-V	WS-V	public water supplies	02B .0218
Class WL	WL	wetlands	02B .0219
Tidal Salt Waters (15 NCAC 02B .0101(d)):			Aquatic life propagation and maintenance of biological integrity (including fishing, fish and functioning PNAs) wildlife, secondary recreation, and any other usage except primary recreation or shellfishing for market purposes 02B .0220
Class SC	SC	Saltwaters protected for secondary recreation, fishing, aquatic life including propagation and survival, wildlife.	
Class SB	SB	Saltwaters protected for primary recreation-swimming	
Class SA	SA	Suitable for commercial shellfishing and all other tidal saltwater uses	
Class SWL	SWL	coastal wetlands	
Supplemental Classifications (15 NCAC 02B .0101(e)) :			
Trout waters	Tr	freshwaters protected for natural trout propagation and survival of stocked trout	

Swamp waters	Sw	waters which have low velocities and other natural characteristic which are different from adjacent streams	
Nutrient Sensitive Waters	NSW	waters subject to growths of microscopic or macroscopic vegetaion requiring limitations on nutrient inputs	
Outstanding Resource Waters	ORW	Unique and special waters of exceptional state or national recreational or ecological significance which require special protection to maintain existing uses	Waters are of exceptional state or national recreational or ecological significance and the water have exceptional water quality and meet the conditions. (The waters exhibit one of the listed characteristics, for example, there are outstanding fish habitat and fisheries). (02B .0225)

High Quality Waters	HQW	<p>Waters which are rated as excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, native and special native trout waters (and their tributaries) designated by the Wildlife Resources Commission, primary nursery areas (PNA) designated by the Marine Fisheries Commission and other functional nursery areas designated by the Marine Fisheries Commission, all water supply watersheds which are either classified as WS-I or WS-II or those for which a formal petition for reclassification as WS-I or WS-II has been received from the appropriate local government and accepted by the Division of Water Quality and all Class SA waters.</p>	<p>HQW are a subset of waters with quality higher than the standards. 02B .0224</p>
Future Water Supply	FWS	<p>Waters that have been requested by a local government and adopted by the Commission as a future source for drinking, culinary, or food processing purposes.</p>	
Unique wetland	UWL	<p>Wetlands of exceptional state or national ecological significance which require special protection to maintain existing uses.</p>	
<p>North Carolina's waterbodies under Mercury Fish Consumption Advisories</p>	<p>Use Classifications designated to North Carolina's waterbodies under Mercury Fish Consumption Advisories</p>		

Statewide- all coastal waters			
Regional- all waters south and east of interstate 85			

Ohio		
Ohio's Water Use Designations (3745-1-07 of the Ohio Administrative Code)	Abbreviation	Definition of Use Designations
Aquatic Life Habitat (3745-1-07(B)(1):		
Warmwater	WWH	(3745-1-07(B)(1)
Limited warmwater		(3745-1-07(B)(1)
Exceptional warmwater	EWH	(3745-1-07(B)(1)
Modified warmwater	MWH	(3745-1-07(B)(1)
Seasonal salmonid	SSH	(3745-1-07(B)(1)
Coldwater	CWH	(3745-1-07(B)(1)
Limited resource water	LRW	(3745-1-07(B)(1)
Water Supply (3745-1-07(B)(3):		
		These are waters that, with conventional treatment, will be suitable for human intake and meet federal regulations for drinking water. Criteria associated with this use designation apply within five hundred years of surface water intakes.
Public	PWS	
Agricultural	AWS	these are waters suitable for irrigation and livestock watering without treatment

Industrial	IWS	these are waters suitable for commercial and industrial uses, with or without treatment
Recreation (3745-1-07(B)(4):		
Bathing waters	BW	these are waters that, during the recreation season, are suitable for swimming where a lifeguard and/or bathhouse facilities are present, and include any additional such areas where the water quality is approved by the director.
Primary contact	PCR	these are waters that, during the recreation season, are suitable for full-body contact recreation, such as, but not limited to, swimming, canoeing and scuba diving with minimal threat to public health as a result of water quality.
Secondary contact	SCR	these are waters that, during the recreation season, are suitable for partial body contact recreation such as, but not limited to, wading with minimal threat to public health as a result of water quality.
Antidegradation Designated Uses: 3745-1-05 of the Ohio Administrative Code		
High Quality Waters (3745-1-05(A)(10))		mean all surface waters of the state except limited quality waters. Four categories of high quality waters exist:

General high quality waters		Wetlands
Superior high quality waters	SHQW	surface waters that possess exceptional ecological values
State resource waters		
Outstanding national resource waters		surface waters that have a national ecological or recreational significance, and that have been so categorized.
Outstanding state waters- based on ecological values ;Outstanding waters based on recreational values	OSW-E/ OSW-R	waters that have special significance for the state because of their exceptional ecological values and/or exceptional recreational values, and that have been so categorized.
Limited quality waters		
Ohio Special High Quality Waters under Mercury Fish Consumption Advisory	Antideg. Category	
Ashtabula River	SHQW	
Big Darby Creek	OSW-E	
Chagrin River	OSW-E	
Conneaut Creek	OSW-E	
Cuyahoga River	OSW-R	
Grand River	OSW-E	
Great Miami River	SHQW	
Greenville Creek	OSW-E	
Huron River	SHQW	
Little Miami River	OSW-E	
Little Muskingum River	SHQW	
Mad River	SHQW	
Maumee River	OSW-R	
Olentangy River	OSW-E	
Paint Creek	OSW-E	
Rocky Fork	SHQW	
Salt Creek	OSW-E	

Sandusky River	OSW-E	
Scioto River	SHQW	
<i>Statewide: All Rivers and Lakes- advisory number 4595</i>		
Stillwater River	OSW-E; SHQW	
Vermilion River	OSW-E	
Ohio waters under Mercury Fish Consumption Advisory	Water Use Designations for a Few of Ohio's waters under a mercury Fish Consumption Advisory	
Ashtabula River	PCR	
Chagrin River	PCR	
Conneaut Creek	PCR	
Cuyahoga River	PCR	
Duck Creek	PCR	
East Branch- Black River		
Grand River		
Great Miami River		
Greenville Creek		
Huron River		
Little Miami River		
Little Muskingum River		
Little Scioto		
Mad River		
Mahoning River		
Maumee River		
Ohio River		
Olentangy River		
Paint Creek		
Rocky Fork- Liking River		
Salt Creek		
Sandusky River		
St. Joseph River		
St. Mary's		
Stillwater River		
Symmes Creek		
Tiffin River		
Tymochtee Creek		
Vermilion River		

West Branch Black River		
Whitewater River		

Pennsylvania		
Pennsylvania's Protected Water Uses: (Chapter 93. Water Quality Standards. Section 93.3)	Symbol Protected Use:	Definitions
Aquatic Life:		
Cold Water Fishes	CWF	Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat
Warm Water Fishes	WWF- Statewide	Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a warm water habitat
Migratory Fishes	MF	Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which ascend to flowing waters to complete their life cycle.
Trout Stocking	TSF	Maintenance of stocked trout from February 15-July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

Water Supply:	S	
Potable Water Supply	PWS	Used by the public as defined by the Federal Safe Drinking Water Act, 42 U.S.C.A 300F, or by other water users that require a permit from the Department under the Pennsylvania Safe Drinking Water Act, or the act of June 24, 1939, after conventional treatment, for drinking, culinary and other domestic purposes, such as inclusion into foods, either directly or indirectly.
Industrial Water Supply	IWS	Used by industry for inclusion into nonfood products, processing and cooling.
Livestock Water Supply	LWS	Use by livestock and poultry for drinking and cleansing
Wildlife Water Supply	AWS	Use for waterfowl habitat and for drinking and cleansing by wildlife.
Irrigation	IRS	Used to supplement precipitation for growing crops.
Recreation:		
Boating	B	Use of the water for power boating, sail boating, canoeing and rowing for recreational purposes when surface water flow or impoundment conditions allow.
Fishing	F	Use of the water for the legal taking of fish. For recreation or consumption
Water Contact Sports	WC	Use of the water for swimming and related activities
Esthetics	E	Use of the water as an esthetic setting to

		recreational pursuits
Special Protection:		
High Quality Waters	HQW	Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Section 93.4b(a) . (Section 93.1 Definitions)
Exceptional Value Waters	EV	Surface waters of high quality which satisfy Section 93.4b(b) relating to antidegradation. (Section 93.1 Definitions)
Other:		
Navigation	N	Use of the of the water for the commercial transfer and transport of persons, animals and goods
Pennsylvania Waterbodies under Mercury Fish Consumption Advisory	Water Uses Designated to Pennsylvania Waterbodies under Mercury Fish Consumption Advisory	
<i>Statewide- all freshwaters</i>		
Allegheny River	WWF	
Aughwick Creek	TSF	
Big Elk Creek	HQ-TSF; MF	
Brokenstraw Creek	CWF	
Chemung River	WWF	
Clarion River	HQ-CWF	
Conestoga River	WWF	
Conewango Creek	WWF; CWF	
Conneaut Creek	WWF; MF	
Cowanesque River	CWF;WWF	
Dunkard Creek	WWF	
East Branch Clarion River	HQ-CWF	

First Fork Sinnemahoning Creek	HQ-CWF	
Fishing Creek	HQ-CWF	
French Creek	WWF	
Kettle Creek	EV	
Lake Erie	WWF; CWF	
Lake Pleasant	HQ-CWF	
Licking Creek	TSF	
Loyalsock Creek	CWF	
Middle Creek	WWF; TSF	
Oil Creek	WWF; CWF	
Penns Creek	CWF	
Pine Creek	EV; HQ-CWF	
Raystown Branch Juniata Rive	CWF; TSF	
Sinnemahoning Creek	CWF	
Sugar Creek	HQ-CWF	
Susquehanna River	WWF	
Thorn Creek	HQ-WWF; CWF	
Tioga River	CWF; WWF	
Tionesta Creek	HQ-CWF	
Tobyhanna Creek	HQ-CWF	
Towanda Creek	CWF; TSF	
Traverse Creek	HQ-CWF; TSF	
Tunungwant Creek	WWF; HQ-CWF	
Tuscarora Creek	CWF	
West Branch Delaware River	CWF, MF	
West Conewago Creek	HQ-CWF	
White Deer Creek	HQ-CWF	
Wyalusing Creek	CWF	
Youghiogheny River	HQ-CWF	

Texas		
Texas's Appropriate Use Designations (Chapter 307: Texas Surface Water Quality Standards):		
Recreation:	Abbreviation	Definition

		recreational activities involving a significant risk of ingestion of water, including wading by children, swimming, water skiing, diving and surfing (Section 307.3 Definitions)
Contact Recreation	CR	
Noncontact Recreation	NCR	
Domestic Water Supply:		
Public Water Supply	PWS	
Aquifer Protection	AP	
Aquatic life	H/I	
Texas waterbodies under Mercury Fish Consumption Advisory	Appropriate Uses of Texas Waterbodies under Mercury Fish Consumption Advisories	
B.A. Steinhagen Reservoir		
Big Cypress Creek (Bayou)	CR/H/PS	
Caddo Lake	CR/H/PS	
Lake Daigerfield		
Lake Kimball		
Lake Meredith	CR/E/PS	
Pruitt Lake (Black Cypress Bayou)		
Pruitt Lake (Black Cypress Bayou)		
Ratcliff Lake		
Sam Rayburn Reservoir		
Statewide- Gulf of Mexico	CR	
Toledo Bend Reservoir	CR/H/PS	
Upper Lavaca Bay		

West Virginia		

West Virginia Water Use Categories (Title 46, Section 46-1-6)	Abbreviation	Definition of Water Use Categories
Category A - Public Water Supply - (Section 6.2)	A	This category is used to describe waters which, after conventional treatment, are used for human consumption.
Category B - Propagation and Maintenance of Fish and Other Aquatic Life(Section 6.3)	B	Includes warm water fishery streams, trout waters, wetlands.
Category C- Water Contact Recreation-(Section 6.4)	C	Includes swimming, fishing water skiing and certain types of pleasure boating such as sailing in very small craft and outboard motor boats.
Category D- Agriculture and wildlife use (Section 6.5)	D	Irrigation, livestock watering, wildlife
Category E- Industrial uses	E	water transport, cooling water, power production, industrial.
West Virginia Waters Under Mercury Fish Consumption Advisory	Water Use Category of West Virginia Waters Under Mercury Fish Consumption Advisory	
All West Virginia Waters		

Appendix 12B.1: Methodology for creating charts

A chart included with each state's materials correlates designated uses of state waterways with mercury fish consumption advisories (FCA's). Each chart lists the use designations for each state (also called "Waterbody Use Classifications" in North Carolina and Alabama, "Protected Water Uses" in Pennsylvania, "Water Use Categories" in West Virginia, "Appropriate Use Designations" in Texas, "Water Use Designations" in Ohio, Kentucky, and Indiana, "Waterbody Use Designations" in Illinois, and "Designated Uses" in Michigan), along with the particular section of the state regulations where these designated uses can be located. The charts also list the equivalent abbreviations of these designated uses and the definitions of each state's designated uses. Next, the charts list for each state the specific waterbodies under mercury FCA's and the correlating designated uses assigned to that particular waterbody.

For example, one of Pennsylvania's Protected Water Uses is "Fishing" or "F" which is defined in the chart as the "use of the water for the legal taking of fish, for recreation or consumption." The chart specifies that Section 93.4 designates all surface waters as "Statewide Water Uses", thus, all of the Pennsylvania waterbodies under a mercury FCA have been designated as a waterbody suitable for fishing.

Some of the charts do not individually list all of the waterbodies under FCA's because that list would be too extensive to include in a chart. Instead, if that state has issued a statewide FCA advisory, it is so indicated. In the charts for Texas and Ohio, all of the waterbodies under FCA's are listed, but the correlating designated use for each of these waterbodies is not. This is due to the chaotic manner in which those states listed their waterbodies with corresponding designated uses. In those instances, a few examples are listed.

Appendix 12C: Title V Permits for Michigan and Ohio

Appendix 12D: Top 15 State by State emitters sorted by 2002 emissions to air with corresponding discharges to water (CEC/EPA data)

Source: CEC Report (See:

http://www.cec.org/files/PDF/POLLUTANTS/PowerPlant_AirEmission_en.pdf)

ALABAMA					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁷² , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁷³ , kg
1	James H Miller Jr,	18,592,131	717	0.039	0
2	E C Gaston	12,639,541	417	0.033	0
3	Gorgas	7,216,594	374	0.052	0
4	Barry	16,718,579	213	0.013	0
5	Widows Creek	8,868,307	181	0.02	0.4
6	Greene County	3,892,941	100	0.026	0
7	Colbert	6,305,034	98	0.016	Unknown
8	Charles R Lowman	3,472,719	72	0.021	0.4
9	Gadsden	484,718	48	0.1	0

ILLINOIS					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁷⁴ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁷⁵ , kg
1	Powerton	7,858,082	584	0.074	1.4
2	Joliet 29	5,411,689	364	0.067	0.9

¹⁷² CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁷³ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

¹⁷⁴ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁷⁵ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

3	Will County	5,419,706	348	0.064	0
4	Waukegan	4,230,118	317	0.075	0.9
5	Joppa Steam	8,075,552	262	0.032	Unknown
6	Baldwin	12,454,874	223	0.018	0
7	Newton	7,886,447	168	0.021	Unknown
8	Kincaid	3,888,878	166	0.043	0.4
9	Crawford	2,575,482	162	0.063	0
10	Coffeen	5,257,211	97	0.019	0
11	Joliet 9	1,292,531	89	0.069	(reported with Joliet 29)
12	Fisk	1,299,559	84	0.064	0
13	Edwards Station	3,536,593	66	0.019	Not available ¹⁷⁶
14	Hennepin	2,045,489	45	0.022	0
15	Wood River	2,205,841	42	0.019	0

INDIANA					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁷⁷ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁷⁸ , kg
1	Rockport	16,643.32	467	0.028	0
2	Clifty Creek	7,838,812	221	0.028	0
3	R M Schahfer	8,756,429	167	0.019	0.9

¹⁷⁶ Facility not listed in TRI report.

¹⁷⁷ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁷⁸ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

4	Petersburg	11,641,137	104	0.009	Unknown
5	Warrick	1,044,762	96	0.092	0
6	R Gallagher	2,253,862	96	0.042	0
7	Cayuga	5,930,084	92	0.015	0
8	Wabash River	5,744,472	88	0.015	0
9	Michigan City	2,487,472	56	0.023	Unknown
10	Merom	6,643,503	52	0.008	Unknown
11	State Line Generating	1,599,873	51	0.032	0
12	Frank E Ratss	1,517,924	31	0.02	Unknown
13	Bailly	2,831,251	29	0.01	Unknown
14	Eagle Valley (H T Pritchard)	1,332,751	26	0.02	Unknown
15	F B Culley	2,417,245	22	0.009	0

KENTUCKY					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁷⁹ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁸⁰ , kg
1	Paradise	14,130,150	296	0.021	0
2	Ghent	11,533,151	203	0.018	0
3	Big Sandy	5,752,379	189	0.033	0
4	H L Spurlock	6,080,970	152	0.025	1.8

¹⁷⁹ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁸⁰ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

5	Coleman	2,864,421	119	0.042	Unknown
6	E W Brown	3,992,354	97	0.024	0
7	Mill Creek	9,075,622	89	0.01	2.3
8	East Bend	2,941,427	81	0.027	0
9	John S Cooper	2,100,208	70	0.033	0
10	Trimble County	3,929,027	42	0.011	Unknown
11	Shawnee	8,826,178	32	0.004	Unknown
12	Elmer Smith	2,185,345	30	0.014	25
13	R D Green	3,501,986	26	0.008	0.4
14	Green River	719,410	20	0.028	0
15	D B Wilson	2,849,550	19	0.007	0

MICHIGAN					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁸¹ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁸² , kg
1	Monroe	16,720,823	344	0.021	0
2	J H Campbell	9,269,258	248	0.027	Unknown
3	Dan E Karn	4,474,257	116	0.026	0.4

¹⁸¹ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁸²United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

4	Belle River	7,716,451	98	0.013	3.2
5	St. Clair	6,965,047	97	0.014	3.6
6	Eckert Station	1,540,404	90	0.058	0
7	Trenton Channel	4,339,844	70	0.016	0
8	J R Whiting	2,262,790	70	0.031	0
9	B C Cobb	2,188,545	59	0.027	0.9
10	J C Weadock	2,205,966	59	0.027	0.4
11	River Rouge	3,401,765	52	0.015	0
12	Presque Isle	3,140,761	40	0.013	0
13	Erickson	809,058	21	0.026	0

NORTH CAROLINA					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁸³ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁸⁴ , kg
1	Roxboro	14,281,069	352	0.025	0.9
2	Belews Creek	16,912,850	269	0.016	0.4
3	Marshall	14,498,223	243	0.017	0.4
4	G G Allen	5,071,389	98	0.019	1.4
5	L V Sutton	2,622,440	78	0.03	0.9

¹⁸³ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁸⁴ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

6	Asheville	2,628,074	64	0.025	0.4
7	Lee	1,969,494	55	0.08	0.4
8	Cape Fear	1,857,910	45	0.024	0
9	Riverbend	1,660,438	40	0.024	0.4
10	Cliffside	2,723,353	35	0.013	0.4
11	Buck	1,249,807	35	0.028	0
12	W H Weatherspoon	794,816	20	0.025	Unknown

OHIO					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁸⁵ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁸⁶ , kg
1	Conesville	10,158,928	451	0.044	0
2	Eastlake	6,724,187	381	0.057	0
3	J M Stuart	15,351,286	318	0.021	0
4	Cardinal	8,555,500	266	0.031	0
5	W H Sammis	15,521,117	263	0.017	0
6	Gen J M Gavin	15,617,077	238	0.015	1.4
7	Avon Lake	4,169,683	228	0.055	0
8	Kyger Creek	6,852,119	209	0.03	0
9	Muskingum River	8,359,764	198	0.024	0

¹⁸⁵ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁸⁶ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

10	Walter C Beckjord	6,756,632	178	0.026	0
11	Miami Fort	7,587,241	160	0.021	0
12	Bay Shore	3,538,463	103	0.029	0
13	W H Zimmer	9,734,563	90	0.009	0.4
14	Ashtabula	1,236,725	79	0.064	0
15	Killen Station	3,612,949	71	0.02	0

PENNSYLVANIA					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁸⁷ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁸⁸ , kg
1	Keystone	11,790,991	787	0.067	0.4
2	Homer City	10,938,699	743	0.068	1.4
3	Montour	9,263,444	634	0.068	Unknown
4	Bruce Mansfield	15,974,911	528	0.033	26
5	Shawville	2,991,436	377	0.126	0
6	Brunner Island	9,994,684	235	0.024	Unknown
7	Hatfield's Ferry	9,753,564	227	0.023	Unknown
8	Conemaugh	12,584,027	224	0.018	0.9
9	Armstrong	2,140,768	154	0.072	0.4
10	Sunbury	1,714,652	135	0.079	0

¹⁸⁷ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁸⁸ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

11	Cheswick	3,021,295	105	0.035	0
12	New Castle	1,577,573	105	0.066	0
13	Portland	1,915,994	57	0.03	0
14	Martins Creek	2,402,706	33	0.014	Unknown
15	Elrama	2,321,405	31	0.013	0

TEXAS					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁸⁹ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁹⁰ , kg
1	Monticello	13,127,881	849	0.065	0
2	Martin Lake	14,825,001	547	0.037	0
3	Big Brown	7,920,848	473	0.06	0
4	Limestone	11,385,520	407	0.036	0
5	H W Pirkey	4,504,102	382	0.085	3.2
6	Sam Seymour	11,749,703	361	0.031	Not available ¹⁹¹
7	W A Parish	20,026,008	240	0.012	0
8	Welsh Power Plant	11,000,083	217	0.02	1.8

¹⁸⁹ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁹⁰ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

¹⁹¹ Facility not listed in TRI report.

