

**Natural Resources Defense Council • Western Lake Erie Waterkeeper •
National Wildlife Federation • Ohio Environmental Council • Ohio Citizen Action •
Sierra Club • Izaak Walton League of America – Ohio Division**

Via Electronic and First-Class Mail

June 1, 2010

Mike McCullough
Ohio EPA, DSW
Permits & Compliance Section
P.O. Box 1049
Columbus, OH 43126-1049
mike.mccullough@epa.state.oh.us

**Re: Comments on Proposed Modification of Clean Water Act Permit for
FirstEnergy Bayshore Power Plant (OEPA Permit No. 2IB00000)**

Dear Mr. McCullough:

Please accept these comments submitted on behalf of the Natural Resources Defense Council, Western Lake Erie Waterkeeper, National Wildlife Federation, Ohio Environmental Council, Ohio Citizen Action, Sierra Club, and Izaak Walton League of America – Ohio Division, regarding the Ohio Environmental Protection Agency’s (“Ohio EPA”) proposed renewal of the Clean Water Act National Pollutant Discharge Elimination System (“NPDES”) permit for the FirstEnergy Bayshore Power Plant (OEPA Permit No. 2IB00000) (hereinafter “Draft Permit”).

As explained below, the Ohio EPA must deny the requested permit renewal on the present record. If Ohio EPA continues to process the Draft Permit, the Agency must revise the terms and conditions of the Draft Permit substantially, and the revised draft must be re-noticed and the public must have a full and fair opportunity to comment and request a hearing on the revised draft. Pursuant to the U.S. EPA regulations covering required state program elements for the issuance of NPDES permits, 40 C.F.R. § 124.17, if the Ohio EPA issues a final Permit, a written responsiveness summary must be provided addressing all specific comments made in this submittal, along with all other public comments filed during the comment period.

I. The Mercury Variance Must Be Denied Because FirstEnergy Has Not Adequately Demonstrated That “There Is No Readily Available Means of Compliance Without End-of-Pipe Controls.”

FirstEnergy’s requested variance from compliance with permit limitations based on Lake Erie Water Quality Standards (“WQS”) for mercury should be denied because the company has failed to provide adequate support for the contention in its variance application that it is unable to meet the WQS without end-of-pipe treatment to remove mercury from the effluent.

Consistent with U.S. EPA’s Great Lakes Initiative (“GLI”), Ohio has adopted stringent Water Quality Standards (“WQS”) for Lake Erie covering a range of Bioaccumulative Chemicals of Concern (“BCCs”), including mercury. Mercury is the most prevalent BCC in the Great Lakes Basin and poses a significant threat to human health and wildlife. The goal of the GLI is to implement the Great Lakes Water Quality Agreement between U.S. and Canada, which aims to prohibit the discharge of pollution in toxic amounts, and virtually eliminate dangerous, persistent toxic substances in the Basin.

Ohio EPA proposes to grant FirstEnergy a mercury variance from water quality-based effluent limitations (“WQBELs”) derived from the GLI pursuant to a streamlined variance process created through a 1997 Ohio EPA rulemaking, which is now codified at O.A.C. 3745-33-07(D)(10). Specifically, Ohio EPA found in 1997 that “the average cost to reduce mercury below twelve ng/l from a waste stream through end-of-pipe treatment is in excess of ten million dollars per pound of mercury removed.” O.A.C. 3745-33-07(D)(10). Further, Ohio EPA found in 1997 that “requiring removal of mercury by construction of end-of-pipe controls to attain mercury WQS [that are] more stringent than those required by sections 301(b) and 306 of the [federal Clean Water Act] would result in substantial and widespread social and economic impact.” *Id.* Accordingly, Ohio EPA established by rule in 1997 that it may grant a variance from GLI-derived WQBELs for mercury where “the permittee is not currently complying with the WQBEL and information available from the application required in paragraph (D)(10)(b) of this rule indicates that there is no readily apparent means of complying with the WQBEL without constructing end-of-pipe controls more stringent than those required by sections 301 (b) and 306 of the [federal Clean Water Act],” *id.* 3745-33-07(D)(10)(a)(ii), and “the discharger is currently able to achieve or projects that it can achieve an annual average mercury effluent concentration of twelve ng/l within five years of the date that the variance is granted,” *id.* 3745-33-07(D)(10)(a)(iii).