9	Harrington Station	7,831,512	130	0.017	Unknown ¹⁹²
10	Gibbons Creek	3,230,078	122	0.038	Unknown
11	Sandow	3,943,323	116	0.029	Unknown
12	J K Spruce	4,135,806	114	0.028	0
13	Oklaunion	4,264,449	78	0.018	Unknown
14	Tolk Station	7,662,008	69	0.009	Unknown
15	San Miguel	2,855,097	60	0.021	Unknown

WEST VIRGINIA					
No.	Plant	Electricity Generation, MWh	Mercury Emissions to Air ¹⁹³ , kg	Mercury Emission Rate, kg/GWh	Mercury and Mercury Compounds Discharged to Water ¹⁹⁴ , kg
1	Mount Storm	11,671,736	521	0.045	2.3
2	John E Amos	17,995,089	450	0.025	0
3	Phil Sporn	5,361,190	230	0.043	0
4	Mountaineer	8,985,024	211	0.023	0
5	Mitchell	9,231,567	204	0.022	0
6	Fort Martin	7,855,193	195	0.025	Unknown
7	Harrison	12,927,422	133	0.01	Unknown
8	Kammer	4,029,061	117	0.029	0

¹⁹² Reported as “.” in TRI data which indicates that the facility left that cell blank in its submission.

¹⁹³ CEC. 2005. North American Power Plant Air Emissions. Table 3.9.

¹⁹⁴ United States Environmental Protection Agency. 2002. Toxic Release Inventory (TRI) reports.

9	Kanawha River	2,571,055	70	0.027	0
10	Albright	1,374,335	64	0.025	Unknown
11	Pleasants	7,629,209	56	0.007	Unknown
12	Willow Island	1,151,588	37	0.032	Unknown
13	Rivesville	386,259	20	0.051	Unknown

Appendix 12D.1: Methodology for creating TRI reports

To generate the TRI reports using the TRI explorer first go to:

<http://www.epa.gov/triexplorer/>

Under "Reports", which allows the user to select the type of report, we selected "Facility".

Then under "Geographic Location" we selected the State being researched (ie the ten states subject to our inquiry).

Then under "Chemical Released" we selected "Select specific chemical(s)". This produced a list of TRI chemicals. We scrolled through the list of chemicals and selected both "Mercury" and "Mercury Compounds".

Then under "Industry" we selected "SIC 4911,4931, 4939 - - Electric Utilities".

Finally, under "Year of Data" we selected the most recent year for which data is available "2002".

Next to all those selections is a column that defines the report columns to include in the final report.

Since our interest is in On Site releases we selected "Total On Site Disposal or Other Releases" and the two "Details" boxes below that. We also selected "Total On and Off Site Disposal and Other Releases", although that was not necessary to obtain the information we required.

Once all of that is done we selected the "Generate Report" button.

Once this report was generated we sorted the information in descending order according to the column titled "Surface Water Discharges" by selecting the downward arrow under

the column heading. This sorted the list of plants in order from greatest to least in terms of quantity of Mercury and Mercury Compounds released to surface water.

We then printed the reports and downloaded and saved the data in Microsoft Excel.

Appendix 12E: TMDLs: Example State Documents

Michigan

Mercury Information Sheet

2004 Michigan Family Fish Consumption Guide

Michigan Land Use Institute: *What's the Wait on Mercury*

Michigan Environmental Council: Press Release: Deer Lake has most mercury-polluted fish in Michigan; Other worst-off Water Bodies also highlighted

Michigan DEQ: Staff Report: CWA s. 202(d) list, Michigan Submittal for Year 2002, April 2002

Michigan DEQ, Surface Water Quality Division, August 2002: *Total Maximum Daily Load for Mercury for Hammell Creek, Houghton County*

Appendix XV: Updates to 303(d) 2002 TMDL List

2004 Report

Michigan DEQ: Water Quality and Pollution Control in Michigan: 2004 ss. 303(d) and 305(b) Integrated Report, Revised May 2004

Letter dated May 14, 2004 from US EPA to Michigan DEQ approving 2004 303(d) list

Letter dated June 29, 2004 from EPA to Michigan DEQ re

Appendix I: Administrative Rules

Appendix X: USEPA Approved List for Water Bodies (Category 4a)

Appendix XI: WQS Nonattainment List for Water Bodies with other Control Mechanisms (Category 4(b))

Appendix XIII: WQS Nonattainment List for Waterbodies Requiring TMDLs (Category 5)

Appendix XIV: Schedule for TMDL Development - 2004

Appendix XV: Updates to TMDL List

Appendix XVI: Comments and Responses Regarding the Draft 2004 Federal CWA s. 303(d) Report Review

Environmental Working Group: Michigan estimated mercury emissions from coal-b

Approved TMDLs in Michigan

Waterbody: Bean Creek WBID#: 060102A

County: Hillsdale and Lenawee HUC: 4100006 Size: 2 M

Location: Vicinity of Hudson.

Problem: Untreated sewage discharge; pathogens (Rule 100).

TMDL Type: Pathogen TMDL **Submittal Date: 03/2003 Approval Date: 04/2003**

Waterbody: Bear Creek WBID#: 082805E
County: Kent HUC: 4050006 Size: 3 M
Location: From W. Cannonsburg Road upstream to cattle access site
100 yards upstream of Warren Townsend Park.
Problem: Threatened biota.
TMDL Type: Sediment TMDL **Submittal Date: 08/1997 Approval Date: Inform. TMDL**

Waterbody: Belleville Lake WBID#: 061203K
County: Wayne HUC: 4090005 Size: 1270 A
Location: Vicinity of Belleville.
Problem: Nuisance algal growths, phosphorus.
TMDL Type: Nutrient TMDL **Submittal Date: 09/2004 Approval Date: 11/2004**

Waterbody: Black Creek WBID#: 082701J
County: Muskegon HUC: 4060101 Size: 13 M
Location: Tributary to Mona Lake.
Problem: FCA-PCBs; Fish community rated poor.
TMDL Type: Biota TMDL **Submittal Date: 08/2003 Approval Date: 10/2003**

Waterbody: Brighton Lake WBID#: 061205O
County: Livingston HUC: 4090005 Size: 158 A
Location: An impoundment on south Ore Creek just downstream from the
city of Brighton.
Problem: Nutrient enrichment.
TMDL Type: Phosphorus TMDL **Submittal Date: 12/1999 Approval Date: 02/2000**

Waterbody: Carrier Creek WBID#: 082812D
County: Eaton HUC: 4050004 Size: 4 M
Location: Grand River confluence upstream to I-496.
Problem: Macroinvertebrate community rated fair.
TMDL Type: Biota TMDL **Submittal Date: 05/2002 Approval Date: 07/2002**

Waterbody: Cedar River WBID#: 210429A
County: Gladwin HUC: 4080201 Size: 9 M
Location: Vicinity of Gladwin; M-61 d/s to Howard Oil Field Road.
Problem: CSO, pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 11/2003 Approval Date: 05/2004**

Waterbody: Coldwater River WBID#: 210424B
County: Isabella HUC: 4080202 Size: 3 M
Location: Vernon Rd. crossing upstream to Outlet Lake (Littlefield Lake area).
Problem: Biological community threatened.
TMDL Type: Biota TMDL **Submittal Date: 06/2001 Approval Date: 09/2001**

Waterbody: Crapaud Creek WBID#: 061409E
County: Macomb HUC: 4090002 Size: 2 M
Location: Downtown New Baltimore at Hamer Street upstream.
Problem: Pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 02/2002 Approval Date: 03/2002**

Waterbody: Deer Creek WBID#: 083301D
County: Berrien HUC: 4040001 Size: 7 M
Location: S. Br. Galien River confluence u/s to the headwaters in vicinity of Three Oaks.

Problem: Untreated sewage discharge, pathogens (Rule 100); macroinvertebrate community rated poor; nuisance algae.
TMDL Type: E. coli TMDL **Submittal Date: 08/2002 Approval Date: 09/2002**

Waterbody: Duff Creek WBID#: 210406A
County: Sanilac HUC: 4080205 Size: 6 M
Location: S. Br. Cass River u/s to vicinity of Marlette.
Problem: Untreated sewage discharge, pathogens (Rule 100); macroinvertebrate community.
TMDL Type: E. coli TMDL **Submittal Date: 07/2004 Approval Date: 08/2004**

Waterbody: Ecorse River WBID#: 061301I
County: Wayne HUC: 4090004 Size: 25 M
Location: Detroit River confluence u/s (so as to include Ecorse Creek and La Blanc)
Problem: Macroinvertebrate community rated poor; untreated sewage discharges, pathogens (Rule 100).
TMDL Type: Biota TMDL **Submittal Date: 07/2003 Approval Date: 09/2003**

Waterbody: Ford Lake WBID#: 061203F
County: Washtenaw HUC: 4090005 Size: 975 A
Location: Ypsilanti, upstream of Belleville Lake.
Problem: Nuisance algal growths, phosphorus.
TMDL Type: Nutrient TMDL **Submittal Date: 9/2004 Approval Date: 11/2004**

Waterbody: Ford Lake/Belleville Lake (Huron River Imp.) WBID#: 061203N
County: Wayne HUC: 4090005 Size: 2245 A
Location: Vicinity of Belleville.
Problem: Nutrient enrichment; nuisance algal growths.
TMDL Type: Phosphorus TMDL **Submittal Date: 12/1996 Approval Date: 03/2000**

Waterbody: Galien River WBID#: 083301A
County: Berrien HUC: 4040001 Size: 2 M
Location: Galien River in the vicinity of New Troy (Flynn Rd. upstream to Elm Valley Rd.).
Problem: Water quality standard exceedances for E. coli; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 03/2002 Approval Date: 05/2002**

Waterbody: Geddes Pond (Huron River) WBID#: 061203B
County: Washtenaw HUC: 4090005 Size: 2 M
Location: Geddes Pond Dam upstream to Geddes Avenue (vicinity of Ann Arbor).
Problem: Pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 08/2001 Approval Date: 09/2001**

Waterbody: Grand River WBID#: 082816H
County: Jackson HUC: 4050004 Size: 25 M
Location: Grand River from Tompkins Road upstream to the city of Jackson and Portage River from the Grand River confluence upstream to Wooster Road.
Problem: Untreated sewage discharge, pathogens (Rule 100); WQS exceedances for DO; Macroinvertebrate and fish communities rated poor.
TMDL Type: Biota TMDL **Submittal Date: 06/2003 Approval Date: 09/2003**

Waterbody: Grand River WBID#: 082816H
County: Jackson HUC: 4050004 Size: 25 M

Location: Grand River from Tompkins Road upstream to the city of Jackson and Portage River from the Grand River confluence upstream to Wooster Road.

Problem: Untreated sewage discharge, pathogens (Rule 100); WQS exceedances for DO; Macroinvertebrate and fish communities rated poor.

TMDL Type: DO TMDL **Submittal Date: 06/2003 Approval Date: 09/2003**

Waterbody: Grand River WBID#: 082816H

County: Jackson HUC: 4050004 Size: 25 M

Location: Grand River from Tompkins Road upstream to the city of Jackson and Portage River from the Grand River confluence upstream to Wooster Road.

Problem: Untreated sewage discharge, pathogens (Rule 100); WQS exceedances for DO; Macroinvertebrate and fish communities rated poor.

TMDL Type: E. coli TMDL **Submittal Date: 06/2003 Approval Date: 08/2003**

Waterbody: Great Bear Lake Proper WBID#: 083102L

County: Van Buren HUC: 4050002 Size: 150 Acres

Location: Great Bear Lake

Problem: Nuisance algal growths, phosphorus

TMDL Type: Phosphorus TMDL **Submittal Date: 09/2004 Approval Date: 11/2004**

Waterbody: Hammell Creek WBID#: 221001O

County: Houghton HUC: 4020103 Size: 5 M

Location: Trapp Rock River confluence upstream.

Problem: Mercury.

TMDL Type: Mercury TMDL **Submittal Date: 08/2002 Approval Date: 09/2002**

Waterbody: Kawkawlin River WBID#: 210501F

County: Bay HUC: 4080102 Size: 5 M

Location: Saginaw Bay confluence u/s to the N. Br. Kawkawlin River confluence.

Problem: PCBs.

TMDL Type: PCB TMDL **Submittal Date: 08/2002 Approval Date: 09/2002**

Waterbody: Kent Lake WBID#: 061206D

County: Oakland HUC: 4090005 Size: 1000 A

Location: An impoundment on the main stem of the Huron River. Its upstream boundary is Dawson Rd. and downstream is the Kent Lake spillway at I-96.

Problem: Nutrient enrichment.

TMDL Type: Phosphorus TMDL **Submittal Date: 12/1999 Approval Date: 03/2000**

Waterbody: Kintz Creek and Hunter's Creek (Metamora) WBID#: 210413I

County: Lapeer HUC: 4080204 Size: 1 M

Location: All of Metamora drains eventually flow to the south branch Flint River.

Problem: Untreated sewage discharge, pathogens (Rule 100).

TMDL Type: E. coli TMDL **Submittal Date: 1/2004 Approval Date: 02/2004**

Waterbody: Lake Allegan (Kalamazoo River Imp.) WBID#: 083005G

County: Allegan HUC: 4050003 Size: 1587 A

Location: Located west of Allegan in Alley and Allegan Twps.

Problem: Nutrient enrichment; nuisance algal growths.

TMDL Type: Phosphorus TMDL **Submittal Date: 03/2001 Approval Date: 04/2001**

Waterbody: Lake Macatawa (Watershed) WBID#: 082901D

County: Ottawa HUC: 4050002 Size: 1780 A

Location: Vicinity of Holland (Park and Holland Twps.).

Problem: Nutrient enrichment; nuisance algal blooms.

TMDL Type: Phosphorus TMDL **Submittal Date: 01/1999 Approval Date: 04/2000**

Waterbody: Lenawee County Drain No. 70 WBID#: 061103H
County: Lenawee HUC: 4100002 Size: 1 M
Location: Tributary to Big Meadow Creek, Palmyra Twp. from Manor Farms
and Humphrey Hwy. downstream to west of Palmyra.
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 04/2002 Approval Date: 06/2002**

Waterbody: Little Black Creek WBID#: 082701T
County: Muskegon HUC: 4060101 Size: 7 M
Location: Mona Lake inlet upstream.
Problem: Fish and macroinvertebrate communities rated poor.
TMDL Type: Biota TMDL **Submittal Date: 07/2003 Approval Date: 09/2003**

Waterbody: Malletts Creek WBID# 061203I
County: Washtenaw HUC: 4090005 Size: 2 M
Location: Huron River confluence u/s to Packard Road.
Problem: Fish and macroinvertebrate communities rated poor.
TMDL Type: Biota TMDL **Submittal Date: 08/2004 Approval Date: 09/2004**

Waterbody: Mickles Creek (Shiawassee River) WBID# 210415B
County: Saginaw HUC: 4080203 Size: 0.5 M
Location: Vicinity of Oakley d/s.
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 04/2003 Approval Date: 05/2003**

Waterbody: Mill Creek WBID# 061503A
County: St. Clair HUC: 4090001 Size: 1 M
Location: Vicinity of Yale, T7N, R14E, Sec. 1.
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 02/2004 Approval Date: 03/2004**

Waterbody: Ore Lake WBID#: 061205S
County: Livingston HUC: 4090005 Size: 192 A
Location: Downstream of Brighton Lake.
Problem: Nutrient enrichment.
TMDL Type: Phosphorus TMDL **Submittal Date: 12/1999 Approval Date: 02/2000**

Waterbody: Plaster Creek WBID#: 082806H
County: Kent HUC: 4050006 Size: 12 M
Location: Grand River confluence upstream to Dutton Park (Hanna Lake Avenue and 76th
Street).
Problem: Fish and macroinvertebrate communities rated poor; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 08/2002 Approval Date: 09/2002**

Waterbody: Plaster Creek WBID#: 082806H
County: Kent HUC: 4050006 Size: 12 M
Location: Grand River confluence upstream to Dutton Park (Hanna Lake Avenue and 76th
Street).
Problem: Fish and macroinvertebrate communities rated poor; pathogens (Rule 100).
TMDL Type: Biota TMDL **Submittal Date: 07/2002 Approval Date: 08/2002**

Waterbody: Prattville Drain and Lime Lake WBID#: 060102B
County: Hillsdale HUC: 4100006 Size: 0.5 M

Location: Wright Township
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 02/2003 Approval Date: 03/2003**

Waterbody: Rio Grande Creek WBID#: 082803F
County: Ottawa HUC: 4050006 Size: 0.5 M
Location: Crockery Creeek confluence u/s to Chester Twp.
Problem: Untreated sewage discharge, pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 01/2003 Approval Date: 02/2003**

Waterbody: River Raisin WBID#: 061101P
County: Lenawee HUC: 4100002 Size: 8 M
Location: City of Tecumseh upstream to the vicinity of the city of Clinton.
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 09/2002 Approval Date: 11/2002**

Waterbody: Saline River WBID#: 061104A
County: Washtenaw HUC: 4100002 Size: 1 M
Location: Near Mooreville, Section 28, York Township.
Problem: Untreated sewage discharge; pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 10/2002 Approval Date: 11/2002**

Waterbody: Small Creek and Hunter's Lake WBID#: 210806B
County: Alcona HUC: 4070007 Size: .5 M
Location: Vicinity of Curtis Twp. (Glennie).
Problem: Untreated sewage discharge, pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 07/2004 Approval Date: 09/2004**

Waterbody: St. Joseph River WBID#: 083204G
County: Berrien HUC: 4050001 Size: 32 M
Location: Lake Michigan confluence in Morrison Channel u/s to Michigan/Indiana state line.
Problem: CSO, pathogens (Rule 100).
TMDL Type: E. coli TMDL **Submittal Date: 09/2003 Approval Date: 06/2004**

Waterbody: Strawberry Lake WBID#: 061205U
County: Livingston HUC: 4090005 Size: 247 A
Location: A lake on the Huron River just downstream of M-36 in Livingston County.
Problem: Nutrient enrichment.
TMDL Type: Phosphorus TMDL **Submittal Date: 12/1999 Approval Date: 08/2000**

Waterbody: Sycamore Creek (Watershed)# WBID#: 082817D
County: Ingham HUC: 4050004 Size: 87 M
Location: Grand River confluence upstream to headwaters and to include
Mud Creek, Talmadge Creek, Willow Creek, and Havens Drain.
Problem: Water quality standard exceedance for D.O.
TMDL Type: D.O. TMDL **Submittal Date: 08/1996 Approval Date: Inform. TMDL**

Waterbody: Wagner-Pink Drain WBID#: 061203J
County: Monroe HUC: 4090005 Size: 0.5 M
Location: Huron River confluence upstream to South Huron River Drive.
Problem: Macroinvertebrate community rated poor; Pathogens (Rule 100).
TMDL Type: E. coli **Submittal Date: 04/2003 Approval Date: 05/2003**

Appendix 12E.1: Example of TMDL Development Document (summarised from Michigan Department of Environmental Quality)

Typically TMDLs contain an introduction which sets out the statutory basis of TMDLs and its requirements. For instance, the document will say:

The TMDL process establishes the allowable levels of pollutants for a waterbody based on the relationship between pollution sources and in-stream water quality conditions. TMDLs provide states a basis for determining the pollutant reductions necessary from both point and nonpoint sources to restore then maintain the quality of their water resources.

The document then goes on to elaborate a statement of the problem including the affected area of the water body in question, including the type of use that is impaired, and the contaminant in issue. Particular exceedances of WQS, if this is the problem, may also be set out. Sampling histories are documented.

Numeric targets are then outlined. For instance, it may be that the WQS requires that the water body be protected for total body contact recreation for a specified period of the year. Numeric levels to protect such a use would then be set out. In such a case, the rule in the WQS says:

Rule 62. (1) All waters of the state protected for total body contact recreation shall not contain more than 130 *Escherichia coli* (*E. coli*) per 100 milliliters, as a 30-day geometric mean. .. At no time shall the waters of the state protected for total body contact recreation contain more than a maximum of 300 *E. coli* per 100 milliliters.

Sanitary wastewater discharges are considered in compliance with the WQS of 130 *E. coli* per 100 ml if their National Pollutant Discharge Elimination System (NPDES) permit limit of 200 fecal coliform per 100 ml as a monthly average is met.

The document may then go on to evaluate the sources of contaminants in the water body, which may include both point and non point sources (including illicit discharges). The document will also review NPDES permits for their allowed discharge numbers.

There is then a LINKAGE ANALYSIS, which looks at the link between the contaminant concentration in the water body and the potential sources. This is the basis for the

development of the TMDL. The linkage is defined as the cause and effect relationship between the selected indicators and the sources. This provides the basis for estimating the total assimilative capacity of the creek and any needed load reductions. A determination is then made of what the major input sources are and how they can be controlled to revive the lost use, for example, total body recreation contact.

Thus, the TMDL DEVELOPMENT represents the maximum loading that can be assimilated by the waterbody while still achieving WQS. As indicated in the Numeric Targets section, the target for this pathogen TMDL

For most pollutants, TMDLs are expressed on a mass loading basis (e.g., pounds per day).

Allocations

TMDLs are comprised of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include a Margin of Safety (MOS), either implicitly or explicitly, that accounts for uncertainty in the relation between pollutant loads and the quality of the receiving waterbody.