The 1997 mercury variance rule as codified clearly places the burden of proof on the permit applicant to provide information, in its application, regarding “whether there are other means by which the permittee could comply with the WQBEL without constructing end-of-pipe treatment.” O.A.C. 3745-33-07(D)(10). Although the 1997 mercury variance rule has been approved by U.S. EPA as part of Ohio’s federally delegated Clean Water Act NPDES program, U.S. EPA has specifically noted that, while “Ohio’s mercury variance relieves individual dischargers of the responsibility to demonstrate social and economic impacts of complying with the mercury criteria[,] [i]ndividual dischargers must still demonstrate that end of pipe treatment is the only viable compliance option.” Water Quality Criteria: Notice of Availability of Water

Quality Criterion for the Protection of Human Health: Methylmercury, 66 Fed. Reg. 1344, 1350-51 (Jan. 8, 2001).

The 1997 mercury variance rule further provides that, in the absence of an adequate demonstration by the permit applicant that there are no available means of compliance without end-of-pipe controls, Ohio EPA “*shall deny*” the mercury variance application. O.A.C. 3745-33-07(D)(10)(c) (emphasis added). U.S. EPA concurs with this interpretation of the rule, having noted that “[w]here the discharger demonstration is inadequate (including an inadequate demonstration that end of pipe treatment is the only readily available option for complying), Ohio denies the applicability of the mercury variance to the individual discharge.” 66 Fed. Reg. at 1351.

FirstEnergy’s mercury variance applications – both its original application, dated July 30, 2008, and its revised application, dated November 14, 2008 – fail to meet the burden required by O.A.C. 3745-33-07(D)(10) of substantiating the company’s entitlement to a mercury variance. Both applications submitted by FirstEnergy state that the company uses a form of “micro filtration Reverse Osmosis” as a form of treatment for mercury upstream of Outfall 003, without providing any engineering analysis or detailed explanation of the point in the process at which this treatment is applied, what level of mercury reduction this treatment can achieve, and whether the treatment can be expanded or combined with additional forms of treatment to achieve further mercury reductions upstream of Outfall 003. Nor is there any indication that Ohio EPA requested such an analysis or explanation from FirstEnergy, let alone performed its own independent analysis. Without a detailed, plant-specific analysis of whether additional mercury reductions can be achieved upstream of Outfall 003 through additional or expanded wastewater treatment, FirstEnergy may not lawfully obtain a mercury variance under the plain language of O.A.C. 3745-33-07(D)(10).

In the documents constituting the publicly available record for this permitting decision, both FirstEnergy and Ohio EPA appear to be relying on the analysis of mercury treatment technologies undertaken in connection with the 1997 rulemaking as providing additional support for FirstEnergy’s contention that there are no alternative means available to meet the GLI-derived WQBELs. As we understand it, the basis of the 1997 rulemaking was a study conducted by the Foster-Wheeler engineering firm which found that it would be prohibitively expensive to remove mercury from wastewater effluent through end-of-pipe treatment. (*See Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy* (April 24, 1997), attached as Ex. A.)

This 13-year old study is not an adequate basis to circumvent the GLI’s critical water quality standards. Pollution control technologies for coal-fired power plants have evolved rapidly over the last 13 years, and U.S. EPA is currently in the process of revising its Effluent Limitation Guideline for coal-fired power plants to reflect these technological advances. *See U.S. Environmental Protection Agency, Steam Electric Power Generating Point Source Category: Final Detailed Study Report* (2009), available at <http://www.epa.gov/waterscience/guide/steam/finalreport.pdf>. The 1997 Foster-Wheeler contains only a cursory overview of the capabilities of mercury control technologies, focused on the question of whether – at that time, in

1997 – it was cost-effective to “polish” mercury discharges through end-of-pipe treatment to levels that could comply with GLI standards of 1.3 ppt for wildlife. (*Id.* at 7-8, 23-24.) There is no discussion in the study of the possibility of employing a combination of treatment technologies upstream of the end-of-pipe discharge points, nor is there any discussion of zero liquid discharge systems. (*Id.*) Further, it is our understanding that, other than observing a few pilot projects, little to no evaluation of these and other mercury control technologies, either at end-of-pipe or at internal treatment points, has been undertaken by Ohio EPA since 1997. Whether or not the 1997 rulemaking and study were based on valid information and assumptions at the time, in light of the availability of new information and the 1997 rulemaking’s lack of focus on mercury controls upstream of the end-of-pipe, the 1997 rulemaking and study do not provide an adequate factual basis for granting mercury variances to the Bayshore plant and other plants discharging into Lake Erie.