The term TMDL represents the maximum loading that can be assimilated by the receiving water while still achieving WQS. The overall loading capacity is subsequently allocated into the TMDL components of WLAs for point sources, LAs for nonpoint sources, and the MOS. This TMDL is concentration-based. The MOS accounts for any uncertainty or lack of knowledge concerning the relationship between pollutant loading and water quality. The MOS can be either implicit (i.e., incorporated into the TMDL analysis through conservative assumptions) or explicit (i.e., expressed in the TMDL as a portion of the loadings).

How is a TMDL developed?

A TMDL is developed by determining the maximum daily load of a pollutant that a waterbody can assimilate and meet WQS. This load is then allocated to point source discharges, nonpoint source discharges, and a margin of safety reserve (to account for technical uncertainties).

What happens once a TMDL is developed?

Following development of a draft, a TMDL is noticed for public comment. After making any appropriate modifications in response to the public comment, the TMDL is sent to the United States Environmental Protection Agency for approval. Once approved, the state is required to implement the TMDL so the waterbody will meet WQS. The TMDL is implemented through existing programs, such as NPDES permits for point source discharges and **nonpoint source control programs**, to achieve the necessary pollutant reductions. (our emphasis)

Source: http://www.michigan.gov/deq/0,1607,%207-135-3313_3686_3728-12464--.00.html

Appendix 12F: Florida Dept of Environmental Protection, Executive Summary, Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida, October 2002 (Revised November 2003)

EXECUTIVE SUMMARY

Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida:

An approach for conducting a Total Maximum Daily Load analysis for an atmospherically derived pollutant

Florida Department of Environmental Protection

October, 2002

Revised November, 2003

Purpose:

The purpose of this project was to demonstrate the technical feasibility of conducting a Total Maximum Daily Load (TMDL) analysis for a system where the contaminant of interest is derived principally from atmospheric sources. Depending on the type of aquatic system, a number of contaminants may be categorized as significantly atmospheric in origin, including mercury, fixed nitrogen, PCB's, and others. This study focuses on mercury, and incorporates extensive field data into a framework combining atmospheric mercury deposition and aquatic mercury cycling models to demonstrate the feasibility of the approach. The goal was to understand and simulate how changes in local atmospheric mercury emissions in south Florida would influence mercury concentrations in top predator fish, thus demonstrating the potential of combining air and water modeling approaches in TMDLs involving air deposition of mercury.

About 2 million acres of the south Florida Everglades ecosystem are currently under fish consumption advisories because of mercury contamination. The Clean Water Act requires that states list as impaired all waterbodies that do not meet water quality standards when the designated uses are not being met or because water quality criteria are being exceeded.

Mercury-contamination fish consumption advisories represent an exceedance of water quality standards because a designated use for the Florida Everglades ecosystem is not being met. Once a waterbody such as the Everglades is placed on the Clean Water Act 303(d) list, a TMDL study is conducted to determine how much the pollutant (i.e.,

mercury) loading must be reduced, and from what sources, to meet the water quality standards and designated use for the waterbody. A TMDL establishes the maximum amount of a given pollutant that a particular waterbody can assimilate without exceeding surface water quality standards.

TMDL-type analyses for determining needed reductions in atmospherically derived pollutants have rarely been done due to the data needs and technical complexity of developing and linking atmospheric and aquatic cycling models.

Mercury is both a naturally occurring element and a pollutant that cycles, in a variety of chemical forms, through air, water and soil. Some forms of mercury are transported around the world through the air, others tend to deposit from the atmosphere at local or regional scales. Extensive monitoring of the Florida Everglades ecosystem has shown that the primary source of mercury loading is atmospheric deposition – over 95% of the mercury load to the Everglades each year comes from atmospheric deposition. Because some atmospheric mercury is transported into Florida from both local and distant sources, a difficulty in producing a TMDL is determining the relative contribution of these sources. To conduct a TMDL analysis for mercury, atmospheric models are needed to simulate the transport of local mercury emissions and deposition onto the Everglades water surface. In addition, once the mercury deposition is estimated using atmospheric models, this deposition must be used as input to an aquatic ecosystem model that will simulate mercury cycling in the Everglades and uptake through the food chain to top predator fish, such as largemouth bass.

To that end, this modeling project was sponsored by the Florida Department of Environmental Protection and US Environmental Protection Agency to combine atmospheric mercury deposition models with an aquatic mercury cycling model. The mercury deposition output from the atmospheric models was used as input to an aquatic mercury cycling model.

The aquatic mercury cycling model was used to predict the change in largemouth bass mercury concentrations that might occur if mercury emissions were reduced. The goal is to provide data and models that can be used to conduct a Total Maximum Daily Load study for mercury in the Everglades. ¹

Results and Conclusions

The following results were obtained from using output of the atmospheric model as input to the aquatic ecosystem model:

1. The E-MCM model predicts a linear relationship between atmospheric mercury deposition and mercury concentrations in largemouth bass, with a small residual mercury concentration in fish at zero atmospheric mercury deposition (Figure 9). In other words, for any reduction in mercury inputs to the Everglades a slightly lesser

¹ For additional information about the Florida DEP Mercury Program, access the web address given below:
<http://www.floridadep.org/labs/mercury/index.htm>

reduction in fish mercury concentrations may be anticipated. Furthermore, error analysis shows that the E-MCM predicts near equivalence between the percent decrease in atmospheric mercury deposition rate and the percent decrease in largemouth bass mercury concentration over the likely range for current estimates of atmospheric deposition of mercury. The slight offset from a 1:1 relationship results from slow mobilization of historically deposited mercury from deeper sediment layers to the water column. Until buried below the active zone, this mercury can continue to cycle through the system. In addition, because mercury is a naturally occurring element, fish tissue mercury concentrations can never be reduced to zero.

2. In the absence of changes to the system other than mercury loading (e.g. changes in sulfur cycling, nutrient cycling, or hydrology), a reduction of about 80% of current total annual mercury atmospheric deposition rates would be needed for the mercury concentrations in a 3-year old largemouth bass at WCA 3A-15 to be reduced to less than Florida's present fish consumption advisory action level of 0.5 mg/kg (parts per million).

3. Mercury concentrations in three-year-old largemouth bass are predicted to achieve 50% of their long-term, steady state response following sustained mercury load reductions within approximately 10 years and 90% within 30 years (Figure 10).

4. Despite the uncertainties identified, the progress represented in these demonstrations of a unique combination of atmospheric and aquatic cycling models is remarkable. There is every reason to believe that, with modest additional effort, the remaining uncertainties can be reduced to levels that will allow reliable, confident allocation of mercury emissions to protect the designated uses of the Everglades.

5. It is also evident that there is further potential for combining such air and water modeling approaches for TMDLs involving air deposition of mercury for other aquatic ecosystems. We believe the approaches presented here can be applied to other geographic areas and in other studies of air – water chemical interactions.

Combining Atmospheric and Aquatic Models

The atmospheric modeling approach used in this study was developed by the University of Michigan Air Quality Laboratory to simulate the atmospheric transport of mercury from local emission point sources in southern Florida to its deposition onto the Everglades. The aquatic model, the Everglades Mercury Cycling Model (E-MCM), was used to simulate how mercury was cycled in the Everglades and accumulated through the Everglades food chain to top-level predator fish (e.g., largemouth bass, a popular sport fish).

The Florida Everglades ecosystem extends over 3,000 square miles, thus it was not realistic to simulate the entire ecosystem. However, extensive monitoring studies in the Everglades by USEPA (1998) revealed a mercury “hot spot” in central Water

Conservation Area 3. The US Geological Survey subsequently conducted several years of intensive field study at this 'hot spot' (WCA 3A-15). Data from this site were used to calibrate the E-MCM model.

Deposition and aquatic cycling data were available for 1995-1996; as a result, this period (22 June 1995 to 21 June 1996) was selected as the period of study. Atmospheric deposition rate for 1995-1996 is referred to as "current" deposition rate in this report. Because of limited information and tools available to support modeling of a global transport domain, source-receptor modeling relied primarily on local sources to estimate deposition to the Everglades. As discussed in detail in Section 5.4.5 of the report, several lines of evidence suggest that local sources were the predominant contributor to mercury deposition on south Florida.

We acknowledge the global-scale cycling of some forms of mercury, but paucity of data or models to quantify or simulate this potential source to Florida puts this phenomenon beyond the reach of this analysis. An analysis by the principals of the FAMS project, independent of this work, examined rainfall mercury deposition in relation to trace element signatures of common sources of air pollution. They concluded that most mercury deposited at long-term south Florida deposition collection sites did not originate from local sources. Further field measurements and modeling analyses are underway to resolve this seeming paradox.

To estimate the deposition load to WCA 3A-15 measured wet deposition at multiple FAMS sites was combined with modeled dry deposition in this analysis. Estimating total deposition to the TMDL study site required analysis of historical weather patterns in south Florida and selecting representative wind direction and rainfall patterns to use in estimating both wet and dry mercury deposition over the area based on local point source mercury emissions. The atmospheric model was calibrated to 1995-96 mercury deposition rates (both dry and wet deposition). Different mercury deposition reduction scenarios were simulated (75, 50, 30, and 15% of current levels) and provided as input to the aquatic mercury cycling model.

The aquatic mercury cycling model was run using the projected estimates of mercury deposition onto the marsh water surface at WCA 3A-15. The E-MCM model was run for 200 years so that steady-state conditions would be reached between atmospheric mercury deposition and largemouth bass mercury concentrations at current deposition rates. A relationship between atmospheric mercury deposition and largemouth bass mercury concentration was developed using the results from each of the different mercury emission/deposition scenarios. In addition, the time required for largemouth bass mercury concentrations to decrease to 50% and 90% of their long term, steady state mercury concentrations based on the reduced mercury deposition scenarios was estimated to be 10 and 30 years, respectively.

Assumptions and Cautions

This analysis demonstrates that atmospheric and aquatic mercury cycling models can be

combined and used to estimate the reduction in fish mercury concentration associated with reduced mercury deposition. However, several assumptions and cautions must be considered when interpreting these results:

✓

1. This report is not a fully formed mercury TMDL intended for implementation; that was not the goal of the present analysis. However, this report does demonstrate the technical feasibility of a combined modeling analysis to encompass the multi-media aspects of an air-water-biota pollutant problem. It establishes a method that furthers the goal of conducting a mercury TMDL study for the Florida Everglades.

2. The contribution of global mercury emissions to current atmospheric mercury deposition in southern Florida is poorly understood. After model testing and evaluation to assess the strengths of the assumption, the final model analysis of the relationship between mercury emissions and atmospheric deposition assumed that most of the mercury in deposition was from local sources. Although the comparison between observed and predicted wet deposition rates based on this assumption was good, this remains an area of scientific debate.

3. The processes affecting the transformation of mercury in the atmosphere were poorly understood or quantified at the time of this report. Therefore, the atmospheric modeling may not accurately reflect the properties of the actual mercury species that are being deposited onto the Everglades.

4. Not all the aquatic cycling processes affecting the transformation of inorganic mercury to methylmercury (which is the toxic mercury species that accumulates in fish) are represented in detail in the Everglades Mercury Cycling Model. For example, sulfate reduction is an important to the process of transforming inorganic to methylmercury. Some of the byproducts of sulfate reduction bind inorganic and methylmercury, making them less available for biological uptake. The details of these processes are not yet understood, thus cannot be modeled. Until the model is progressively refined and parameterized these limitations might affect the results reported here.

5. Although the measurement set is drawn from extensive, quantitative research, uncertainties remain in all field measurements, but this uncertainty is not included in the modeled output. The magnitude of the uncertainty is unknown, but it can affect the interpretation and conclusions drawn from the results.

6. Natural year-to-year variation in mercury deposition can be relatively large. This natural variability has not been included in the minimum loading calculations (although the effects of this variability were examined over long time-frames through Monte Carlo analysis). The 1995-1996 period was used as the basis for this analysis because it is the 12 month period for which extensive field monitoring and modeling data were available. It was not, however, a typical year as 1995 and 1996 were relatively wet years in southern Florida.

7. Only one area of the Everglades was considered in the simulation - WCA 3A-15. Other

areas in the Everglades might not respond similarly because of different habitat, food web dynamics and water quality.

Recommendations

The following actions are recommended in order to allow a formal TMDL to be conducted for the Florida Everglades:

1. Obtain better estimates of local vs. regional and global mercury contributions to south Florida. This is critical because estimates of regional plus global sources by various workers range from ca. 25 to >60% of the mercury deposition over southern Florida.
2. Incorporate the aquatic chemistry and cycling of sulfur into the Everglades Mercury Cycling Model. Sulfate is an important influence on the production of methylmercury, affecting not only mercury transformations, but also the biological availability of mercury for uptake. There is a strong sulfate gradient decreasing from north to south in the Everglades Protection Area that is an important cofactor controlling the severity of the mercury problem at any given site.
3. Apply the atmospheric and aquatic models to other areas of the Florida Everglades to see if similar changes occur in largemouth bass mercury concentrations following reduced atmospheric deposition of mercury.
4. Improve mercury emissions inventories and better describe mercury species' transformations in the atmosphere. These are critical information needs to improve mercury transport and fate modeling.
5. Obtain better estimates of the uncertainty in the study. Uncertainty can affect the interpretation and conclusions drawn. Uncertainties that potentially affect decisions regarding controlling local mercury emission sources should receive highest priority.

Appendix 12G: EPA: Total Maximum Load (TMDL) Development for Total Mercury in the Ocklockonee Watershed, February 28, 2002.

See:

http://www.epa.gov/Region4/water/tmdl/georgia/ochlockonee/final_tmdls/OchlockoneeHgFinalTMDL.pdf

Appendix 12H: Department of Energy: Potential Implications of TMDL/NPDES Initiatives on Coal-Based Power Systems

(See: <http://www.netl.doe.gov/publications/proceedings/00/app-rvr00/FEELYPNL.PDF>), Appalachian Rivers Conference, October 4-5, 2000 (Powerpoint presentation)

Appendix 12I: Final Withdrawal of 2000 TMDL Rule

FINAL WITHDRAWAL OF 2000 TMDL RULE TAKES EFFECT; EXISTING RULES MAKE PROGRESS CLEANING UP IMPAIRED WATERS

Environmental News

John Millett 202-564-7842/millett.john@epa.gov

In an action strongly supported by agriculture, forestry, states, industry, and the U.S. Congress, EPA Administrator Christie Whitman today withdrew a controversial rule that would have revised EPA's program for cleaning up impaired waters - the July 2000 final Total Maximum Daily Load (TMDL) rule. The 2000 rule was determined to be unworkable based on reasons described by more than 34,000 comments and was challenged in court by some two dozen parties. Congress stopped the rule's implementation, and the National Academy of Sciences' National Research Council (NRC) found numerous drawbacks with the July 2000 rule.

"In order to ensure that this nation's bodies of water are cleaned up, we need an effective national program that involves the active participation and support of all levels of government and local communities," EPA Administrator Christie Whitman said. "Unfortunately, the 2000 rule, designed to implement the TMDL program, fell short of that goal and others. We have an existing TMDL program, and this action will not stop ongoing implementation of that program, development of water quality standards, issuance of permits to control discharges, or enforcement against violators. EPA and states will continue to cooperate to identify impaired waters and set protective standards for those waters. EPA will continue to work diligently on ways to improve this program to ensure that we meet our goal of purer water."

An overwhelming majority of comments (more than 90 percent) supported EPA's proposed action to withdraw the July 2000 rule. These comments came from a broad cross-section of stakeholders, including agricultural and forestry groups, business and industry entities and trade associations, state agencies, professional associations, academic groups and private citizens.

The Clean Water Act requires states to identify waters not meeting water quality standards and to develop plans for cleaning them up. The Total Maximum Daily Load (TMDL) program provides a process for determining pollution budgets for the nation's waters that, once implemented, will assure that Clean Water Act goals will be met.

EPA is continuing efforts to improve the TMDL program in order to further enhance the quality of the nation's waters. In 2001 and 2002 combined, more than 5,000 TMDLs were approved or established under the current TMDL rule. The number of TMDLs approved or established annually has steadily increased in the last four years jumping from 500 in 1999 to nearly 3,000 in 2002. EPA has been working steadily to identify options to

improve the TMDL program, including addressing problems reported by the National Academy of Sciences. The agency has conducted several public meetings and is reviewing its ongoing implementation of the existing program with a view toward continuous improvement and regulatory changes in light of stakeholder input and the NRC recommendations.

R-068 # # # Release date:03/13/2003 Receive our News Releases Automatically by Email

Source: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2003_register&docid=fr19mr03-20.pdf

Appendix 12J: Press Reports identifying EPA's permissive attitude toward coal-fired mercury pollution

A Perfect Storm: Mercury and the Bush Administration, Part II

AUTHOR: Lisa Heinzerling and Rena I. Steinzor

Lisa Heinzerling is a professor at the Georgetown Law Center. The first part of this Article was published at 34 ELR 10297 (Apr. 2004).

TEXT:

The Storm Continues

In December 2003, the U.S. Environmental Protection Agency (EPA) proposed a rule to control mercury emissions from power plants and issued a final rule for mercury from chlor--alkali facilities. For power plants, EPA offered a melange of proposals, while making clear that it strongly prefers to allow commercial trading in this toxic substance, imposing only minimal, long--delayed additional controls for mercury...

...

Conclusion

For those who have watched the development of environmental policy since the early 1970s, the mercury debate cannot help but instill a strong sense of *deja vu*. Twenty years ago, EPA banned lead in gasoline, rescuing millions of children from irreversible neurological problems. The decision, which was controversial at the time, is widely regarded as one of the most important successes EPA has ever achieved. Not only were the doomsayers proved wrong and the costs of the ban dwarfed by the value of its benefits, the science on lead now provides definitive justification for its elimination from the marketplace. Mercury is lead's evil twin, and there are startling similarities between the arguments made against the momentous decision to ban lead and the arguments now being made in defense of mercury. At the moment, the debate is stalemated, with the government holding back action but facing a crescendo of public criticism. We can only hope that the forward momentum of the law, and the enormous and obvious flaws in the arguments of those who flout it, will overcome that stalemate, setting the stage for another victory on behalf of our generation and those that follow.

Washington Post, "Panel: Plan Lowers Clean-Air Standards"

The Washington Post

Fri 14 Jan 2005

By Juliet Eilperin

The Bush administration's bill to curb air pollution from power plants would reduce air

pollution less than the current Clean Air Act rules, according to a preliminary report by the National Academy of Sciences released yesterday.

The 18-member panel's initial assessment of proposals to regulate aging coal-fired power plants represents the latest salvo in the ongoing battle over how best to clean up the nation's air. The president's "Clear Skies" bill would set up a cap-and-trade program that aims to cut sulfur dioxide, nitrogen oxide and mercury pollution from utilities by 70 percent after 2018; the Senate will conduct hearings on the plan in two weeks.

The administration has also retooled federal "New Source Review" (NSR) rules, which require plants to install costly emissions controls if they increase pollution when modifying the facilities. The administration's revised rules, which have been blocked by a federal judge since late 2003, would require new controls only when the modifications equal 20 percent of a plant's replacement cost.

The academy report, commissioned by Congress in 2003 after Democrats tried to stall the administration's revision of NSR regulations, said it is difficult to gauge the effects of that plan because data are scarce.

But the committee, which consists largely of academics, said in its 160-page report that it is "unlikely that Clear Skies would result in emission limits at individual sources that are tighter than those achieved when NSR is triggered at the same sources. . . . In general, NSR provides more stringent emission limits for new and modified major sources than" Clear Skies. The panel will issue a final report by the end of the year.

The NSR rule triggered dozens of state and federal suits against more than 50 power plants during the 1990s and forced some to install new pollution controls. The administration argues that this approach costs jobs and keeps plants from running at full capacity.

Sen. James M. Jeffords (I-Vt.), the ranking minority member on the Environment and Public Works Committee, said the report "provides further proof that the Bush administration has been recklessly tinkering with the Clean Air Act for several years and wants to go even further. They want to replace existing programs, like New Source Review, that have documented benefits, with a proposal that is weaker and slower when it comes to reducing emissions and protecting health and the environment."

But Environmental Protection Agency officials and Senate Republicans questioned the academy's assessment. They said it ignores the success of cap-and-trade programs such as the one for acid rain, which has cut sulfur dioxide and nitrogen oxide emissions about a third since 1990, and that new plants would have incentives to reduce emissions because they would get no pollution allowances, unlike older plants.

"It's the same argument we've had before," said Will Hart, spokesman for Environment and Public Works Committee Chairman James M. Inhofe (R-Okla.). "Overall, Clear Skies is more protective of human health because we know we're going to get early and guaranteed reductions from it. New Source Review is a piecemeal approach, while Clear Skies is certain."

The Gazette

Coal-fired plants need pollution curbs: premiers, governors: Meeting sends tough motion on upholding clean air pact to Bush administration

The Gazette (Montreal)

Wed 10 Sep 2003

Page: A11

Section: News

Byline: KEVIN DOUGHERTY

Source: The Gazette

Their annual gathering is sometimes dismissed as a "clambake," but the New England governors and eastern Canadian premiers wrapped up their 28th conference yesterday with a tough-worded resolution calling on the Bush administration to restore requirements that coal-fired electricity-generating plants install anti-pollution equipment.

"Some people thought the battle of acid rain had been won," Quebec Premier Jean Charest said, while proposing an amendment to make the wording even tougher.

"Well, look again."

Charest said the decision Aug. 28, in the wake of the massive power blackout that affected 50 million people in Ontario and the United States, undoes the 1990 Clean Air Agreement between Canada and the United States to reduce emissions of sulphur dioxide, a gas that produces acid rain, killing life in Canadian lakes and causing property damage downwind in the United States.