Fundamentally, we will never have a clean Lake Erie as long as Ohio EPA permits coal-fired power plants to discharge mercury into the Lake in excess of water quality standards derived from the GLI. We would appreciate the opportunity to continue a dialogue regarding how to improve Ohio’s mercury variance program so that it ensures that Lake Erie is adequately protected. We understand that Ohio EPA intends to rely on the 1997 rulemaking and study to grant mercury variances to dozens of facilities that discharge into Lake Erie, and we have serious concerns that such reliance is legally and factually unsupported and will create a major obstacle to restoration of the Lake.

II. The Mercury Variance Must Be Denied Because FirstEnergy Has Not Provided a Proposed Schedule for Implementation of its Pollutant Minimization Plan.

FirstEnergy’s mercury variance applications – both its original application, dated July 30, 2008, and its revised application, dated November 14, 2008 – also fail to include a timeline for the implementation of the mercury Pollutant Minimization Plan. Such a schedule is clearly required as part of any mercury variance application pursuant to O.A.C. 3745-33-07(D)(10)(b)(iii) (requiring a “proposed schedule for evaluating the mercury sources . . . and a proposed schedule for identifying and evaluating potential reduction, elimination, and prevention methods”).

Firm deadlines for the completion of the steps required under the Pollutant Minimization Plan must be included in any mercury variance issued for the Bayshore facility. Bayshore should also be required to monitor and study the effectiveness of its Pollutant Minimization Plan, and make that information available to Ohio EPA and the public.

III. Section 301 of the Clean Water Act Requires Ohio EPA to Set Best Available Technology Limits for Mercury at Outfall 003.

With respect to toxic pollutants such as mercury, Clean Water Act Section 301 requires that NPDES permits “shall require application of” Best Available Technology (“BAT”) to reduce

pollutant discharges to the maximum extent “technologically and economically achievable,” including “elimination of discharges of all pollutants” if it is achievable. 33 U.S.C. § 1311(b)(2)(A)(i); *see also id.* §§ 1311(b)(2)(C), 1317(a) (listing procedures for toxic pollutants); 40 C.F.R. § 401.15 (listing toxic pollutants, including mercury). Federal regulations promulgated by U.S. EPA also require that “[t]echnology-based treatment requirements under Section 301(b) of the [CWA] represent the minimum level of control that *must be imposed*” in a NPDES permit. 40 C.F.R. § 125.3(a) (emphasis added). BAT is a stringent treatment standard that has been held to represent “a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges.” *EPA v. Nat’l Crushed Stone Ass’n*, 449 U.S. 64, 74 (1980).

Technology-based effluent limitations (“TBELs”) are a necessary minimum requirement for a permit “regardless of a discharge’s effect on water quality.” *Am. Petroleum Inst. v. EPA*, 661 F.2d 340, 344 (5th Cir. 1981); *see also PUD No. 1 Jefferson County v. Wash. Dep’t of Ecology*, 511 U.S. 700, 704 (1994) (state water quality standards are “supplementary” to required individual TBELs) (citing *EPA v. Calif. ex. rel. Water Res. Control Bd.*, 426 U.S. 200, 205 n.12 (1976)); *Hooker Chems. & Plastics Corp. v. Train*, 537 F.2d 620, 623 (2d Cir. 1976) (CWA “predicate[s] pollution control on the application of control technology on the plants themselves rather than on the measurement of water quality.”). Federal regulations require state permitting authorities to establish BAT effluent limits in individual NPDES permits on a case-by-case basis, using Best Professional Judgment (“BPJ”), “to the extent that EPA-promulgated effluent limitations are inapplicable.” 40 C.F.R. § 125.3(c)(2), (d); *see also* O.R.C. 6111.042 (authorizing the Director to make BPJ determinations in NPDES permits); O.A.C. 3745-33-05(A)(1)(e) (Director shall set “[a]ny more stringent limitations” in NPDES permits “required to comply with any other state or federal law or regulation”); *Northern Cheyenne Tribe v. Montana Dep’t of Env’tl. Quality*, --P.3d--, 2010 WL 1997421 (Mont. May 18, 2010). The use of the word “shall” in both the federal statute and regulations does not leave the Director with any discretion as to whether TBELs should be established. *See Bennett v. Spear*, 520 U.S. 154, 172 (1997) (the imperative “shall” makes clear that the agency action specified is obligatory, not discretionary); *see also Alabama v. Bozeman*, 533 U.S. 146, 153 (2001) (“The word ‘shall’ is ordinarily the language of command.”) (internal quotations and citations omitted).

As such, the statement in the Fact Sheet for the Draft Permit that “the director *may* establish technology-based limits based on Best Professional Judgment (BPJ)” (Fact Sheet at 1 (emphasis added)) is legally incorrect. The Clean Water Act requires BAT limits for mercury in this permit at Outfall 003. Because the U.S. EPA Effluent Limitation Guideline – which has not been updated since 1982 – does not address mercury discharges, Ohio EPA is under a non-discretionary duty here to independently evaluate the available pollutant control technologies and require stringent permit limits that, as a minimum level of control, reflect the stringent nature of BAT and the Act’s goal that pollutant discharges be eliminated.¹

¹ This analysis would apply equally to any other pollutant discharge from the Bayshore plant. To the extent that U.S. EPA regulations do not set a TBEL, Ohio EPA must evaluate BAT on a case-by-case basis and set a TBEL using BPJ.

An evaluation of BAT for Bayshore's mercury discharges from Outfall 003 would require consideration of both the potential for additional or expanded wastewater treatment to reduce mercury concentrations upstream of Outfall 003, as discussed above, and also consideration of additional end-of-pipe treatment measures before this permit is issued – not at some point in the future, after the permit issues. Thus, although we support immediate implementation of a Pollutant Minimization Plan at Bayshore, as an interim measure, the Clean Water Act BAT provisions require more stringent alternatives to be considered, and required if available, before this NPDES permit can be lawfully renewed.

For example, the Draft Permit requires, in Part II.F(1)(d)(v), “a planning level evaluation of the installation of a filtration system” at Outfall 003, which “shall include estimates of cost, mercury removal rates, and technical feasibility for mercury filtration alternatives.” This is exactly the kind of evaluation that is required by the federal Clean Water Act as part of an analysis of BAT – only it must be done before a NPDES permit issues, not afterward. Ohio EPA may not lawfully renew the Bayshore NPDES permit until all potential pollution control technologies and options are fully evaluated and the combination of technologies and options is required that reflects BAT for mercury discharges from Outfall 003.

Nor can FirstEnergy and Ohio EPA simply rely on the 1997 Foster-Wheeler study as a substitute for a BAT analysis here. Reliance on a 13-year old rulemaking and study that does not incorporate the newest generation of pollutant control technologies, does not perform a plant-specific analysis of potential technologies and options for mercury at Outfall 003 of the Bayshore facility, and does not address controls upstream of the end-of-pipe discharge point is inconsistent with the Clean Water Act and the non-discretionary mandate to require BAT.

IV. Ohio EPA Must Require Wet Cooling Towers or Their Equivalent as Best Available Technology to Reduce Fish Killed by Bayshore's Cooling Water Intake Structure.

The Draft Permit does not require adequate measures to minimize the massive adverse environmental impact on Lake Erie caused by the Bayshore plant's killing fish with its cooling water intake structure, either because they are slammed and caught against its cooling water intake screens (called impingement) or because they are sucked into the plant itself through the intake (called entrainment). The Bayshore plant is located near where the Maumee River meets the Maumee Bay, one of the most ecologically sensitive and biologically productive areas in the Great Lakes region. The Maumee River is Lake Erie's largest tributary and an important spawning area for walleye. At present, by FirstEnergy's own estimates, Bayshore's cooling water intake impinges approximately 46 million fish per year and entrains 208,565,490 fish eggs, 2,247,249,020 larvae and 13,824,022 juvenile fish per year. (Kinetrics, *Bay Shore Power Plant Cooling Water Intake Structure Information and I&E Sampling Data* (Jan. 2008), attached as Ex. B.) This averages out to 126,000 fish killed per day due to impingement and 6 million fish, fish larvae, and fish eggs killed per day due to entrainment. These massive fish kills are the direct consequence of FirstEnergy being allowed to continue using an antiquated once-through cooling system at Bayshore that withdraws over 749 million gallons of water per day from Lake Erie. Ohio EPA estimates that, because of the size of this withdrawal and Bayshore's proximity

to Maumee River and Maumee Bay, the Bayshore plant kills more fish per year than all other Ohio power plants combined. (Fact Sheet at 10.)