Charest said that if there are no pollution controls in the U.S. Midwest, New England and eastern Canada will be "the tailpipe of the Midwest," receiving pollution that is carried eastward by prevailing winds.

"It is extremely important to us," he said.

Connecticut Gov. John Rowland said that if New England got rid of all its cars and shut down all its power plants, the region's air quality would still violate the U.S. Environmental Protection Agency guidelines, because of acid rain and other pollution originating in coal-fired power plants of the Midwest.

"We want the other states in the Midwest to live by the same rules as we live by," he said.

Rowland is a Republican and a crony of U.S. President George Bush. He said he did not know how the decision was made or whether Bush was aware, but he intends to use his contacts with the president to bring up dissatisfaction on both sides of the border with the EPA decision.

Rowland said the issue could also go to the courts, but when a reporter observed that he did not seem too excited about the pollution issue, he answered, "This is New England. This is as excited as we get."

Two Canadian premiers, Pat Binns of Prince Edward Island, who is on the election trail, and Newfoundland's Roger Grimes, who is believed to be close to calling an election, did not attend the annual meeting.

New Brunswick's Bernard Lord sat in for Grimes as co-chairman, and Nova Scotia's John Hamm, recently re-elected, also attended.

Hamm noted that since the Sept. 11 terror attacks that destroyed New York's World Trade Centre, security considerations have changed the relationship between the two countries, but he reminded his U.S. counterparts that Canada was also affected.

"Those of us who live in eastern Canada were much closer to the Sept. 11 terrorist attack than many people in the United States," he said.

"We were just as affected by Sept. 11 as you were."

He said good trade relations between Canada and the U.S. must be maintained for the benefit of people in both countries.

"We cannot ignore the economy on our side of the border and you cannot ignore the economy on your side of the border," Hamm said.

"There is far much more that bonds us together."

The governors and premiers will meet again next year in Newfoundland.

kdougherty@thegazette.canwest.com

Edition: Final
Length: 533 words

Charlottetown Guardian

Governors, premiers attack Washington on emissions:
Leaders agree on resolution telling the Bush administration not to ease
restrictions on United States' most polluting industries.

The Guardian (Charlottetown)

Wed 10 Sep 2003

Page: A1 / Front

Section: News

Source: Canadian Press

GROTON, Conn. (CP) -- The New England governors and eastern Canadian premiers blasted the U.S. government Tuesday for backing down on air pollution controls.

The six governors and the premiers of Quebec, New Brunswick and Nova Scotia unanimously endorsed a resolution calling on the Bush administration to reconsider new regulations easing restrictions on the nation's most polluting industries.

Quebec Premier Jean Charest accused the U.S. government and its Environmental Protection Agency of backing away from commitments the United States made more than 10 years ago when it signed a clean air treaty with Canada at the height of the acid rain scare.

"Some people thought the battle over acid rain had been won," Charest told the governors and premiers at their annual meeting, which ended Tuesday.

"Well, look again. The battle still rages."

The premiers and governors said their region is the nation's tailpipe through which all the worst pollutants pass.

For years, the New England states and eastern Canadian provinces have been taking steps to clean up their own pollution problems, but nothing can compensate for the load of sulphurous, contaminated air that blows across the region from the heavily industrialized Midwestern states.

"We want the other states in the Midwest to live by the same rules we do," said Connecticut Gov. John Rowland, host of the two-day meeting.

The EPA eased pollution-control requirements for U.S. utilities, oil companies and factories in December. Last month, the agency announced more changes that allow many of the nation's dirtiest coal-burning power plants and other industrial facilities to claim most upgrades as "routine maintenance" that do not require new emissions-cutting devices.

Charest, who called the measures a "regrettable retreat," said the rollback will create more environmental and health problems as pollution from Midwestern plants drifts east.

New Brunswick Premier Bernard Lord, who was earlier criticized by environmentalists for considering a new coal-fired power plant for his province, endorsed the call for tough action against coal-burning plants in states such as Ohio.

Illustration:

- Color Photo: Canadian Press / Prince Edward Island Provincial Treasurer Pat Mella, left, shares a light moment with Connecticut Governor John Rowland at the final session of the annual meeting of Eastern Canadian premiers and New England governors in Groton, Conn., Tuesday.

Edition: Final
Story Type: News
Length: 329 words

A New Twist in the Mercury Controversy

WASHINGTON, DC, April 29, 2004 (ENS) - The Natural Resources Defense Council (NRDC) formally notified the U.S. Environmental Protection Agency (EPA) on Tuesday that it intends to extend the deadline for adopting a final rule to regulate hazardous pollution - including mercury - from power plants to March 15, 2005.

The extension is in response to EPA Administrator Michael Leavitt's claim that the agency could not extend the period for public comment on the rule because of its settlement agreement with NRDC.

NRDC and EPA are parties to a legal settlement agreement requiring the agency to adopt Clean Air Act rules to control mercury emissions from electric power plants by December 15, 2004.

Mercury emissions from power plants are currently unregulated - these facilities emit some 48 tons of mercury each year, accounting for about 40 percent of the nation's mercury pollution.

The administration's proposal to use a cap and trade program to reduce emissions of mercury has drawn widespread criticism from environmentalists, scientists, Democrats and state pollution control officers.

Ten state attorneys general have formally opposed the proposal, which they argue favors industry over public health and the environment.

Critics note that the EPA's mercury contained 12 paragraphs almost verbatim from an industry proposal and contend that the cap and trade system it proposes is an inappropriate form of regulation for mercury.

Scientists have shown that mercury can cause brain and nerve damage and studies indicate children and women of childbearing age are at a disproportionate risk.

The agency is accepting public comment on its proposal until Friday, April 30 - many critics have called on the administration to extend that comment period, but Leavitt said in an April 14 speech that the court order prevented such extension.

NRDC says it had contacted EPA on April 12, notifying the agency that NRDC would agree to extend the December 15 deadline to March 15, 2005, to allow the agency to undertake additional analysis and extend the public comment period.

The New York based environmental organization says that since then - despite repeated inquiries - EPA has not responded to the proposal.

This has prompted NRDC to formally notified EPA that it would regard EPA to be in compliance with the settlement agreement if the agency takes the final action required by the agreement by March 15, 2005. NRDC also is alerting the court of this notification to EPA.

Federal officials have yet to issue a response to the notification.

THE NATION

A Plea to Scrap Mercury Emission Plan

A bipartisan group says the Bush proposal is slanted toward industry and is too weak to protect public health.

By Alan C. Miller and Tom Hamburger, Times Staff Writers
3/17/04

WASHINGTON — A bipartisan group of senators, a former head of the Environmental Protection Agency and health, labor and religious groups urged the Bush administration Tuesday to withdraw its controversial proposal to curb mercury emissions from power plants.

They said that the plan was too weak to protect public health and that the internal process that produced it was so slanted toward industry that the final rule would not survive legal challenge.

In a letter to EPA Administrator Michael O. Leavitt, Sen. James M. Jeffords (I-Vt.), the ranking minority member of the Environment and Public Works Committee, said the EPA had violated requirements calling for agencies to review alternatives and disclose their analysis when proposing a major regulation.

Jeffords also referred to the proposal's "gross inadequacies in controlling mercury." He called on Leavitt to request an investigation by the agency's inspector general "into the allegations of undue industry influence in the rule-making process." He said it appeared

that EPA political appointees and White House officials had worked "to skirt, if not directly violate, the law and rules of ethical behavior."

But an agency spokeswoman said Tuesday that work on the mercury rule was ongoing and that no judgment "should be made until the rule is finalized in December."

EPA officials said, at this point, they stand by their "cap-and-trade" approach to regulating mercury, which creates market-oriented incentives for coal-fired utilities to either clean their emissions or buy "credits" from those that do.

"Our goal and our commitment remains the same: to reduce mercury emissions by 70%," said Cynthia Bergman, the spokeswoman. Leavitt said this week that he was directing his staff to undertake additional studies and analysis of the mercury proposal, which was announced in December, shortly after he took office. He said he considered this part of the "normal process," which he suggested could result in changes to the proposal.

He emphasized that the administration was the first to propose regulations that would limit mercury emissions from power plants. President Clinton's EPA administrator, Carol Browner, said the Bush proposal "is fundamentally flawed. It can't withstand a legal test, and it must be withdrawn."

Speaking at a news conference hosted by Physicians for Social Responsibility, she said Bush administration officials "decided where they wanted to go before they completed the analysis and then they cooked the analysis to get to where the industry was willing to be. That is not the way a regulatory process should operate."

Jeffords and Browner said they were largely responding to a Los Angeles Times report Tuesday that disclosed that EPA political appointees had bypassed agency professional staff and a federal advisory committee last year to develop a mercury emissions rule preferred by the White House and industry.

The Times also reported that EPA staffers said they were told not to undertake routine economic and technical studies called for under an executive order and requested by the advisory panel. Significant language from utility lobbyists was included verbatim in the proposal.

Also Tuesday, Sens. Patrick J. Leahy (D-Vt.) and Olympia J. Snowe (R-Maine) reiterated an earlier plea to scrap the EPA's proposed rule.

They have collected nearly three dozen signatures on a letter urging Leavitt to submit a new proposal.

Critics say the EPA should regulate mercury under the provisions of the Clean Air Act, which call for much steeper and earlier emissions reductions than the agency has proposed.

Christie Whitman, who headed the agency last spring — when EPA staffers say they were told to forgo the normal analysis of the mercury proposal — said Tuesday that she supported Leavitt's decision to order new studies. He has the option of publishing the findings before the deadline for public comment and well before the final rule is enacted, she said.

Still, Whitman said, "ideally you have the underlying analysis when you go out with a rule." She reiterated that she never requested that her staff not produce its normal analysis or skew the data and, had she known that was happening, "I would have stepped in."

Further support for Leavitt's approach came from a powerful Senate ally.

Sen. James M. Inhofe (R-Okla.), chairman of the Environment and Public Works Committee, believes that "this controversy is testament to the length environmentalists will go to politicize the normal workings of government," said a spokesman for Inhofe. He also said the plan had undergone extensive review, "so it is a stretch to say it has not been analyzed."

A recent study found that about 60,000 children a year could suffer learning disabilities from being exposed to mercury while in the womb. That can happen when pregnant women eat fish from waters contaminated by the mercury emitted from power plants.

But coal and utility executives warn that overly aggressive regulation of the nation's 1,100 coal-fired plants could seriously damage those industries as well as the nation's economy.

A spokesman for coal-fired utility companies said Tuesday that withdrawing the current mercury proposal would create unnecessary delay and undercut the spirit of the proposal's public-comment period that allows for more research and study.

Scott Segal of the Electric Reliability Coordinating Council suggested

that Browner's criticism of the administration was unwarranted, particularly because her record on regulating mercury from power plants was marked by delay.

Proposed Mercury Rules Bear Industry Mark EPA Language Similar to That in Memos From Law Firm Representing Utilities

By: Eric Pianin
The Washington Post
January 31, 2004

The Bush administration proposed new rules yesterday regulating power plants' mercury pollution, and some of the language is similar to recommendations from two memos sent to federal officials by a law firm representing the utility industry.

The three approaches that the administration published for public comment would for the first time regulate airborne emissions of toxic mercury, which can enter the food chain and cause developmental damage to infants whose mothers eat mercury-tainted fish. A side-by-side comparison of one of the three proposed rules and the memorandums prepared by Latham & Watkins -- one of Washington's premier corporate environmental law firms -- shows that at least a dozen paragraphs were lifted, sometimes verbatim, from the industry suggestions.

Environmental Protection Agency officials dismissed the matter as largely an interagency mix-up that had little to do with shaping the administration's centerpiece proposal for forcing power plants to reduce mercury emissions 70 percent by 2018. They said the law firm language that turned up in the proposed rule published in the Federal Register was related to an alternative proposal that the administration does not support.

"That's not typically the way we do things, borrowing language from other people," said Jeffrey Holmstead, head of the EPA's air policy office. "But it came to us through the interagency process."

Latham & Watkins was among the law firms and utility industry groups that lobbied the administration last year during deliberations over mercury rules in the Clean Air Act. The firm represents Cinergy Inc. and other major utilities and energy companies with a major interest in the outcome of the rule-making. Holmstead, an assistant EPA administrator, and his chief counsel, Bill Wehrum, worked for Latham & Watkins before joining the EPA.

There is nothing unusual about industry groups peppering government agencies with position papers and recommendations. Indeed, lawyers for Latham & Watkins served on an EPA mercury advisory group and submitted two detailed memos -- one dated March 8, 2002, that dealt with the challenges of regulating different grades of coal, and another, dated Sept. 4, that outlined a number of regulatory legal theories. However, some former EPA officials said it is rare for the agency to simply insert large chunks of an industry analysis into a proposed rule.

"The regulations are supposed to be drafted by the staff -- the people in the science program and regulatory branches," said Robert Perciasepe, who headed the EPA air policy office during the Clinton administration. "I think it would be inappropriate" for the agency to borrow heavily from an industry memorandum, he said, "unless it was from a government contractor."

Martha Keating, a toxics scientist with the Clean Air Task Force and a former EPA employee, was the first to discover the similarities between some of the proposed rules and the law firm's memos. "It just illustrates the inside track the industry groups and some of these law firms have with the administration," she said.

Claudia M. O'Brien, lead writer of the Latham & Watkins memos, said it was "gratifying" that the EPA found the firms' analysis persuasive, but that "we didn't ask EPA to cut and paste our analysis into their [rule-making] preamble."

"It was a long rule-making process, and it's a big document done under a tight time frame," she said. "If they found an analysis persuasive, they adopted the analysis." Until recently, the EPA appeared on track to issue new rules requiring the nation's 1,100 coal- and oil-fired power plants to meet a maximum achievable control technology (MACT) standard to sharply reduce mercury pollutants within three years. That approach met strong resistance from industry groups, which say the regulations would be excessively costly and would be impossible to meet with existing technology.

Instead, the administration has embraced a mandatory "cap-and-trade" program, similar to the program used to combat acid rain, begun in 1990. The new program, intended to reduce mercury emissions by nearly 70 percent by 2018, would allow utilities to buy emissions "credits" from cleaner-operating plants to meet an overall industry target without having to install new scrubbers in every plant.

To comply with a consent agreement, the EPA also proposed a modest MACT standard to reduce mercury emissions by 29 percent by the end of 2007 -- although Holmstead said that is not the administration's preference.

A third proposal would use a more novel legal interpretation of the Clean Air Act to launch a cap-and-trade program. In describing this alternative, the EPA borrowed heavily from one of the Latham & Watkins memos. According to Holmstead, the law firm's language was part of the public record and was passed along to the EPA by the White House budget office and the Energy Department.

The EPA used the other memo to describe at length plans to rank and regulate coal in "subcategories" based on the amount of mercury pollution they emit. "Neither Bill [Wehrum] nor I had any idea this language came from Latham & Watkins," Holmstead said. "Our technical folks who did subcategorization used it."

Appendix 12K: Canadian submission to US EPA on proposed mercury rule.

EPA Docket Center, Room B-108
U.S. EPA West
United States Environmental Protection Agency
1301 Constitution Avenue N.W.
Washington DC 20460
Attn: Docket ID No. OAR-2003-0056

Proposed National Emission Standards for Hazardous Air Pollutants; and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units

Submission filed by Environment Canada on March 30, 2004

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Executive Summary

Environment Canada is pleased to submit comments to the United States Environmental Protection Agency (EPA) in response to the *Federal Register* notice of January 30, 2004. Environment Canada commends EPA action to reduce mercury emissions from coal fired power plants and nickel emissions from oil fired boilers. Our comments are confined to mercury only.

Mercury is a toxic, persistent, bioaccumulative substance. Human exposure to mercury — primarily by eating contaminated fish — may cause neurological and developmental damage, particularly in fetal and adult nervous systems. Thousands of Canadian lakes currently have fish consumption advisories, primarily due to mercury. This is a particular concern for subsistence fishers and Aboriginal people in the far North who consume large quantities of fish as part of their traditional lifestyles. In some northern communities, mercury levels in blood are greater than the Health Canada acceptable level.

Environment Canada supports the efforts being made by the EPA to limit emissions of mercury. Our modelling indicates that 10% of the mercury that is deposited in Canada each year comes from U.S. sources, with that figure climbing to 38% in the Great Lakes

Region, home to more than nine million Canadians. As a result, mercury reductions in the U.S. are needed to help protect the environment and human health in Canada.

At the same time, Environment Canada is concerned that both the Maximum Achievable Control Technology (MACT) proposal and Phase I of the cap-and-trade proposal fall short of the emissions reductions that are achievable with current and emerging control technologies.

The Canadian view is based on:

- a review of current literature, which suggests that capture of mercury from bituminous and sub-bituminous coal-fired power plants (and possibly lignite-fired plants) on the order of 60-90% is achievable;
- consensus agreement among all Canadian provinces, territories and the federal government to set, by 2005, a Canada-wide Standard for mercury emissions from coal-fired power plants that will target "the national capture of mercury from coal burned in the range of 60-90%," by 2010; and
- a recommended mercury standard for Alberta power plants based on activated carbon injection and fabric filters, by 2009.

Specifically, Environment Canada recommends and urges the U.S. EPA to:

- consider a more stringent MACT standard for mercury that would result in the national capture of mercury from coal burned in the range of 60-90%, or
- set a lower Phase I cap (for 2010) in the cap-and-trade option that would result in the national capture of mercury from coal burned in the range of 60-90%.
- This would be comparable to the mercury Canada-wide Standard for coal-fired power plants that is being developed by the Canadian Council of Ministers of the Environment.

Introduction

Environment Canada is pleased to respond to the request of the United States Environmental Protection Agency (EPA), in the *Federal Register* notice of January 30, 2004, for comments on the proposals to regulate mercury emissions from power plants under the U.S. *Clean Air Act*.

Environment Canada strongly welcomes the EPA's efforts to reduce mercury emissions from the coal-fired electric power generation sector. Canada and its provincial and territorial governments have already determined that a mercury standard for this sector is needed in Canada as well.

This document describes Environment Canada's concerns regarding mercury, and Canadian actions to reduce mercury releases. It also includes a high level review of mercury control technology, and outlines why Environment Canada believes that the EPA could go further to set a more aggressive mercury standard. Finally, the document describes the impact of the mercury proposal on Canada, and shows that a more

aggressive standard would reduce transboundary flows and thus be more protective of the Canadian and American environment.

Environment Canada's Concerns

Health and environment

Mercury is a toxic, persistent, bioaccumulative substance. Biological processes, such as bacterial activity in plants and sediments on lake bottoms, in rivers and oceans, can transform elemental mercury to methyl mercury, one of the most bioaccumulative and toxic forms. Levels of methyl mercury in animals increase as it moves up the food chain, from plankton to large fish, birds and mammals, including humans.

Human exposure to mercury — primarily by eating contaminated fish — may cause neurological and developmental damage, particularly to fetal and adult nervous systems. Methyl mercury ingested by a pregnant woman, or metallic mercury that may enter her body from breathing contaminated air, can be passed from the maternal blood to the developing fetus by crossing the placental barrier. Methyl mercury can also accumulate in an unborn baby's blood to a concentration higher than the concentration in the mother, with possible greater adverse health effects to the developing systems in the fetus.

Although levels of total mercury have begun to decline in Aboriginal blood and hair in Canada's North, there is still significant variability between different communities, depending on a number of factors. These include: location, lifestyle, proportion of traditional foods in the diet, and genetic factors. Of the Native populations in Canada's North, Caucasians, Dene, Métis and others are registering total mercury blood levels below the Health Canada "acceptable" level of $<20 \mu\text{g}/\text{kg bw}/\text{day}$. However, the Inuit population in Baffin Island and in other regions of the North display significantly higher levels of total blood mercury than their northern counterparts. Total blood mercury levels recorded in Nunavik (northern Quebec), for example, were observed at up to 16% greater than the Health Canada "acceptable" level.

In contrast to the Health Canada total blood mercury guidelines, a recent re-evaluation of mercury in the U.S. concluded that a benchmark dose of $5.8 \mu\text{g}/\text{L}$ maternal blood (10X safety factor) is considered adequate to protect the population. When using this value rather than the Health Canada level of $<20 \mu\text{g}/\text{kg bw}/\text{day}$, 79% of the highest exposed population in Nunavik exceeded the U.S. standard, which is considerably higher than the value of 16% identified using the Health Canada standard. As well, proportionally higher levels were seen in Inuit populations in Baffin, Inuvik, Kitikmeot and Kivalliq than calculated under the Health Canada guideline.

Mercury's effect on wildlife is also harmful. Fish-eating predators such as loons, merganser ducks, osprey, eagles, herons and kingfishers can have very high concentrations of mercury. Mercury has been detected in Common Loons from Alaska to Atlantic Canada, and blood concentrations have been correlated with levels in prey fish

species. A survey of mercury in loons from five regions across the U.S. and Canada has shown that blood mercury concentrations increased from west to east, with the highest levels in southeast Canada. High levels of mercury are suspected of impairing the loon's reproductive success as well as causing growth-related problems. These problems inevitably lead to an increased death rate and a decreased birth rate, resulting in a reduction in the abundance of natural populations.

In addition, mercury has been found in predatory mammals such as otters from south central Ontario. It is thought that elevated mercury levels in otters may cause early mortality due to toxicity and behavioural changes. While the reproduction and behaviour of bird species is generally affected by exposure to methyl mercury, mammals most often suffer neurological effects. The severity of the toxic effects will depend on the degree of exposure, and may range from a slight impairment to reproductive failure or death.