Section 316(b) of the Clean Water Act requires that the “location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.” 33 U.S.C. § 1326(b). Notwithstanding this unambiguous legal mandate, Ohio EPA proposes to allow FirstEnergy to experiment with an unproven “reverse louver” technology that would purportedly divert fish away from the cooling water intake screens. (Draft Permit at 9.) The Draft Permit requires FirstEnergy to complete this pilot project by December 2010, then submit a report to Ohio EPA by July 2011 selecting a compliance option for Bayshore (either the proposed reverse louver option or another option) that would reduce impingement by 80% and entrainment by 60%. (*Id.*) Ohio EPA would then review and comment on the report, then FirstEnergy would have until March 2012 to apply for a permit to install the compliance option selected and until October 2014 to complete construction of the compliance option. (*Id.* at 10.) The Draft Permit does not appear to contemplate any further opportunities for public review or comment on any proposed changes to Bayshore’s cooling water intake structure.

The Draft Permit’s provisions allowing FirstEnergy to experiment with a pilot project for an unproven compliance option, then to install an option that reduces impingement only by 80% and entrainment only by 60%, fall far short of ensuring that FirstEnergy complies with the BAT provision in Clean Water Act Section 316(b). Based on the available evidence, Ohio EPA’s proposal to allow FirstEnergy to delay compliance for a year while it experiments with piloting unproven reverse louver technology is unreasonable and unlawful. Tetrattech, an independent consulting firm retained by U.S. EPA and Ohio EPA to review the cooling water intake structure at the Bayshore plant, found that there was insufficient data to support recommending louvers as a compliance option to reduce impingement and entrainment. (Tetrattech, *Bay Shore Power Plant: Intake and Thermal Discharge NPDES Compliance Option Evaluation* (Feb. 2009) [hereinafter “Tetrattech Report”], at A-1, attached as Ex. C.) Additionally, Ohio EPA staff’s own analysis of the proposed reverse louver pilot project found “serious concerns that the pilot project will not demonstrate” reductions in impingement and entrainment that are scalable to the entire Bayshore facility. (Letter from Mike McCullough, Division of Surface Water, Ohio EPA, to Scott M. Brown, Environmental Engineer, First Energy Generation Corporation, dated April 9, 2010, attached as Ex. D.) We are unaware of any evidence that contradicts these documents; rather, all indications are that the reverse louver pilot project proposed by FirstEnergy is a “shot in the dark” that neither the company nor Ohio EPA has any clear idea will actually work to reduce impingement and entrainment at levels comparable to other, proven alternatives.

There is no basis in fact or law to allow FirstEnergy an additional year to select a compliance alternative, when there is clear alternative, available now, that should be selected as BAT for Bayshore: mechanical draft wet cooling towers. Tetrattech found that “wet cooling towers may reduce the volume of water withdrawn from a particular source by as much as 98 percent depending on various site-specific characteristics and design specifications.” (Tetrattech Report at 26.) With this greatly reduced water use would come dramatic reductions in fish kills due to impingement and entrainment. Tetrattech found that implementing wet cooling towers at

Bayshore would result in 95-98% reduction in *both* impingement and entrainment. (*Id.* at A-1.) Indeed, Tetrtech found that wet cooling towers are the *only* cost-effective measure available to Bayshore for compliance with Section 316(b) of the Clean Water Act. (*Id.* at A-1, A-2.)