In Canada, federal, provincial and territorial agencies have issued fish consumption advisories limiting consumption of specific fish species from certain lakes. Thousands of advisories on fish species from individual water bodies are put in place every year due to mercury contamination of fish. Province wide advisories are in effect in New Brunswick and Nova Scotia, while other provinces have advisories for specific lakes and/or species. Over 90% of fish consumption advisories are due to mercury, which is a particular concern for subsistence fishers who consume large quantities of fish as part of their traditional lifestyles. This is particularly true in the far North, where mercury cools, condenses and settles in the colder Arctic ecosystem, resulting in its bioconcentration in organisms higher in the food chain, including humans.

Mercury from foreign sources

Unlike some pollutants, mercury emissions may remain in the atmosphere anywhere from hours to years. As a result, a cloud of mercury, known as the global pool, has been building up over the years. Furthermore, mercury that was deposited many years ago may volatilize and re-enter the atmosphere. These emissions can end up in ecosystems far from their point of origin, such as in Canada's Arctic, where there are no local point sources.

Global atmospheric emissions of mercury from *major* anthropogenic sources are estimated to be over 2 200 metric tonnes per year. In 1999, Canada's share was about 8 tonnes and the U.S. share was 106 metric tonnes (or 117.3 U.S. short tons). The largest source of atmospheric mercury in both Canada and the U.S. is coal-fired power plants, with 1999 emissions of approximately 2 metric tonnes and 43.5 metric tonnes (or 48 U.S. short tons), respectively.

Canada is a net receiver of mercury, with some 10% of the 138 tonnes we receive annually coming from the U.S., based on the 1995 global emissions inventory. In the Great Lakes region, that figure climbs to 38% of total mercury deposition coming from U.S. sources.

Since most of the mercury that is deposited in Canada each year comes from foreign and natural sources, Canada cannot solve its mercury problem on its own. In addition to reducing its domestic sources of mercury, Canada needs other countries, including the U.S., to do the same.

What Canada is Doing to Reduce Mercury Releases

Federal government

Canada has taken action for over thirty years to reduce mercury releases to the environment. In 1972, the federal government issued a regulation under the *Fisheries Act* to limit the discharge of mercury in effluents from mercury-cell chlor-alkali plants. In 1978, the federal government passed another regulation, under the *Canadian Environmental Protection Act*, to limit mercury releases to the air from mercury-cell chlor-alkali plants. These regulations have since been updated. As a result of these regulations, coupled with provincial regulations and a shift away from chlorine bleaching at pulp and paper mills, mercury releases from this sector alone have fallen from 70 tonnes in the 1970s to 47 kilograms in 2001.

The federal government also participates in a number of activities with other countries, including the U.S., to reduce mercury:

- the Great Lakes Bi-national Toxics Strategy;
- the North American Regional Action Plan on Mercury, under the Commission for Environmental Cooperation;
- the Arctic Council Action Plan mercury project;
- the United Nations Economic Commission for Europe Heavy Metals Protocol;
- the United Nations Environment Programme Global Mercury Programme;
- the New England Governors/Eastern Canadian Premiers Mercury Action Plan.
- Canadian Council of Ministers of the Environment

In 1998, the Canadian Council of Ministers of the Environment (CCME) — which comprises the 14 Environment Ministers of the federal, provincial and territorial governments — agreed to set mercury Canada-wide Standards for the remaining large uncontrolled sources. As a result, between 2000 and 2002, the CCME endorsed a series of mercury Canada-wide Standards for base metal smelters, waste incinerators, mercury-containing lamps, and dental amalgam waste. These Canada-wide Standards are to be met by 2010 or earlier, depending on the standard.

The CCME has also committed to develop a Canada-wide Standard by 2005, to reduce mercury emissions from the coal-fired electric power generation sector by 2010 and "to explore the national capture of mercury from coal burned in the range of 60-90%." The CCME has agreed that "provincial application of the national target or standard may vary, with some provinces doing more and some less, depending on the control technologies for the different coal types (especially lignite). Alternatively, the standard may vary depending on the coal type or other relevant factors." The CCME has also agreed that "the capture of mercury includes all efforts to reduce mercury releases and

may be achieved through a continuum of actions, from pollution prevention through emissions controls."

The federal, provincial and territorial governments are working together at the CCME toward setting this Canada-wide Standard. The focus at present is to analyze mercury data from Canadian coal-fired power plants (e.g., the mercury content in coal and ash, and mercury stack emissions, and the resulting mass balance) and review current and emerging control technology.

Alberta

In June 2002, the Alberta Minister of Environment asked the Clean Air Strategic Alliance (CASA) to develop an approach for managing emissions from the electricity sector in Alberta. CASA is a multi stakeholder, not-for-profit organization. The members include representatives from industry, health and environmental groups, and the provincial and federal governments.

In December 2003, and by consensus, CASA tabled its report with the Alberta Minister of Environment. On March 4, 2004, the Government of Alberta announced that it was accepting and adopting the CASA recommendations.

CASA based its recommended emission standards for sulphur dioxide, nitrogen oxides and particulate matter on *Best Available Control Technology Economically Achievable* (BATEA) levels, but did not set a specific capture limit for mercury, because there was no established BATEA level for mercury at the time. Instead, the key CASA recommendations for mercury are:

In a multi-stakeholder setting, review the latest BATEA in 2005, and set a standard based on BATEA that existing coal-fired units must meet by the end of 2009. The regulations or standards will be established under Alberta's *Environmental Protection and Enhancement Act*.

If a BATEA level is not identified in 2005, then, by 2009, existing coal units must make a financial level of effort equivalent to installing fabric filters and activated carbon at an injection rate to be determined as part of the 2005 review.

New or transitional units that have fabric filters would only be expected to meet the activated carbon component of this level of effort commitment by 2009. For those units designated to shut down in the 2012-2017 time frames, no mercury controls are required.

As a result of these recommendations, CASA predicts that emissions from coal fired power plants in Alberta would drop by 400 kg — a 50% reduction — by 2009.

Current and Emerging Control Technology

The Government of Canada has been following the work in the U.S. to determine methods to capture mercury from coal-fired power plants using various control technologies. Canada appreciates the significant resources put forth by the U.S. Government and industry in looking at the mercury control issue. We offer the following comments on the work that has been conducted to date.

Current technology

The EPA's Information Collection Request (for mercury emissions data from coal-fired power plants) has revealed that some of the controls used to address acid rain and smog also capture mercury in varying degrees. Generally, mercury removal rates are higher in units fired with bituminous coal, followed by units fired with sub-bituminous, and lower for units fired with lignite coal. In the U.S., more than 90% of the coal combusted for power generation is bituminous and sub-bituminous.

The following list provides examples of pollution controls that also capture mercury:

Coal washing: Coal washing is widely used to remove sulphur and ash from coal before it is burned. Mercury removals from near zero to about 60% were reported for the washing methods that are used in the U.S.

Electrostatic precipitators (ESPs): ESPs are designed to capture particulate matter, a component of smog. Mercury removals across cold-side ESPs averaged 27%, compared to 4% for hot-side ESPs.

Fabric filters: Fabric filters are also designed to capture particulate matter. Removals for fabric filters were higher than ESPs, averaging 58%.

Flue gas desulfurization (FGD): FGDs are often known as scrubbers, and are designed to control sulphur dioxide, a gas that causes acid rain. Both wet and dry flue gas FGD systems removed 80-90% of the gaseous mercury, but elemental mercury was not affected.

Fluidized-bed combustors with fabric filters: Designed to control sulphur, these systems showed high levels of mercury removals, averaging 86%.

Selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR): SCRs and SNCRs are used to control nitrogen oxides, a gas that may form ozone. Test results on mercury control via SCRs and SNCRs were inconclusive; additional full-scale tests are in progress.

Equipment vendors have also recommended that a mercury MACT rule be set at 90% mercury removal for bituminous coal-fired units and 70% removal for sub-bituminous-fired units.

Emerging technology

The U.S. Department of Energy (DOE) continues to fund emerging mercury control technology for coal-fired power plants. In 2001, DOE's Office of Fossil Energy issued a press release saying: "The department wants to develop a wider array of mercury control options for power plants that can reliably reduce emissions by 50 to 70 percent by 2005 and 90 percent by 2010." To that end, a number of technologies have been tested.

The following list is incomplete, but serves to illustrate some of the promising new controls for mercury:

Sorbent injection: Sorbent injection is the mercury control technology closest to commercialization for power plants. It involves directly injecting activated carbon, or some other sorbent, into the flue gas stream of a utility boiler. The mercury in the flue gas is adsorbed onto the sorbent, and the sorbent is then collected in downstream particulate control equipment. Mercury removal depends on many factors; preliminary results show removal levels greater than 90% for boilers burning bituminous coals.

Carbon filter beds: Carbon filter beds are capable of removing high mercury concentrations from waste incinerators. The Eastman Chemical Company's coal gasification plant in Kingsport, Tennessee, achieves 90%+ mercury removal in a carbon absorbent bed. However, carbon filter beds have not been tested for mercury removal at pulverized coal-fired power plants.

In Situ: *In situ* sorbent removal captures mercury in the flue gas by using thermally activated sorbent produced *in situ*. The sorbent consists of semi-combusted coal, which is extracted from the furnace, injected into the flue gas downstream of the air pre-heater, and then captured in a particulate control device. Pilot-scale tests indicate that mercury removal efficiencies of up to 90% are achievable.

While acknowledging the variability in the data from the Information Collection Request, Environment Canada observes that current and emerging pollution controls are able to capture mercury in ranges that are considerably higher than those proposed by the EPA. Although the cost of emerging, commercial-scale mercury control technologies remains a question, the U.S. experience has shown that actual costs of meeting air pollution regulations are often much lower than anticipated.

The above findings suggest that the EPA could set a more aggressive mercury standard by:

- setting a MACT standard based on current *as well as* emerging mercury control technology; or
- establishing a Phase I cap (for 2010) that is lower than the proposed cap, based on the co-benefits of reducing sulphur dioxide and nitrogen oxides emissions as required to meet the proposed *Interstate Air Quality Rule*. The Phase I cap should be set at a level that could be met with current *as well as* emerging mercury control technology.

Impact of the Proposed U.S. Mercury Rule on Canada

Environment Canada was not able to model the impact on Canada of the proposed mercury rule within the 60-day comment period. However, Environment Canada has been able to calculate a *very approximate estimation* of the positive impact — i.e., a reduction in mercury deposition in Canada — of the MACT option and the cap-and-trade option. It must be stressed that these estimations are very rough, as they:

- are based on Canada's modelling work with the 1995 global emissions inventory;
- assume that the spatial distribution of reduced coal-fired power plant emissions is the same as total U.S. emissions; and
- assume a linear relationship between emissions reductions in the U.S. and its impact on the deposition in Canada and the Great Lakes Region.

Since Environment Canada believes that the U.S. mercury rule could be more stringent, Environment Canada also did an approximate estimation of the benefits of a 50% emissions reduction from U.S. coal-fired power plants by 2010, and compared that to the impact of the current proposals.

Regional impact

The impact of U.S. emissions over Canada has a significant spatial distribution; it is higher over eastern Canada and decreases toward northern Canada, where the impact of European and Asian sources is large. Due to this regional distribution, Environment Canada did a very approximate estimation of the impact of the EPA's proposed mercury rules on the Great Lakes Region, where roughly 38% of annual mercury deposition is from U.S. sources. More than nine million Canadians live in the Great Lakes Region. Both the MACT option and Phase I of the cap-and-trade option would reduce total mercury deposition by roughly 4% in the Great Lakes Region. That figure climbs to roughly 7% with a more aggressive rule that cuts emissions in half (see Table 1). By 2018, Phase II of the cap-and-trade option would reduce total mercury deposition by about 10% in the Great Lakes Region.

Table 1: Estimated reduction in mercury deposition in the Great Lakes Region

	MACT option	Phase I of cap-and-trade option	Hypothetical option	Phase II of cap-and-trade option
Resulting mercury emissions	34 tons* by 2007/08/09	34 tons by 2010	24 tons by 2010	15 tons by 2018
Decrease in mercury emissions (from 48 tons in 1999)	14 tons	14 tons	24 tons	33 tons
Sector % emission reduction (from 48 tons in 1999)	30 %	30 %	50 %	70 %
National % emission	12 %	12 %	20 %	28 %

reduction (from 117.3 tons in 1999)				
% reduction in total mercury deposition in the Great Lakes Region	4 %	4 %	7 %	10 %

* U.S. short tons. One short ton equals 0.907 tonne.

Conclusion

Environment Canada commends the U.S. for proposing mercury regulations for coal-fired power plants.

The CCME is currently developing a Canada-wide Standard for mercury emissions from Canadian coal-fired power plants, and is exploring the national capture of mercury from coal burned in the range of 60-90%.

Based on the CCME goal, and Canada's determination to reduce mercury deposition as a result of foreign emissions, Environment Canada urges the U.S. EPA to: consider a more stringent MACT standard for mercury that would result in the national capture of mercury from coal burned in the range of 60-90%, or set a lower Phase I cap (for 2010) in the cap-and-trade option that would result in the national capture of mercury from coal burned in the range of 60-90%, which would be consistent with the mercury Canada-wide Standard for coal-fired power plants that is being developed by the CCME.

All information requests should be directed to:

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Also see:

[News Release: Environment Canada Calls for Faster Reductions in Air Pollutants from U.S. Power Plants](#)
[Environment Canada position on U.S. EPA regulatory proposal for air quality](#)

Appendix 12L: Guido A. Pronsolino, et al., v. Felicia Marcus, et al.,

U.S. District Court, Northern District of California, Motion for Summary Judgement, March 23, 2000 (see: <http://www.epa.gov/owow/tmdl/pronsolino.html>)

Motion for Summary Judgment in Pronsolino v. Marcus

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IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN
DISTRICT OF CALIFORNIA
SAN FRANCISCO HEADQUARTERS

No. C 99-1828 WHA

NOTICE OF MOTION AND MOTION FOR SUMMARY JUDGMENT;
DEFENDANTS' MEMORANDUM IN SUPPORT OF MOTION FOR
SUMMARY JUDGMENT and RESPONSE TO PLAINTIFFS' MOTION FOR
SUMMARY JUDGMENT

DATE: March 23, 2000

TIME: 8:00 A.M.

PLACE: COURTROOM OF THE HONORABLE WILLIAM ALSUP,
COURTROOM 9

450 GOLDEN GATE AVENUE

SAN FRANCISCO, CA

(JOINT STATEMENT OF UNDISPUTED FACTS and DECLARATION OF S.
RANDALL HUMM FILED SIMULTANEOUSLY)

GUIDO A. PRONSOLINO, et al.,

Plaintiffs,

v.

FELICIA MARCUS, et al.,

Defendants.

and

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS, et al.;

and ASSOCIATION OF METROPOLITAN SEWERAGE AGENCIES;

Defendant-Intervenors,

and

AMERICAN FOREST AND PAPER ASSOCIATION and CALIFORNIA

FORESTRY ASSOCIATION,

Plaintiff-Intervenors.

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33 U.S.C. §§ 1314(b), 1316(b)(1)(B)

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40 C.F.R. § 122.44(a), (d)(1)

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40 C.F.R. § 130.2(i)

40 C.F.R. § 130.7(b)

40 C.F.R. §§130.7(c)(1)(ii)

40 C.F.R. 130.7(d)(1)

40 C.F.R. §§ 131.3(b), 131.6(c), 131.11

40 C.F.R. § 131.3(f), 131.6(a), 131.10

40 C.F.R. § 131.11(b)

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43 Fed. Reg. 60664, 60665 (Dec. 28, 1978)

50 Fed. Reg. 1774, 1779 (Jan. 11, 1985)

54 Fed. Reg. 1300, 1314 (Jan. 12, 1989)

57 Fed. Reg. 33040, 33044 (Jul. 24, 1992)

64 Fed. Reg. 46012, 46034 (August 23, 1999)

64 Fed. Reg. 46020

FEDERAL RULES

Fed. R. Civ. P. 56(c)

LEGISLATIVE MATERIAL

H.R. Rep. No. 92-911 (1972)

S. Rep. No. 92-414 (1971)

LIST OF ATTACHMENTS

Attachment No.

- 1 Garcia River Sediment Total Maximum Daily Load
- 2 William H. Rodgers, Jr., Environmental Law (2d ed. 1994)
- 3 Comm. On Public Works, 93d Cong., 1st Sess., 1 A Legislative History of the Water Pollution Control Act Amendments of 1972 (Comm. Print 1973)
- 4 EPA's Water Quality Standards Handbook, 2d ed., (EPA 1994)
- 5 43 Fed. Reg. 60664, 60665 (Dec. 28, 1978)
- 6 64 Fed. Reg. 46012, 46034 (August 23, 1999)
- 7 EPA, New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs) (August 8, 1997)
- 8 See, e.g., Friends of the Wild Swan et al. v. USEPA et al. (unpublished, CV 97-35-M-DWM (D.Mont. 1999)
- 9 Oliver A. Houck, TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act, 27 ELR 10391, 10400 (August, 1997)
- 10 Oliver A. Houck, TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act, 27 Env'tl. L. Rep. 10329
- 11 Dioxin/Organochlorine Center v. Rasmussen, 1993 WL 484888 (W.D. Wash., August 10, 1993)
- 12 S. Rep. No. 92-414, at 39 (1971)
- 13 50 Fed. Reg. 1774, 1779 (Jan. 11, 1985)
- 14 54 Fed. Reg. 1300, 1314 (Jan. 12, 1989)
- 15 57 Fed. Reg. 33040, 33044 (Jul. 24, 1992)
- 16 Guidance for Water Quality-based Decisions: The TMDL Process (April 1991)
- 17 Supplemental Guidance on Section 303(d) Implementation, August 13, 1992
- 18 Guidance for 1994 Section 303(d) Lists, November 26, 1993

- 19 EPA Action on 1996 Lists, Priority Rankings and TMDL Targeting Plans Submitted by States Under Section 303(d) of the Clean Water Act
- 20 National Clarifying Guidance For 1998 State and Territory Section 303(d) Listing, Aug. 27, 1997
- 21 New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs), August 8, 1997
- 22 1996 National Water Quality Inventory "305(b) Report"
- 23 Joint Statement of Undisputed Facts for Defendants' Motion for Summary Judgment
- 24 EPA TMDL in Upper Birch Creek, Alaska
- 25 EPA TMDL for Appoquinimink River, Delaware
- 26 EPA TMDL for Jewel Lake, Alaska

Please take notice that on March 23, 2000 at 8:00 a.m. or as soon thereafter as the matter may be heard, Defendants will move for summary judgment pursuant to Federal Rule of Civil Procedure 56.

INTRODUCTION

At issue in this case is the authority of the United States Environmental Protection Agency ("EPA" or "Agency") under Section 303(d) of the Clean Water Act ("CWA" or "Act") to identify polluted waters and to develop pollutant reduction plans -- known as "total maximum daily loads" or "TMDLs" -- for waters that are impaired by pollutants that originate from "nonpoint sources."⁽¹⁾ A TMDL identifies the sources polluting a water and expresses the amount of a pollutant that can be introduced from those sources without causing the water to exceed a State's water quality standards.

In this case, timber harvesters and a variety of agricultural and timber trade associations challenge EPA's authority under Section 303(d) to include the Garcia River in Northern California in the TMDL process.⁽²⁾ Plaintiffs object to EPA's inclusion and approval of the Garcia River on California's list of

impaired waters and the establishment of a TMDL that identifies, but does not require as a matter of Federal law, the reductions in sediment from categories of nonpoint sources that are necessary for the River's recovery. Excessive sedimentation from nonpoint sources, such as timber harvesting sites, has caused the River to exceed California's water quality standards, which designate the River as a spawning ground and habitat for salmon and other cold water fish. See Att. 1 at 5, 9, 29. Plaintiffs contend that Section 303(d) is limited solely to point sources of pollution, and that Congress intended that nonpoint source impaired waters such as the Garcia be exempted from the listing and TMDL calculation requirements of Section 303(d).

As EPA has pointed out from the outset of this case, Plaintiffs' arguments challenge an interpretation of Section 303(d) that is not asserted by EPA -- that the Agency has the authority to require reductions from nonpoint sources through establishment of TMDLs (i.e., to "regulate" nonpoint sources of pollution). Plaintiffs' statement of the issue that the Court must resolve therefore is in error, see Plaintiffs' Brief ("Pl. Br.") at 10, and their lengthy arguments challenging a position that EPA does not advance are beside the point.

Plaintiffs' narrow reading of Section 303(d) as applying only to point sources is colored heavily by their misconception of the Agency's position and, if accepted by the Court, would lead to absurd results that Congress never intended. Their arguments contradict (i) the text, structure, legislative history, and goals of the Act, (ii) EPA's TMDL regulations, and (iii) the Ninth Circuit Court of Appeals' descriptions of Section 303(d) as applying to both point and nonpoint sources. See Alaska Ctr for the Env't v. Browner, 20 F.3d 981, 985 (9th Cir. 1994)("Congress and the EPA have already determined that establishing TMDLs is an effective tool for achieving water quality standards in waters impacted by nonpoint source pollution."); Dioxin/Organochlorine Ctr v. Clarke, 57 F.3d 1517, 1520 (9th Cir. 1995)("[A] TMDL represents the

cumulative total of all . . . loading attributed to nonpoint sources, natural background sources, and . . . the total load allocated to individual point sources."). Consistent with the "source-neutral" water quality-based approach to pollution control that is reflected in Section 303 generally, Congress intended Section 303(d) to require States and EPA, when appropriate, to list impaired waters and to establish TMDLs for those waters irrespective of the source of the pollution. Under principles of statutory construction set forth in Chevron, U.S.A., Inc. v. NRDC, 467 U.S. 837 (1984), the Court should affirm EPA's interpretation of Section 303(d) as consistent with a plain reading of the CWA. Alternatively, the Court should uphold EPA's actions because they are reasonable and not clearly contrary to the intent of Congress. See Dioxin, 57 F.3d at 1525, citing Chevron ("A court should accept the 'reasonable' interpretation of a statute chosen by an administrative agency except when it is clearly contrary to the intent of Congress."), 467 U.S. at 842-44 (emphasis added). Accordingly, Defendants' motion for summary judgment should be granted and Plaintiffs' motion should be denied.

BACKGROUND

I. Statutory And Regulatory Background

Section 303(d) of the CWA is one component of an integrated and complex water pollution control regime established over the course of decades in order to "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). Section 303(d)'s contribution toward achieving the Act's stated objective can best be understood in the context of the overall pollution control framework that Congress created in the CWA, the evolution of that framework, and the strategies supporting it.

A. Strategies to Achieve the CWA's Objective: The "Source Neutral" Water Quality-Based Approach and the "Point-Source Targeted" Technology-Based

Approach

The CWA seeks to control water pollution by means of two different overarching strategies: (1) a water quality-based approach that is based on in-stream water quality standards⁽³⁾ and (2) a technology-based approach that applies exclusively to point sources and generally relies on federally promulgated technology regulations.⁽⁴⁾ As courts and commentators have recognized, water quality standards and technology-based strategies derive from different statutory origins and reflect fundamentally different regulatory philosophies. See, e.g., William H. Rodgers, Jr., *Environmental Law* 252, 259-62 (2d ed. 1994) [hereinafter Rodgers], Att. 2; *see also EPA v. California*, 426 U.S. 200, 202-05 (1976). As discussed below, Congress combined these two different pollution control strategies in the 1972 amendments to the CWA. See H.R. Rep. No. 92-911, at 124 (1972), reprinted in Comm. on Public Works, 93d Cong., 1st Sess., 1 *A Legislative History of the Water Pollution Control Act Amendments of 1972* at 811 (Comm. Print 1973) (noting that the two approaches "needed to be consolidated and not left each to go in its own direction"), Att. 3.

The water quality-based approach to pollution control originated in the Water Quality Act of 1965, Pub. L. No. 89-234, 79 Stat. 903. Rodgers at 252-53. The water quality-based approach was premised on the view that waste disposal is a legitimate use of the receiving waters and that dischargers should be allowed to dispose of waste up to some legally defined point of unreasonableness. Rodgers at 260. The water quality-based approach is "source neutral," i.e., it examines the combined impact of all contributing sources of pollution on the in-stream quality of the receiving water rather than on the control of particular sources. Once a waterbody is identified as not meeting the applicable standards, States, or EPA, identify all contributing sources of pollution and take appropriate steps to limit those sources. As explained by the Ninth Circuit, under the water quality-based approach EPA and the States "work backward from an overpolluted body of water and

determine which entities were responsible."⁽⁵⁾ NRDC v. EPA, 915 F.2d 1314, 1316 (9th Cir. 1990). Under federal law, the resulting controls on sources consist of enforceable permit limits on point sources, and voluntary pollution management measures adopted by landowners to reduce nonpoint source pollution. Regulation of nonpoint sources is left to the discretion of the States. By the early 1970s, a slim majority of the States had adopted federally approved water quality standards under the 1965 Water Quality Act. Rodgers at 253. It proved very difficult, however, to translate these ambient standards into "standards to govern the conduct of individual polluters." EPA v. California, 426 U.S. at 202-03. Due to the nature of the standards and their cumbersome enforcement procedures, progress in ameliorating water pollution was slow. In 1972, Congress decided to overhaul the statute. Id. The 1972 amendments to the Act introduced a radically different approach. Rather than focusing merely on the quality of the receiving waters, Congress prohibited the discharge of any pollutants from point sources except as specifically allowed by statute or by permit. 33 U.S.C. § 1311(a).⁽⁶⁾ As one aspect of the new CWA permit requirements, EPA was authorized to establish technology-based effluent limitation guidelines by issuing regulations that incorporate increasingly stringent levels of pollution control technology over time on point source dischargers. Id. § 1311(b)(1)(A),(B), (b)(2); see E. I. du Pont de Nemours & Co. v. Train, 430 U.S. 112 (1977). As a backstop to this new technology-based approach, the 1972 amendments preserved an important role for water quality standards, "extend[ing] and expand[ing] the water quality standards procedure initiated in the Water Quality Act of 1965." Att. 3 at 171. Subsections 303(a), (b) and (c) of the CWA direct the States, with federal approval and oversight, to adopt and maintain water quality standards for intra- as well as interstate waters. 33 U.S.C. § 1313(a)-(c). By their nature, these standards are not identified with particular categories or sources of pollution but rather express a desired condition of the receiving water. By retaining water quality standards in the

Act, Congress intended the water quality-based approach to serve as a safety net to ensure that standards would be achieved. In addition to technology-based effluent limitations, permits for point source dischargers must also incorporate any more stringent effluent limitations necessary to meet these water quality standards. 33 U.S.C. § 1311(b)(1)(C).⁽⁷⁾

B. Section 303: Water Quality Standards, TMDLs, and the Continuing Planning Process (CPP)

1. Water Quality Standards

In adopting a water quality standard, a State defines the water quality goals of a particular body of water by designating the uses intended for the water. 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. §§ 131.3(f), 131.6(a), 131.10. Such uses include, among others, drinking water, recreation, navigation and -- in the case of the Garcia River -- cold water fishery (i.e., salmon spawning and habitat). In addition, the State adopts criteria specifying the amounts of various pollutants that may be present in its waters without impairing the designated uses. 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. §§ 131.3(b), 131.6(c), 131.11. These may be numerical or narrative criteria. 40 C.F.R. § 131.11(b); see generally, Standards Handbook, Att. 4; NRDC, 915 F.2d at 1317 (describing elements of water quality standards). For the Garcia River, California has established narrative criteria for sediment and settleable material which provide that such pollutants shall not cause "nuisance or adversely affect beneficial uses" like salmon spawning. Att. 1 at 9.

2. The TMDL Process: 303(d) Lists and TMDL Development

Section 303(d) requires each State to identify and prioritize waters where technology-based controls are inadequate to attain water quality standards:

Each State shall identify those waters within its boundaries for which the effluent limitations required by section 1311(b)(1)(A) and section 1311(b)(1)(B) of this title are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking of such waters, taking into account the severity of the pollution and the uses to be made of such waters.

33 U.S.C. § 1313(d)(1)(A). The State's identification of such waters, which are known as "water quality limited segments" (or "WQLSs"), constitutes the

"303(d) List." See 40 C.F.R. § 130.7(b). Pursuant to EPA's regulations, States must establish and submit their 303(d) Lists to EPA for review every two years. 40 C.F.R. 130.7(d)(1). If EPA disapproves a State's List, EPA must establish a List for the State. 33 U.S.C. § 1313(d)(2)

For all waters identified under Section 303(d)(1)(A) as exceeding water quality standards, the Act provides:

Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 1314(a)(2) of this title as suitable for such calculation.⁽⁸⁾ Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

33 U.S.C. § 1313(d)(1)(C)(footnote added). The term "total maximum daily load" is not expressly defined in the CWA. In its 1985 implementing regulations, EPA defined a TMDL for a pollutant, e.g., sediment, as the sum of the "wasteload allocations" assigned to point sources, the "load allocations" assigned to nonpoint sources or "natural background," and a margin of safety. 40 C.F.R. § 130.2(i). Therefore, a TMDL identifies the maximum amount of a pollutant that can be added to a waterbody ("its loading capacity") without exceeding water quality standards.⁽⁹⁾

States must establish TMDLs for waters where pollutants are "preventing or expected to prevent attainment of water quality standards." 33 U.S.C. § 1313(d)(1)(C); 40 C.F.R. § 130.7(c)(1)(ii). Under Section 303(d)(2), EPA is required to review and approve or disapprove TMDLs established by States for listed waters. 33 U.S.C. § 1313(d)(2). If EPA disapproves a State TMDL submission, it must establish the TMDL. 33 U.S.C. § 1313(d)(2).

For all waters other than those identified on the 303(d) List (i.e., all remaining waters in a State), Section 303(d)(3) provides:

For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the total maximum daily load

33 U.S.C. § 1313(d)(3)(emphasis added). Thus, under Section 303(d)(3), States are to identify and estimate TMDLs for all waters not previously listed

pursuant to paragraphs(d)(1)(A) and (d)(1)(B). While Section 303(d)(1) requires States to identify and establish TMDLs for waters not meeting water quality standards, Section 303(d)(3) requires States to identify and estimate TMDLs for waters meeting water quality standards. Unlike TMDLs calculated under Section 303(d)(1), States are not required to submit TMDLs estimated pursuant to Section 303(d)(3) to EPA. Instead the Act directs States to estimate these TMDLs for the "purpose of developing information." 33 U.S.C. § 1313(d)(3). Such information may be used to protect waters to ensure they continue to meet water quality standards.

TMDLs established pursuant to Section 303(d)(1) for impaired waters are not self-executing.⁽¹⁰⁾ Limitations in loadings identified for point sources (*i.e.*, "waste load allocations") are enforced through permits issued pursuant to Section 402 of the Act. 40 C.F.R. § 122.44(d)(1)(vii)(B); *NRDC*, 915 F.2d at 1316. Limitations in loadings identified for nonpoint sources (*i.e.*, "load allocations"), on the other hand, are not subject to a federal nonpoint source permitting program and therefore any resulting reductions may be "required" from those responsible for the nonpoint source pollution only to the extent that a State opts to make such reductions a regulatory requirement pursuant to a state authority.⁽¹¹⁾ As explained below, Section 303(e) calls for implementation of State water management plans, which must include TMDLs, but how that implementation is achieved is at a State's discretion and need not be "required" from landowners based on a command and control regulatory system.

3. Section 303(e) and the Continuing Planning Process (CPP)

In Section 303(e), Congress required each State to develop a "continuing planning process" ("CPP") that would result in plans for all waters within the State. See 33 U.S.C. § 1313(e)(3). These plans are required to include TMDLs, see 33 U.S.C. § 1313(e)(3)(C), and "adequate implementation" for new and revised water quality standards. See 33 U.S.C. § 1313(e)(3)(F). Congress, however, did not specify the method that States are to use

(regulatory vs. non-regulatory) to carry out their plans, leaving this decision to the discretion of the states.⁽¹²⁾ States are required to submit their CPPs to EPA for review and approval. 33 U.S.C § 1313(e)(2).

C. The CWA's Implementation Tools

The National Pollution Discharge Elimination System (NPDES) permit program under Section 402 was established by the 1972 amendments as the regulatory implementing mechanism for point sources for both technology-based regulations and water quality standards. Id. §§ 1342(a)(1), 1311(b)(1)(C); 40 C.F.R. § 122.44(a), (d)(1). An NPDES permit transforms the generally applicable technology-based regulations and water quality standards into specific limits applicable to the individual discharger. EPA v. California, 426 U.S. at 205. Discharges of pollutants from any point source into the waters of the United States are prohibited unless in compliance with the discharge limits and other requirements of an NPDES or other permit. 33 U.S.C. §§ 1311(a), 1362(12), (14). TMDL allocations to point sources are required to be implemented through NPDES permits. 40 C.F.R. § 122.44(d)(1)(vii)(B).

By contrast, there is no federal regulatory authority under the Act to control pollutants emanating from nonpoint sources. Instead, nonpoint source pollution is addressed by the States through, inter alia., areawide waste treatment management (CWA § 208) and source management programs (CWA § 319). Section 208 directs the States to draft waste treatment plans that include procedures for identifying nonpoint source pollution from various sources, and to establish best management practices to control such pollution. 33 U.S.C. § 1288(b)(2)(F). Section 208 also provides financial incentives for farmers and other nonpoint source polluters to adopt these management practices, but does not penalize nonpoint source polluters for failing to adopt them. NRDC, 915 F.2d at 1316 n.3; 33 U.S.C. § 1288(j). In 1987 Congress added Section 319 to the CWA, a provision which assigns the States primary responsibility for controlling nonpoint source pollution. The

hallmark of Section 319 is its grant program by which EPA disburses funding to the States to assist them with implementation of nonpoint source management programs. 33 U.S.C. § 1329(h). Congress required, *inter alia*, that these programs identify and implement best management practices to reduce pollutant loadings. 33 U.S.C. § 1329(b)(2)(A); NRDC, 915 F.2d at 1318. As a condition to receipt of grant funds, a State must prepare and submit a management program, as well as a one-time assessment report which identifies: (1) navigable waters which cannot be expected to achieve or maintain water quality standards because of nonpoint source pollution; (2) nonpoint sources responsible for impairing the identified waters; and (3) existing programs for controlling and abating pollution added from nonpoint sources. 33 U.S.C. § 1329(a)(1). Like Section 208, Section 319 does not establish any federal regulatory authority. NRDC, 915 F.2d at 1318. Therefore, the Clean Water Act provides no regulatory mechanism to control nonpoint source pollution, but rather uses federal grants to the States to accomplish this task. Id.

II. Factual Background

EPA incorporates by reference statement of fact numbers 1-5, 8-9, 11-12, and 16 in the Joint Statement of Undisputed Facts in Support of Plaintiffs' Motion for Summary Judgment.

STANDARD OF REVIEW

Summary judgment is appropriate if the moving party demonstrates "that there is no genuine issue of material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c); Celotex Corp. v. Catrett, 477 U.S. 317, 322-23 (1986).

Where issues of statutory interpretation are raised, Chevron, U.S.A., Inc. v. NRDC, 467 U.S. 837, 842-45 (1984), sets forth a two-step test for analyzing an agency's interpretation of a statute that it administers. Under the first step of the Chevron analysis, the reviewing court must determine "whether

Congress has directly spoken to the precise question at issue." Id. at 842.

This inquiry focuses on the language of the provision "as well as the language and design of the statute as a whole." K Mart Corp. V. Cartier, Inc., 486 U.S. 281, 291 (1988). If Congress' intent is clear from the statutory language, the inquiry ends. Chevron, 467 U.S. at 842-43.

If, however, the statute is silent or ambiguous with respect to the specific issue, the court moves to the second step of the Chevron analysis and decides whether the agency's interpretation is based on a permissible construction of the statute. Id. at 843. To uphold EPA's interpretation of Section 303(d), the court need not find that EPA's interpretation is the only permissible construction that EPA might have adopted, or even the reading the court would have reached, but only that EPA's interpretation is reasonable. Chevron, 467 U.S. 843, 844 n. 11; Chemical Mfrs. Ass'n v. NRDC, 470 U.S. 116, 125 (1985); Sierra Club v. EPA, 99 F.3d 1551, 1555 (10th Cir. 1996).. When the interpretation involves reconciling conflicting policies committed by the statute to an agency's expertise, deference is particularly appropriate. Chevron, 467 U.S. at 844-45. As explained by the Ninth Circuit, "[a] court should accept the 'reasonable' interpretation of a statute chosen by an administrative agency except when it is clearly contrary to the intent of Congress." Dioxin, 57 F.3d at 1525 (emphasis added).

ARGUMENT

II. THE COURT SHOULD UPHOLD EPA'S INTERPRETATION THAT SECTION 303(d) INCLUDES NONPOINT SOURCES IN THE TMDL PROCESS

Plaintiffs have failed to establish that EPA's interpretation of Section 303(d) is clearly contrary to Congress' intent, and therefore judgment must be entered against them. As explained above, the first step in the Chevron framework for analyzing an agency's interpretation of a statute that it administers is to ascertain whether Congress clearly expressed its intent in the statute. It is clear from a plain reading of Section 303 that Congress gave States and EPA

authority to identify and establish TMDLs for waters where technology-based controls are inadequate to implement water quality standards and to identify all sources of impairment in calculating TMDLs. Congress used the term "point sources" repeatedly throughout the CWA and could have limited Section 303(d)'s application to point sources if it so chose, but it did not. Moreover, it is clear from the structure of the Act and Section 303(d)'s placement within Section 303 that Congress intended that TMDL calculations be performed for all waters and did not intend to exclude nonpoint source impaired waters from the 303(d) List. EPA's interpretation reflects this plain reading of the Act.

Plaintiffs nevertheless contend that Congress' use of the terms "effluent limitations" and "daily load" evinces a clear intent to exclude nonpoint sources from Section 303(d). See Pls. Br. at 14-16. However, such a parsed reading is wholly inconsistent with the design of the CWA, and is thus contrary to basic tenets of statutory construction. Plaintiffs' interpretation breaks apart the integrated structure of the Act, relegates to Section 303(d) a role inconsistent with the water quality-based approach, and is destined to achieve little in accomplishing the goals and objectives of the CWA.

The Defendants' arguments are based on both Chevron step one and step two. As demonstrated below, it is clear from the face of Section 303(d), and Section 303's role as part of a water quality-based approach, that Congress intended TMDL calculations to be performed for all waters, irrespective of the source of pollution. It also is clear that Congress did not intend to exclude nonpoint source impaired waters from the Section 303(d) List. Moreover, even if the Court perceives an ambiguity in Section 303(d) regarding these issues, EPA's interpretation that waters impaired by nonpoint sources can be included on the 303(d) List and that TMDL calculations account for contributions from nonpoint sources is permissible given the statutory language, legislative history, Section 303(d)'s integral role in a water quality-based approach, and the objectives of the Act. Under a Chevron step two

analysis, EPA's interpretation is reasonable and consistent with Congress' intent. Accordingly, the Court must uphold EPA's actions in this case and enter judgment in favor of the Defendants.

A. Section 303(d) Clearly Provides that TMDLs Must Account for Nonpoint Sources

1. Congress' Placement of the TMDL Provisions of the 1972 Amendments in Section 303 Demonstrates That TMDLs Are An Integral Part of a Water Quality-Based Approach That by Its Nature Accounts for All Sources of Pollutants

Section 303 of the Act is entitled: "Water Quality Standards and Implementation Plans." Congress' decision to place the TMDL-related provisions of the 1972 Amendments in Section 303 plainly demonstrates that Congress intended TMDLs to be part of a water quality-based approach that, by its nature, is not limited to particular sources. As the Ninth Circuit explained, under the water quality-based approach EPA and the States "work backward from an overpolluted body of water and determine which entities were responsible." NRDC, 915 F.2d at 1316. As a component of the water quality-based approach, the TMDL process must account for both point and nonpoint sources of pollution. As explained in EPA's Standards Handbook: "The TMDL process is a rational method for weighing the competing pollution concerns and developing an integrated pollution reduction strategy for point and nonpoint sources. The TMDL process allows States to take a holistic view of their water quality problems from the perspective of instream conditions." Att. 4 at 7-7. Numerous courts have examined the language of Section 303(d) and recognized the integrated characteristics of the TMDL process as part of a water quality-based approach.⁽¹³⁾

As one court within the Ninth Circuit explained:

EPA's regulatory program for water protection focuses on two potential sources of pollution: point sources and nonpoint sources. Point source pollution was addressed in the 1972 amendments to the Act, where Congress prohibited the discharge of any pollutant from any point source into certain waters unless that discharge complies with the Act's specific requirements. Secs. 301(a) and 502(12), 33 U.S.C. §§ 1311(a) and

1362(12). Under this approach, compliance is focused on technology-based controls for limiting the discharge of pollutants through the National Pollution Discharge Elimination System ("NPDES") permit process.

When these requirements are found insufficient to clean up certain rivers, streams or smaller water segments, the Act requires use of a water-quality based approach. States are required to identify such waters and designate them as "water quality limited." The states are then to establish a priority ranking for these waters, and in accordance with that ranking, to establish more stringent pollution limits called "total maximum daily loads" or "TMDLs." 33 U.S.C. §§ 1313(d)(1)(A), (C). TMDLs are the greatest amount of a pollutant the water body can receive daily without violating a state's water quality standard.

The TMDL calculations help ensure that the cumulative impacts of multiple point source discharges are accounted for, and are evaluated in conjunction with pollution from other nonpoint sources. States are then required to take whatever additional cleanup actions are necessary, which can include further controls on both point and nonpoint pollution sources. As a recent GAO report concluded, the TMDL process:

provides a comprehensive approach to identifying and resolving water pollution problems regardless of the sources of pollution. If implemented, the TMDL process can provide EPA and the states with a complete listing of key water pollutants, the source of the pollutants, information on the amount of pollutants that need to be reduced, options between point and/or nonpoint approaches, costs to clean up, and situations where it may not be feasible to meet water quality standards.