In light of Tetrtech's findings, not only is there no basis for Ohio EPA to delay determining and requiring implementation of BAT for Bayshore's cooling water intake as soon as possible, there is also no basis for the Draft Permit's inclusion of a performance standard of 80% reduction in impingement and 60% reduction in entrainment. (Draft Permit at 9.) This performance standard appears to have been drawn from the low end of the range established by U.S. EPA in its now-suspended Phase II rule for Section 316(b) compliance at existing facilities. *See* Cooling Water Intake Structures-Section 316(b) Final Regulation for Cooling Water Intake Structures at Large Power Plants (Phase II) EPA, 69 Fed. Reg. 41,576 (Feb. 2004) (requiring reduction of impingement by 80 to 95 percent from baseline levels and reduction of entrainment by 60 to 90 percent). This Phase II rule no longer has any legal effect, however, after portions of it were remanded to U.S. EPA by the Second Circuit Court of Appeals in *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2d Cir. 2007). *See* National Pollutant Discharge Elimination System--Suspension of Regulations Establishing Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 72 Fed. Reg. 37,107 (July 9, 2007) (suspending Phase II rule and noting that permitting authorities should ensure compliance with Section 316(b) through case-by-case BPJ analyses of BAT).

As wet cooling towers have been found by Tetrtech to be an available, cost-effective technology for reducing impingement and entrainment at Bayshore, the Draft Permit should be changed to require that any Clean Water Act 316(b) compliance method selected by FirstEnergy be at least as effective as wet cooling towers, *i.e.*, that it must reduce impingement and entrainment at the facility by at least 95 percent. Such a permit provision would be consistent with the findings of other permitting authorities that have recently considered this question and required that facilities similar to Bayshore meet equivalent performance standards. *See In re Dominion Energy Brayton Point, L.L.C.*, NPDES Appeal 03-12, 2006 WL 3361084, slip op. at 19 (E.A.B. Feb. 1, 2006) (upholding permit provision that "would essentially require closed cycle cooling [*i.e.*, wet cooling towers] for the entire station" as BAT), attached as Ex. E; *Notice of Denial: Joint Application for CWA § 401 Water Quality Certification; NRC License Renewal – Entergy Nuclear Indian Point Units 2 and 3*, NYS DEC Nos.: 3-5522-00011/00030 (IP2) & 3-5522-00105/00031 (IP3) (N.Y.S. D.E.C. Apr. 2, 2010) (denying water quality certification on grounds that implementation of wet cooling towers was necessary to comply with Section 316(b)), attached as Ex. F. It is also worth noting that the Davis-Besse Nuclear Generating Station in Oak Park, Ohio, and the Enrico Fermi Nuclear Generating Station near Monroe, Michigan have operated for decades with wet cooling towers.

The Tetrtech Report evaluates this compliance option in detail for the Bayshore plant and estimates the up-front capital cost of constructing mechanical draft wet cooling towers at the plant would be \$97 million. (Tetrtech Report at 29.) Factoring in additional energy costs from using mechanical draft wet cooling towers, Tetrtech estimates that the net present cost to FirstEnergy from implementing wet cooling towers as BAT is either \$153 million, if the company chooses to increase the firing rate of the plant's turbines to compensate for the energy

penalty, or \$292.8 million, if the company chooses to keep the same turbine firing rate (thereby sending less electricity to the grid). (*Id.* at 31-33.)

Although this cost is significant, it pales in comparison to the economic and environmental toll caused by Bayshore's fish kills. A new study by Gentner Consulting Group that looks only at the economic damages to the local fishing economy caused by impingement and entrainment of fish at the Bayshore plant – i.e., the study does not attempt to estimate the other damages to use or non-use values from the fish kills – found that the net present cost to the local fishing economy from Bayshore's fish kills *exceeds* the net present cost to FirstEnergy of implementing wet cooling towers at Bayshore. In summary, the study, which is attached as an exhibit to these comments, contains the following findings:

The Maumee River is economically and ecologically important for fisheries production in Lake Erie. Lake Erie wide commercial fisheries generate \$25.8 million in revenues annually with Ohio responsible for \$4.0 million of those revenues in 2009. Because of low yellow perch abundance, the Western Basin has been closed to yellow perch harvest for the last two years. Commercial fishing in Lake Erie generates \$22.0 million in total sales, \$12.3 million in income and supports 524 jobs from the harvester through to the consumer.

Recreational fishing in Lake Erie has an even larger economic footprint, generating \$518.9 million in expenditures and supporting \$1.2 billion in total sales, \$632.7 million in personal income and 10,708 jobs. Walleye and yellow perch are the most popular target species. All together, commercial and recreational fishing generate \$1.4 billion in total sales, \$711.1 million in personal income and support 14,052 jobs.