Alaska Ctr. for the Env't v. Reilly, 762 F.Supp. 1422, 1424 (W.D.Wash. 1991)(emphasis added)(footnote omitted). On appeal, the Ninth Circuit recognized this interpretation and explained that "Congress and the EPA have already determined that establishing TMDLs is an effective tool for achieving water quality standards in waters impacted by nonpoint source pollution." Alaska Ctr. for the Env't v. Browner, 20 F.3d at 985; accord Dioxin, 57 F.3d at 1520 ("[A] TMDL represents the cumulative total of all . . . loading attributed to nonpoint sources, natural background sources, and . . . the total load allocated to individual point sources.).⁽¹⁴⁾

2. The Elements of a TMDL Must Account for Loads from Nonpoint Sources

Because Congress Directed That TMDL Calculations Be Performed For All Waters

In addition to the structure of the Act, Congress' intent that TMDLs account for nonpoint sources is clear from its use of the term "total maximum daily load" in Section 303. It is a maxim of statutory construction "that identical words used in different parts of the same act are intended to have the same meaning." Commissioner v. Lundy, 516 U.S. 235, 250 (1996) (quoting Sullivan v. Stroop, 496 U.S. 478, 484 (1990)). Congress used the term "total maximum daily load" several times throughout Section 303(d). In Section 303(d)(1)(C), Congress required "[e]ach State [to] establish for [listed] waters the *total maximum daily load*" 33 U.S.C. § 1313(d)(1)(C)(italics added). In Section 303(d)(3), Congress addressed all remaining waters not on the 303(d) List: "For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the *total maximum daily load*" 33 U.S.C. § 1313(d)(3)(emphasis added). When the waters on the 303(d) List are added to the waters identified under subsection (d)(3), every water in a state is accounted for, and therefore Sections (d)(1) and (d)(3) together require TMDL calculations for all waters. Given that "all waters" obviously include those impaired by nonpoint sources, even those impaired exclusively by nonpoint sources, Congress unambiguously intended for "total maximum daily loads" to account for nonpoint source impairments. Accordingly, TMDLs established under Section 303(d)(1)(C), such as the Garcia River TMDL, must account for nonpoint source impairments.

3. Sections 303(d)(1)(C) and 303(d)(2) Require That TMDLs Be Established "To Implement the Applicable Water Quality Standards," Which Is Not Always Possible Without Accounting for Impairments Caused By Nonpoint Sources

The legislative history to Section 303(d) also plainly supports the notion that TMDLs must account for nonpoint sources of pollution. In both Sections

303(d)(1)(C) and 303(d)(2), Congress expressly stated that "loads" (i.e., TMDLs) must be established to implement the applicable water quality standard. Section 303(d)(1)(C) provides in pertinent part:

Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 1314(a)(2) of this title as suitable for such calculation. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

33 U.S.C. § 1313(d)(1)(C)(emphasis added). In addition, Section 303(d)(2) states:

If the Administrator [of EPA] disapproves such identification and load, he shall not later than thirty days after the date of such disapproval identify such waters in such State and establish such loads for such waters as he determines necessary to implement the water quality standards applicable to such waters and upon such identification and establishment the State shall incorporate them into its current plan under subsection (e) of this section.

33 U.S.C. § 1313(d)(2)(emphasis added). The House Committee Report on the bill that introduced Section 303(d) into the 1972 Amendments plainly states, however, that point source controls alone are inadequate to implement applicable water quality standards:

Any required more stringent effluent limitations will be set on the basis of that reduction in the quantity and quality of the discharge of pollutants which would be required to make the total discharge load in the receiving waters from municipal and industrial sources consistent with water quality standards. This should not be interpreted to mean that such more stringent industrial and municipal effluent limitations will, in themselves, bring about a meeting of water quality standards for receiving waters. The Committee clearly recognizes that non-point sources of pollution are a major contributor to water quality problems.

H.R. Rep. No. 92-911, at 105-06 (emphasis added), Att. 3 at 792-93. Thus, while in Sections 303(d)(1)(C) and (d)(2) Congress directed that TMDLs must be established to implement the applicable water quality standard for a water, in the accompanying Committee Report, Congress made plain that point source controls were inadequate to this task and expressly recognized that "non-point sources of pollution are a major contributor to water quality problems." As Professor Houck correctly explains:

It is logical that the committee report describes only municipal and industrial sources as needing additional "emissions limitations" because these are the only sources directly subject to emissions limitations under the Act. The committee goes on to recognize, however, that water quality standards were also violated by nonpoint sources in a

"major" way. This sentence implies the obvious: there is no way to determine the appropriate contributions from, and limitations on, municipal and industrial point sources without considering these nonpoint sources as well. How a state would choose to allocate its limits among point and nonpoint source contributors would, at least in the first instance, be up to states to decide. But the only logical sources were a big fact of life in achieving water quality standards, and they would have to be included in the assessments of polluted waters and their TMDL allocations. Were they not included, a process to ensure that municipal and industrial limits were "consistent with water quality standards" would make no sense; it literally could not be done.

Oliver A. Houck, TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act, 27 *Env'tl. L. Rep.* 10329, 10337 n.100 (1997)(emphasis added), Att. 10. It is clear then that Congress intended TMDLs to account for nonpoint sources.

B. The Structure of the Act and the Plain Language of Section 303(d) Demonstrate That Congress Did Not Intend to Exclude Waters Impaired by Nonpoint Sources From the Section 303(d) List

Section 303(d)(1)(A) sets forth the criteria for the Section 303(d) List: Each State shall identify those waters within its boundaries for which the effluent limitations required by section 1311(b)(1)(A) and section 1311(b)(1)(B) of this title are not stringent enough to implement any water quality standard applicable to such waters. 33 U.S.C. § 1313(d)(1)(A)(emphasis added). On its face, this provision does not exclude from the 303(d) List waters impaired by nonpoint sources. Any water (whether impacted by point sources, nonpoint sources, or both) may fail to meet applicable water quality standards because the effluent limitations identified in Section 303(d)(1)(A) alone are inadequate to the task. Indeed, the Ninth Circuit already has upheld EPA's interpretation that the effluent limitations referred to in Section 303(d)(1)(A) do not limit listing under Section 303(d) to waters where those controls have been applied and found not to be stringent enough to achieve water quality standards. In Dioxin, the Ninth Circuit upheld a TMDL for the Columbia River upon challenge by pulp mills and environmental groups. As do Plaintiffs here, the pulp mills attempted to persuade the Court that Section 303(d)(1)(A) had a plain meaning contrary to EPA's interpretation:

The Mills focus particular attention on the present tense language of § 1313(d)(1)(A), *i.e.*, "the effluent limitations of § 1311 . . . *are not stringent enough* to implement any water quality standard applicable to such waters" The Mills argue that the "plain language" of the provision prohibits EPA from developing TMDLs prior to the proven failure of technology-based limitations.

57 F.3d at 1526 (emphasis in original). The Ninth Circuit flatly rejected the Mills' argument because it found that "EPA's interpretation is reasonable and not contrary to congressional intent." *Id.* at 1527. The Court held:

[the technology limitations identified in Section 303(d)(1)(A)] are not required by § 1313(d) for dioxin because the limitations required by the provisions of § 1311, as a matter of law, "are not stringent enough" to achieve established water quality standards. Nowhere does the Act prohibit the EPA from listing waters as impaired and implementing TMDLs for toxic pollutants pursuant to § 1313(d).

Id. at 1528 (emphasis added).⁽¹⁵⁾ In the same way, nowhere does the Act prohibit EPA from listing waters as impaired and establishing TMDLs for nonpoint source impaired waters pursuant to Section 303(d). Therefore, as the Ninth Circuit has held, the application of the technology-based limitations identified in Section 303(d)(1)(A) is not a condition precedent to 303(d) listing. Like the TMDL at issue in Dioxin, TMDLs for waters with nonpoint sources are not prohibited based on the absence of applicable technology-based requirements. All that is necessary for 303(d) listing is that the technology-based limitations identified in Section 303(d) be inadequate to achieve water quality standards. As the District Court in Dioxin held, those limitations function as a "minimum level" for the 303(d) List and not a restriction as the Plaintiffs in this case contend.⁽¹⁶⁾

In addition, the structure of the Act makes clear that waters impacted by nonpoint sources should not be excluded from the 303(d) List. It is no surprise that Congress chose to condition Section 303(d) listing on the insufficiency of effluent limitations because the water quality-based approach is to be invoked when the technology-based approach fails to achieve standards. See NRDC, 915 F.2d at 1317 ("Congress supplemented the "technology-based" limitations with "water-quality-based" limitations. See CWA §§ 302, 303, 33 U.S.C. §§ 1312, 1313."). The 303(d) List therefore identifies the waters where a technology-based approach will not achieve

standards and where resort to a water quality-based approach is necessary, a structure which mirrors the compromise that Congress struck in the 1972 Amendments between the technology-based and water quality-based strategies with passage of Section 303. The purpose of Section 303 and its place within the Act as part of the source neutral, water quality-based approach therefore establishes that Congress could not have intended the 303(d) List to exclude nonpoint source impaired waters.

C. EPA's Interpretation that Congress Intended the Listing of Waters Pursuant to Section 303(d)(1) Without Regard to the Source of Impairment and Establishment of TMDLs for Those Water Is Reasonable and Entitled to Deference

As demonstrated above, it is clear from the language, structure, and legislative history of the Act that Congress plainly intended that TMDL calculations account for nonpoint source contributions and did not expressly exclude waters impaired by nonpoint sources from the Section 303(d) List. Moreover, a restrictive reading of Section 303(d), such as the one Plaintiffs advance, is disfavored because the Act is intended to protect public health and safety.⁽¹⁷⁾ In any event, even if the Court finds that Congress' intent is not clear from the statute, EPA's interpretation that waters impaired by nonpoint sources can be included on the Section 303(d) List and that TMDL calculations can account for nonpoint source contributions is entitled to deference from the Court because it is based on a reasonable reading of the language, structure, and legislative history of the Act. Chevron, 467 U.S. at 842-4. According to the Supreme Court, "[t]he court need not conclude that the agency construction was the only one it permissibly could have adopted to uphold the construction, or even the reading the court would have reached if the question initially had arisen in a judicial proceeding." Chevron, 467 U.S. at 843, n. 11. Rather, as the Ninth Circuit stated, "[a] court should accept the 'reasonable' interpretation of a statute chosen by an administrative agency except when it is clearly contrary to the intent of Congress." Dioxin, 57 F.3d

at 1525(citing Chevron, 467 U.S. at 842-44). Deference to the agency's interpretation is especially warranted where, as here, the agency charged with administering the CWA is required to exercise its "ecological judgment" and "technical expertise" about how best to achieve Congress' objectives of protecting aquatic ecosystems. United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 134 (1985). Thus, even if this Court were to conclude that it is possible to read the statute in the manner suggested by Plaintiffs, EPA's interpretation is reasonable and not contrary to Congress' intent, and the Court should uphold it under Chevron.

EPA's interpretation of Section 303(d) is entitled to deference because, as explained in detail above, it is consistent with the structure, language, legislative history, and attainment of the overarching goals of the Clean Water Act. Nonpoint source impaired waters can satisfy the criteria for 303(d) listing (i.e., the technology-based limitations identified in Section 303(d) are inadequate to achieve water quality standards), and therefore EPA's interpretation that such waters can be included on the 303(d) List is reasonable. Congress also did not expressly exclude nonpoint source contributions from TMDL calculations. To the contrary, the language of Section 303(d) demonstrates that Congress clearly intended that TMDL calculations be performed for all waters, a position that is consistent with the structure of the Act and the legislative history for Section 303(d). EPA's interpretation also fulfills the goals of the Act. The stated objective of the Clean Water Act "is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a)(1). The legislative history to Section 303(d) emphasized "that non-point sources of pollution are a major contributor to water quality problems," see Att. 3 at 792-93 (emphasis added), and in hearings leading up to Section 303(d)'s enactment, the Senate expressed its fear that nonpoint sources of pollution would prevent attainment of the Act's goal:

One of the most significant aspects of this year's hearings on the pending legislation was the information presented on the degree to which nonpoint sources contribute to

water pollution. Agricultural runoff, animal wastes, soil erosion, fertilizers, pesticides and other farm chemicals that are a part of runoff, construction runoff and siltation from mines and acid mine drainage are major contributors to the Nation's water pollution problem. Little has been done to control this major source of pollution.

It has become clearly established that the waters of the Nation cannot be restored and their quality maintained unless the very complex and difficult problem of nonpoint sources is addressed.

S. Rep. No. 92-414, at 39 (1971), reprinted in 1972 USCCAN 3668, 3705 (emphasis added), Att. 12. Thus, Congress recognized that the primary goals and objectives of the CWA cannot be realized without an effective means to identify and address nonpoint sources of pollution. When viewed in this light, EPA's interpretation that waters impaired by nonpoint sources can be included on the Section 303(d) List and that TMDL calculations can account for nonpoint source contributions is not only reasonable, it is necessary to achieve the stated objectives of the Act.

Furthermore, EPA's consistent interpretation of the scope of Section 303(d) entitles it to deference from this Court. See, e.g., Trafficante v. Metropolitan Life Ins. Co., 409 U.S. 205, 210 (1972)(finding that consistent administrative construction is entitled to "great weight"). Plaintiffs erroneously contend that "[s]ince the early 1990s, however, as a result of settlements in a series of lawsuits brought by environmental groups, EPA has changed its interpretation and has sought to expand its Section 303(d) authority into control of nonpoint sources, such as agriculture and forestry." To the contrary, EPA consistently has interpreted Section 303(d) to encompass nonpoint sources.⁽¹⁸⁾ Pls. Br. at 3-4. EPA's adoption of its TMDL regulations predate the "settlements" cited by Plaintiffs and establish that EPA has not "changed" its interpretation of Section 303(d) because of the extensive TMDL litigation. See, e.g., Sierra Club v. Hankinson, 939 F. Supp. 865, 867 (N.D. Ga. 1996); Idaho Sportsmen's Coalition v. Browner, 951 F. Supp. 962, 965 (W.D. Wash. 1996); American Canoe Ass'n Inc. v. U.S. EPA, 54 F. Supp. 2d 621, 27 n.14 (E.D. Va. 1999).

II. PLAINTIFFS HAVE FAILED TO DEMONSTRATE THAT EPA'S INTERPRETATION OF SECTION 303(d) IS CLEARLY CONTRARY TO THE INTENT OF CONGRESS

A. Plaintiffs' Arguments Respond to an Interpretation of Section 303(d) That EPA Has Not Adopted

Plaintiffs contend that:

The sole question before the Court on summary judgment is one of statutory interpretation: whether Section 303(d) of the Clean Water Act authorizes the regulation of nonpoint sources through the listing/approval of nonpoint source impaired waters and the issuance of TMDLs that allocate loads to nonpoint sources that require reductions in nonpoint source contributions to water segments.

Pls. Br. at 10 (emphasis added). This cannot possibly be the issue for the Court because EPA agrees that the Agency cannot regulate nonpoint sources pursuant to Section 303(d) by requiring load reductions from nonpoint sources. If any load reductions on a nonpoint source are required by a regulatory control, such as a permit, it is because a State has chosen to make the load allocation identified in a TMDL mandatory.⁽¹⁹⁾ Section 303(d) does not create any new implementation authority for EPA or the States. Att. 21, at 4. Moreover, Plaintiffs' arguments are off-base because they contradict the strategies underlying the Act and equate the water quality-based approach solely with a regulatory control function.⁽²⁰⁾ As the Ninth Circuit has recognized, water quality standards are about more than regulating point sources. See Oregon Natural Desert Ass'n v. Dombeck, 172 F.3d 1092, 1097 (9th Cir. 1998)(Section 303 "does not itself regulate nonpoint source pollution. Water quality standards are established in part to regulate point source pollution.")(emphasis added). Section 303(d) merely affords EPA and the States the authority to identify all impairments of those standards (point source and nonpoint source) and to devise comprehensive water quality standards implementation plans (e.g., TMDLs) that guide water quality standards attainment, but it does not require the regulation of nonpoint sources.

B. Plaintiffs Have Failed to Articulate an Interpretation of Section 303(d) That

Allows EPA and the States to Account for Nonpoint Source Contributions in Order to Establish Equitable Allocations for Point Sources

As crafted by Congress and implemented by EPA, Section 303(d) plays a pivotal role in achieving the objectives of the CWA by shedding light on all sources of water quality problems and identifying reasonable, equitable solutions to those problems. Plaintiffs' narrow, abstract, and compartmentalized interpretation of the Act would sever Section 303(d) from the CWA's integrated framework by limiting its scope to point sources. In so doing, EPA and the States would be compelled to exclude evidence of nonpoint source contributions from TMDL development, and they would be denied the opportunity to distribute the burdens of improving the quality of impaired waters to all contributing sources.⁽²¹⁾

Moreover, it is unreasonable to think that Congress did not want the States or EPA to take into account one of the leading causes of water impairment in developing TMDLs. As explained above, the legislative history of Section 303 plainly demonstrates that Congress recognized the seriousness of the nonpoint source pollution problem.⁽²²⁾ The TMDL process has further highlighted the problems caused by nonpoint sources. For example, according to EPA's analysis of California's most recent Section 303(d) List, 54% of the State's waterbodies on the List are impaired by nonpoint sources only; 45% are impaired by a combination of point and nonpoint sources; and 1% are impaired by point sources only. See Att. 18 at 2. The Plaintiffs would prevent EPA and the States from considering impairments caused by nonpoint sources in the development of TMDLs under Section 303(d) with predictable consequences for water quality.

C. Plaintiffs' Reliance on Section 319 to Interpret the Scope of Section 303(d) Is Misplaced

Throughout their briefs, Plaintiffs attempt to persuade the Court that it should ascertain Congress' intent in passing Section 303(d) by looking to Section 319, a section of the Act that was passed 15 years later. As the Supreme

Court has emphasized, however, it is a peculiar form of statutory interpretation that looks to the views of a subsequent Congress to determine what the earlier one intended: "The will of a later Congress that a law enacted by an earlier Congress should bear a particular meaning is of no effect whatever. The Constitution puts Congress in the business of writing new laws, not interpreting old ones. '[L]ater-enacted laws . . . do not declare the meaning of earlier law.'" United States v. Estate of Romani, 523 U.S. 517, 536 (Scalia, J. concurring in part and concurring in the judgment) (quoting Almendarez-Torres v. United States, 523 U.S. 224, 237 (1998)); see also O'Gilvie v. United States, 519 U.S. 79, 90 (1996), citing United States v. Price, 361 U.S. 304, 313 (1960); Higgins v. Smith, 308 U.S. 473, 479-80 (1940)("[T]he view of a later Congress cannot control the interpretation of an earlier enacted statute.").⁽²³⁾ Therefore, to determine Congress' intent in passing Section 303(d), the Court should look to the intent of the 92nd Congress that passed Section 303(d)(1)-(3), and not to the intent of the 100th Congress that passed Section 319.

D. Plaintiffs' "Plain Language" Argument Ignores the Language, Structure, and Strategy Behind Section 303(d)

Plaintiffs contend that Congress' use of the terms "effluent limitations," and "daily load" in "total maximum daily load," plainly limit the application of Section 303(d) to point sources. See Pls. Br. at 14-16. Not only do Plaintiffs misconstrue the Act, their "plain language" argument is undermined by the fact that numerous courts, including the Ninth Circuit, have read the terms "effluent limitations" and "daily load" in Section 303(d) and consistently reached a conclusion exactly opposite to the one Plaintiffs urge the Court to accept.⁽²⁴⁾ See cases cited in note 13, supra. Under such circumstances, it is hard to imagine that the Act in fact has the plain and obvious meaning on its face that Plaintiffs advance. Moreover, even if the Court accepts that Plaintiffs' interpretation of Congress' use of the terms "effluent limitation" and "daily load" is plausible or even a better interpretation than EPA's

interpretation, this does not entitle Plaintiffs to prevail. Rather, Plaintiffs must establish that EPA's interpretation is unreasonable and contrary to Congress' intent. For the reasons set forth below, Plaintiffs' have failed to make this showing.

1. Congress' Use of the Term "Effluent Limitations" in Section 303(d) Does Not Limit That Section to Point Sources

Plaintiffs argue that the appearance of the term "effluent limitations" in Section 303(d)(1)(A), which addresses the 303(d) List, and in Section 303(d)(1)(C), which addresses TMDL establishment, demonstrates that Section 303(d) applies only to point sources. This view is in error because it fails to take into account the purpose of Section 303, and makes the applicability or proven failure of the technology-based limitations identified in Section 303(d) to point sources a condition precedent to 303(d) listing -- neither of which Congress intended.

As explained above, Congress' decision to include on the 303(d) List waterbodies where effluent limitations are not stringent enough to implement water quality standards reflects the approach adopted in the 1972 Amendments that effluent limitations occupy the first line of attack in cleaning up the Nation's waters, and when that effort is inadequate the State must turn to the safety net of a water quality-based approach. Given that it is the insufficiency of technology-based effluent limitations that triggers the need for a TMDL, it is hardly surprising to find a reference to "effluent limitations" in the listing provision in Section 303(d).

Moreover, as explained supra, the Ninth Circuit has held that the applicability or proven failure of the technology-based limitations identified in Section 303(d) is not a condition precedent to 303(d) listing. See Dioxin, 57 F.3d at 1527-28. Contrary to Plaintiffs' contention that the effluent limitations identified in Section 303(d)(1)(A) limit listing under Section 303(d) to waters where controls are subject to those effluent limitations, by its plain terms, all that Section 303(d)(1)(A) requires for listing is that the technology-based

limitations identified in Section 303(d) be inadequate to achieve water quality standards. Id.; see discussion supra.

Plaintiffs also direct the Court's attention to Section 303(d)(1)(C), which requires that TMDLs include "a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." In light of the Act's structure and the surrounding language in Section 303(d), Congress' reference to "effluent limitations" as part of the margin of safety is understandable given that any federal regulatory control resulting from the TMDL would be linked to point sources. The instruction to TMDL writers to "take into account any lack of knowledge concerning the relationship between effluent limitations and water quality" ensures that the sources subject to federal control, which as a practical matter also are the easiest to regulate, account for any uncertainties associated with the development of effluent limitations. In this way, the reductions in loadings necessary to obtain water quality standards are more likely to be stringent enough and, most importantly, readily obtainable - even if it results in increased burdens on dischargers.

In addition, contrary to Plaintiffs' argument, Congress' description of the margin of safety on its face does not exclude nonpoint sources from TMDL calculations or restrict consideration of other complicating factors. Indeed, the term "nonpoint source" does not even appear in Section 303(d). Accordingly, whether Congress intended to exclude nonpoint sources from the TMDL process based on its description of the "margin of safety" is a matter of interpretation. Because EPA's interpretation is consistent with the structure, language and goals of the Act, and does not contradict Section 303(d), the Court should uphold it.

2. TMDLs Are Not Limited to Pollutants That Are Delivered to Waters on a Uniform Daily Basis

Plaintiffs further argue that TMDLs for waters impaired by pollutants from nonpoint sources are not appropriate because the allocations in a TMDL

should apply to "discharges out of the end of a pipe ... which can be sampled and measured to determine compliance relatively easily," whereas nonpoint source pollution, such as sediment, is primarily "the result of runoff after rainfall," and "neither rainfall nor runoff occurs with the predictability and precision that is inherent in the concept of a quantitative total maximum daily load." Pls. Br. at 15. They further criticize the Garcia River TMDL because EPA opted to express that TMDL as an annual rather than daily load. Apart from the fact that Congress directed that TMDL calculations be performed for all waters, see discussion supra, Plaintiffs' argument is flawed for several reasons. First, nothing on the face of the term "daily load" restricts TMDLs to point sources, and indeed the only case that Plaintiffs cite in support of their argument, Hankinson, 939 F.Supp. 865 (N.D.Ga. 1996), found that a TMDL "includes best estimates of pollution from nonpoint sources and natural background sources." Id. at 867, 871. Furthermore, Plaintiffs' argument is undercut by the fact that EPA and the States have on numerous occasions established TMDLs for nonpoint source impaired waters and opted in the first instance to express the load on a daily basis, including TMDLs for sediment.⁽²⁵⁾ This demonstrates, contrary to Plaintiffs' assertion, that TMDLs for nonpoint source impaired waters can be expressed as "daily loads" and that doing so can make technical sense from EPA's view. Second, the issue that Plaintiffs raise regarding the alleged incongruity of "daily loads" and the episodic nature of nonpoint source pollution is not one that Congress intended to address by ignoring nonpoint sources in the TMDL process. To the contrary, Congress required that TMDLs account for "seasonal variations," see 33 U.S.C. § 1313(d)(1)(C), precisely because seasonal factors like rainfall events can greatly influence pollutant delivery and whether a water attains water quality standards. Third, Plaintiffs' arguments are based on a false dichotomy between point source and nonpoint source pollution that is present neither in the Clean Water Act nor the real world. According to Plaintiffs, point source pollution

"discharges out of the end of a pipe" and can be measured with "predictability and precision" on a daily basis. Pls. Br. at 15. Point sources, however, are defined to include such things as ditches, channels, and fissures, which are hardly susceptible to the kind of controlled analysis that Plaintiffs demand as a prerequisite to TMDL calculation. See 33 U.S.C. § 1362 (14). Point source discharges also are not nearly so regular and precise as Plaintiffs describe. For example, Congress required EPA to regulate storm water as point source pollution, which is based on the same irregular rainfall that Plaintiffs contend renders TMDL calculation for nonpoint sources illogical, 33 U.S.C. § 1342(p); 40 C.F.R. 122.1(b)(2)(iv), 122.26. Furthermore, point source controls frequently are not numeric. Storm water discharges, for example, generally are not regulated through numeric limitations at all but through narrative best management practices like those that Plaintiffs associate with nonpoint source pollution. Thus, unless Plaintiffs contend that the plain meaning of Section 303(d) establishes that Congress wanted to exclude many point sources from the TMDL process, their arguments regarding the "predictability and precision that is inherent in the concept of a quantitative total maximum daily load" greatly overstates the requirements of a TMDL as envisioned by Congress. See Pls. Br. at 15. If the former, they advance a position that has been rejected by the courts,⁽²⁶⁾ and have cut their arguments loose from the language of Section 303(d), which does not even mention the term "point source" let alone articulate a standard to distinguish between classes of the same.

Fourth, the Garcia River TMDL can be expressed as a daily load by simple division. Although expressing the TMDL in this way would provide less implementation flexibility, it would satisfy the letter of Section 303(d) as Plaintiffs interpret it. As explained in the TMDL: "This annual TMDL could be converted into daily loads, but expressing the TMDL as an annual average yield better reflects the dynamic nature of sediment movement throughout a watershed over time." Att. 1 at 39. In choosing to express the Garcia TMDL

as an annual load, EPA exercised its discretion and correctly applied its regulations which recognize the practical reality that pollution, including point-source pollution, does not always arrive in our Nation's waters in pipes that can be evaluated under precise clinical conditions: "TMDLs can be expressed in terms of either mass per time, toxicity or other appropriate measures." 40 C.F.R.130.2. Plaintiffs' pleadings do not challenge the validity of 40 C.F.R.130.2.

Finally, the sweeping remedy that Plaintiffs seek -- a declaration that Section 303(d) does not account for nonpoint sources at all -- goes far beyond the relief necessary to cure any violation of the Act caused by EPA's decision not to express the Garcia River TMDL as a "daily" load. That EPA, in the exercise of its technical judgment, opted in this one TMDL to express the load as an annual rather than daily load says little or nothing about whether Congress intended to exclude nonpoint sources from the TMDL process altogether or that nonpoint source contributions in general are not appropriate for daily loads. The Court therefore should reject Plaintiffs' invitation to make sweeping generalizations about the scope of Section 303(d) based on specific technical judgments that EPA made concerning one TMDL. Moreover, Plaintiffs' pleadings do not challenge the technical sufficiency or substance of the Garcia River TMDL by alleging, for example, that it was arbitrary and capricious for EPA not to develop a TMDL that better accounts for seasonal factors such as rainfall. Rather, their position is that the Garcia River TMDL should not exist, and Plaintiffs therefore should not be heard in this case on matters other than EPA's authority under Section 303(d) as alleged in their respective complaints.

CONCLUSION

The Court should grant Defendants' motion for summary judgment and deny Plaintiffs' motion for summary judgment.

Respectfully Submitted,

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Date: February 17, 2000

CERTIFICATE OF SERVICE

I hereby certify that on this 17th day of February, 2000, I caused the foregoing NOTICE OF MOTION, MOTION FOR SUMMARY JUDGMENT, DEFENDANTS' MEMORANDUM IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT and RESPONSE TO PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT; JOINT STATEMENT OF UNDISPUTED FACTS; and DECLARATION OF S. RANDALL HUMM, to be served by overnight mail, post-prepaid, upon the following:

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DEFENDANTS' MEMORANDUM IN SUPPORT OF MOTION FOR
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Footnotes

1. A nonpoint source is any non-discrete source, such as runoff from agriculture. See, e.g., Trustees for Alaska v. EPA, 749 F.2d 549, 558 (9th Cir. 1984). A point source is "any discernable, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362(14).
2. As used in this brief the term "TMDL process" refers collectively to the listing of impaired waters, the calculation of TMDLs, and, as appropriate, the establishment of TMDLs as identified in Section 303(d). 33 U.S.C. § 1313(d).
3. A water quality standard indicates the level of pollution that may be present in a defined body of water irrespective of the source of pollution.
4. Technology-based regulations specify the quantities of pollutants that point sources can legally discharge. EPA identifies technology-based restrictions on specific categories of point sources through rules known as effluent limitations guidelines. 33 U.S.C. §§ 1314(b), 1316(b)(1)(B). In establishing these regulations, EPA identifies the wastestreams to be regulated in a particular category, as well as a technology (or technologies) that represents

the statutorily prescribed level of control for each wastestream (e.g., "best practicable control technology"). The Agency then identifies the specific discharge limitations that correspond to application of the identified technology. See generally *E.I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 130-31 (1977). In the absence of promulgated effluent limitations guidelines, a permit writer uses best professional judgment to establish technology-based controls for point sources.

5. For an excellent description of the water quality-based approach and the role of TMDLs in that approach, see Chapter 7 of EPA's Water Quality Standards Handbook 2d ed. (EPA 1994)("Standards Handbook"), Att. 4.

6. Section 301 makes it unlawful for any person to discharge any pollutant into waters of the United States except in conformity with the effluent limitations required by Section 301 and permits required by other sections, most notably section 402. 33 U.S.C § 1311(a). The Act defines "discharge of a pollutant" as the addition of a pollutant from a point source. 33 U.S.C § 1362(12).

7. According to the Ninth Circuit: "Congress recognized that even if all the firms discharging pollutants into a certain stream segment were using the best available technology, the stream still might not be clean enough to meet the water quality standards set by the states. To deal with this problem, Congress supplemented the 'technology-based' limitations with 'water-quality-based' limitations. See CWA §§ 302, 303, 33 U.S.C. §§ 1312, 1313." NRDC, 915 F.2d at 1317.

8. In a December 28, 1978 Federal Register Notice, EPA identified all pollutants, under proper technical conditions, as suitable for TMDL calculations. See Att. 5.

9. Sections 303(d)(1)(B) and (D), not at issue in this case, address waters affected by thermal discharges. 33 U.S.C. § 1313(d)(1)(B) and (D).

10. The preamble statement to EPA's proposed revisions to its TMDL regulation references Sections 319 and 504 of the Act and states that: "EPA

has strong and diverse authorities to implement controls over nonpoint sources" 64 Fed. Reg. 46012, 46034 (August 23, 1999), Att. 6. Under Section 319, EPA may condition grant funds to the States "as the Administrator considers appropriate," 33 U.S.C. 1329(h), and under Section 504, EPA may seek a court order to abate an imminent and substantial endangerment to the health or welfare of persons, which can include emergency controls on nonpoint sources. However, as explained above, Section 303(d) adds no new federal enforcement authorities, and EPA cannot impose mandatory controls on nonpoint sources in the absence of a court order abating an imminent and substantial endangerment.

11. As explained by the Ninth Circuit, the Act "ban[s] only discharges from point sources. The discharge of pollutants from nonpoint sources -- for example, the runoff of pesticides from farmlands -- was not directly prohibited. The Act focused on point source polluters presumably because they could be identified and regulated more easily than nonpoint source polluters." NRDC, 915 F.2d at 1316 (footnote omitted).

12. According to EPA guidance, state plans for implementing TMDLs for waters impaired by nonpoint sources should include "[r]easonable assurances that the nonpoint source load allocations established in TMDLs will in fact be achieved. These assurances may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs." Att. 7 at 6.

13. See, e.g., Friends of the Wild Swan v. EPA (unpublished, CV 97-35-M-DWM, slip. op. at *4 (D.Mont. Nov. 5, 1999)) (explaining that "[s]ection 303(d) utilizes a water-quality based approach to insure that appropriate standards are in place for every impaired waterbody by establishing pollution limits that account for both point source and nonpoint source pollution"), Att. 8; NRDC et al. v. Fox et al., 909 F.Supp. 153, 156 (S.D.N.Y. 1995) ("The congressional scheme is not met merely by establishing effluent limits for specific sources, because Congress mandated a comprehensive approach to each body of water's quality standard. Without an understanding of the Total Maximum

Daily Load, and the various sources which lower a body of water's quality, there is little chance that the pollution is most efficiently controlled."); Sierra Club v. Browner, 843 F. Supp. 1304, 1311 (D.Minn. 1993) (finding that "[s]ection 303(d) requires the Administrator to oversee a comprehensive evaluation of each State's waters and development of TMDLs to improve water quality in WQLSs. Even water affected solely by nonpoint source pollution would be improved if TMDLs were developed and integrated into Minnesota's water quality program."); Idaho Sportsmen's Coalition v. Browner, 951 F.Supp. 962, 966 (W.D.Wa. 1996) (explaining that "the TMDL process provides '[a] rational method for weighing the competing pollution concerns and developing an integrated pollution reduction strategy for point and nonpoint sources'").

14. The inherent inconsistency between the water quality-based approach, of which TMDLs are a part, and the exclusion of nonpoint sources from the TMDL process as advocated by Plaintiffs has been noted by a scholar of the Act: "TMDLs for point sources alone make no pollution control sense at all. . . . In enacting § 303(d), Congress, at best, said nothing about whether nonpoint sources were in or out, and would have had to have been insane to, on the one hand, spell out the TMDL process, and on the other, exclude those nonpoint sources it recognized at the time were so much the cause of the problem." Oliver A. Houck, TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act, 27 ELR 10391, 10400 (Aug. 1997), Att. 9.

15. Toxic pollutants can be delivered to waters from nonpoint sources.

16. According to the District Court:

A reading of the Clean Water Act discloses no explicit mandate that technology-based restrictions be imposed as a prerequisite to water quality based limitations such as a TMDL. Such a restriction could be inferred through the Mill's overly narrow, and mechanistic reading of the Act, but such an interpretation conflicts with the overall statutory scheme and goals embodied in the Clean Water Act.

The Clean Water Act sets a minimum level at which the states in

cooperation with the EPA must set a TMDL. A state "shall" identify waters "for which the effluent limitations required [by the Act] . . . are not stringent enough to implement any water quality standard applicable to such waters." 33 U.S.C. 1313(d)(1)(A). Congress did not write that a state "shall only" identify waters as requiring a TMDL if technology-based effluent limitations are not stringent enough, and the Court will not read into this section such a prohibition. Dioxin/Organochlorine Ctr. v. Rasmussen, No. C93-330, 1993 WL 484888 *3 (W.D. Wash., August 10, 1993), (emphasis added), Att. 11.

17. The Supreme Court has given statutes intended to protect the waters of the United States generous interpretations to effect their purposes. See Wyandotte Transp. Co. v. United States, 389 U.S. 191, 199-201, 204-06 (1967); see also Blattner & Sons, Inc. v. Secretary of Labor, 152 F.3d 1102, 1105 (9th Cir. 1998)(finding that courts "are bound to interpret statutes and regulations that are intended to protect health and safety in a broad manner so that these goals will be actually achieved.").

18. Beginning in 1978, EPA determined that the application of Section 303(d) should not depend upon the class of sources causing a water body to be impaired. In deciding which pollutants are suitable for TMDLs, EPA stated: "[a]ll pollutants, under the proper technical conditions, are suitable for the calculation of total maximum daily loads." 43 Fed. Reg. 60664, 60665 (Dec. 28, 1978), Att. 5. Furthermore, in 1985, EPA promulgated TMDL regulations that directed States to identify load allocations for nonpoint sources. See 50 Fed. Reg. 1774, 1779-80 (Jan. 11, 1985), Att. 13 ; 40 C.F.R. 130.7.

Revisions to these regulations, proposed in 1989 and adopted in 1992, also restated EPA's interpretation that Section 303(d) applies to nonpoint sources. See 54 Fed. Reg. 1300, 1314-15 (Jan. 12, 1989), Att. 14; 57 Fed. Reg. 33040, 33044 (Jul. 24, 1992), Att. 15. EPA again employed its interpretation that nonpoint sources are included in the TMDL process in a series of administrative guidance documents published between 1991 and 1997. See

Att. 16. The Administrator also recently reaffirmed EPA's longstanding interpretation. 64 Fed.Reg. at 46020, Att. 6. Moreover, EPA has consistently applied these policies and regulations in many listing decisions under Section 303(d)(1)(A), as well as the approval of nonpoint source load allocations in numerous TMDLs including the decisions and calculations that gave rise to Plaintiffs' claims in this case.

19. Indeed, EPA's TMDL for the Garcia River contains no site specific prescriptions at all. Instead, it merely identifies broad categories of controllable sediment sources (e.g., mass wasting from roads in general) and establishes for each source a sediment allocation and target reduction. See Att. 1 at 36.

20. Plaintiffs fail to recognize that implementing regulatory controls pursuant to the Act is distinct from identifying the causes and extent of water impairments. EPA acknowledges that the CWA's regulatory controls are limited to point sources. As concerns such regulatory controls, water quality standards supplement effluent limitations "so that numerous point sources, despite individual compliance with [technology-based] effluent limitations, may be further regulated to prevent water quality from falling below acceptable levels." EPA v. California, 426 U.S. at 205 n. 12. Plaintiffs, however, incorrectly equate the entirety of the water quality-based approach with only one of its component parts: establishing regulatory source controls. See Pls. Br. at 11-12 (describing Section 303 as "the statutory link between point source-limiting effluent limitations and water quality standards."). This interpretation is overly restrictive. See NRDC v. Fox, 909 F.Supp. 153, 156 (S.D.N.Y. 1995) ("The congressional scheme is not met merely by establishing effluent limits for specific sources, because Congress mandated a comprehensive approach to each body of water's quality standard. Without an understanding of the Total Maximum Daily Load, and the various sources which lower a body of water's quality, there is little chance that the pollution is most efficiently controlled.") The water quality-based approach identified in

the Act includes many other elements besides establishing regulatory controls, including identifying impaired waters and identifying or allocating loads to the responsible sources. See Standards Handbook at at 7-1 to 7-2 (describing elements of water quality-based approach), Att. 4.

21. This flaw in Plaintiffs' approach is illustrated by considering a common circumstance where several point sources are located on a water near several nonpoint sources and both the point sources and nonpoint sources are introducing the same pollutant into the water that is causing the water to exceed water quality standards. If effluent limitations under Section 301 are not sufficient to bring the water into compliance with water quality standards, a TMDL must be written to identify the water's loading capacity and the allocations among contributing sources of the pollutant that will allow the water to achieve standards. Assume that the State has collected information that indicates that significant reductions of pollutant loading will occur from the nonpoint sources in the near future. Under Plaintiffs' interpretation of the Act, the TMDL writer would be prevented from taking into account these desired reductions from the nonpoint sources in the TMDL calculations and would have to allocate the entire load reduction to the point sources. Neither the Act nor its legislative history indicates that Congress intended for Section 303(d) to function in a way that would lead to such a fundamentally unfair result, and the Court therefore should reject Plaintiffs' interpretation. See, e.g., Inter-Modal Rail Employees Ass'n v. Atchison, T&SF Ry. Co., 520 U.S. 510, 511, 516 (1997)(finding that "absurd or glaringly unjust result" would even "warrant departure from the plain language of" the statute); accord United States v. Granderson, 511 U.S. 39, 77 n.5 (1994).

22. Plaintiffs attempt to downplay the adverse impacts from nonpoint sources by noting that EPA's TMDL for the Garcia River states that the River has shown improvement since the mid-1970s. Plaintiffs fail to acknowledge, however, that the TMDL also explains that the River is far from supporting its beneficial use as a cold water fishery and that even with a TMDL water

quality standards will not be attained until 2048. See Att. 1 at 29, 44.

Moreover, the import of Plaintiffs' argument contradicts the findings of state surveys as compiled by EPA pursuant to Section 305(b) that identify nonpoint sources as major contributors of pollutants to the Nation's rivers. Att. 22 at 33.

23. Plaintiffs further argue that Section 319 is "obviously parallel" to Section 303(d) and renders Section 319 mere "surplusage." Pls. Br. at 16-17. In support, Plaintiffs point out that Section 303(d) does not refer to Section 319. Id. at 18. However, in 1972, Section 319 did not exist, so Congress obviously would not have referred to it in Section 303(d). To the extent that Plaintiffs are attempting to show that Congress somehow impliedly repealed Section 303(d) by passing Section 319, their arguments again are in error. Implied repeals occur only where (1) the two provisions are in irreconcilable conflict or (2) the later enactment covers the whole subject of the former and the intent to substitute is clearly expressed. See In re Glacier Bay, 944 F.2d 577, 581 (9th Cir. 1991)(quoting Radzanower v. Touche Ross & Co, 426 U.S. 148, 154 (1976). As Plaintiffs correctly note, Section 319 does not refer to Section 303(d), and Section 319 cannot cover the whole subject of Section 303(d) because Section 319 is silent as concerns load identification. Pls. Br. at 16, 18. Given that load identification is not even mentioned in Section 319, the two provisions are not in irreconcilable conflict. Moreover, the goal of a State's management program under Section 319 is "to reduce pollutant loadings" from nonpoint sources, 33 U.S.C. §1329 (b)(2)(A), while the goal of a TMDL under Section 303(d) is to "implement applicable water quality standards" in particular waterbodies, 33 U.S.C. § 1313(d)(1)(C). These are distinguishable and mutually supporting goals.

24. The Court should be aware of another defined term in Section 303(d) that erroneously can be construed to support Plaintiffs' argument. TMDLs are calculated for "pollutants," the definition of which includes the term "discharge." See 33 U.S.C. § 1362(6). The Ninth Circuit has held that the

term "discharge" as used in Section 401 of the Act applies only to point sources. See ONDA, 172 F.3d at 1097. In contrast to its use of the term "discharge," however, Congress consistently uses the term "pollutant" to describe contributions from point sources and nonpoint sources. See, e.g., 33 U.S.C. § 1329 (Each state's nonpoint source management program must include "an identification of the best management practices and measures which will be undertaken to reduce *pollutant* loadings resulting from each . . . *nonpoint source* . . ."(emphasis added). Any contention that Section 303(d) is limited to point sources based on the term "pollutant" therefore is in error.

25. See, e.g., Att. 24 (EPA TMDL for Upper Birch Creek, Alaska - allocations for point sources and nonpoint sources in lbs/day for total suspended sediment); Att. 25 (EPA TMDL for Appoquinimink River, Delaware - allocations for point sources and nonpoint sources for phosphorous and NBOD in lbs/day); Att. 26 (EPA TMDL for Jewel Lake, Alaska--allocation for nonpoint sources for fecal coliform in fecal coliform units/day) .

26. See, e.g., NRDC v. Costle, 568 F.2d 1369, 1380 (D.C.Cir. 1977)(holding that lack of technical precision in setting effluent limitations did not justify EPA's decision to forego setting such limitations and describing the CWA as an "ambitious statute [that] is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try.").