The biological assessment utilized published studies on fish mortality from egg to adult to estimate adult equivalents. Across both impinged and entrained fish, the BSPP prevents 54.5 million predator and prey species from reaching adulthood. Of that total 8.5 million fish are predators targeted by commercial and recreational fishermen. A separate prey analysis indicates that the 46 million prey fish would support an additional 407,645 walleye.

Economic damages stemming from both predator and prey impingement and entrainment were estimated based on the biological assessment using benefit transfer techniques. Recreational values were taken from studies conducted in the Great Lakes where possible. Commercial value proxies were taken from economic impact models of the US fisheries industry and include values from the harvester through to the consumer.

Applying the commercial and recreational damage estimates results in annual economic damages of \$21.4 million per year. If the value of the walleye that could be supported by the lost prey fish are included, the annual losses reach \$29.7 million annually. The net present value of a 20 year stream of these losses discounted at the government recommended 7% discount rate yields \$315.0 million or \$22.1 million more than the cost of implementing cooling towers at the Bay Shore Power Plant.

This analysis presents a conservative estimate of total damages. Mid-range values per fish were used on the recreational side and upper bound estimates were used for the commercial values per fish. On the other hand, damages resulting from other uses, like

bird watching or hunting were not included. Additionally, non-use damages from fish impingement and entrainment were not estimated nor were health or non-use damages from increased algal blooms and other damages from the thermal plume. Finally, there is evidence that the actual impingement and entrainment estimates from the plant are higher than those estimated by the plant. Had any of these other use and non-use values and higher impingement and entrainment estimates been included, the economic damage estimates would be higher than those presented here, all else being equal.

(Gentner Consulting Group, *Economic Damages of Impingement and Entrainment of Fish, Fish Eggs, and Fish Larvae at the Bay Shore Power Plant*, at 3-4 (May 2010), attached as Ex. G.)

The Gentner Consulting Group's findings that the cost to the local fishing economy from Bayshore's fish kills exceeds the cost to FirstEnergy to implement wet cooling towers at the Bayshore plant – which, again, does not include other harms to the local economy and environment from the fish kills – taken together with Tetrattech's finding that wet cooling towers are the only cost-effective measure available to Bayshore for compliance with Section 316(b) of the Clean Water Act, require Ohio EPA to make determination now, without further delay, that wet cooling towers (or an equivalent technology that is at least as effective) represent BAT for Bayshore's cooling water intake structure. The law clearly requires such a provision to be included in any renewed NPDES permit for Bayshore. Requiring anything less would be unreasonable and unlawful.

At a minimum, even if Ohio EPA allows FirstEnergy's reverse louvers pilot project to proceed as currently proposed, Ohio EPA must delay renewal of the Bayshore NPDES permit and give the public the opportunity to comment on any final BAT determination before the permit is issued. The provisions in the Draft Permit that would appear to allow FirstEnergy and Ohio EPA to implement an as-yet-undetermined BAT compliance option without any further opportunity for public review and comment on the BAT determination run contrary to the Clean Water Act, which requires state permitting authorities to provide for public review and comment of such BAT determinations as part of the NPDES permitting process. *See* 33 U.S.C. § 1251(e) (“Public participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States.”); *see also* 40 C.F.R. §§ 124.6(d), (e), 124.10, 124.11, 124.12; O.A.C. 3745-47-07(A)(1) (public notice) & 3745-47-12 (public meetings); *Costle v. Pac. Legal Found.*, 445 U.S. 198, 215-216 (1980). Where Ohio laws allow for less public participation than the CWA would, the federal requirements control. *Rivers Unlimited, Inc.*, 86 Ohio Misc.2d at 83-93 (holding that Ohio statute violated Supremacy and Commerce Clauses of U.S. Constitution because it allowed degradation without public notice and hearing in violation of 40 C.F.R. § 131.12).

Accordingly, the Draft Permit must be substantially revised before it can be issued to ensure that impingement and entrainment of fish from Bayshore's cooling water intake structure is reduced, as soon as possible, to at least the level achievable using a wet cooling tower system. Further, the public should have an opportunity to review and comment on any final BAT determination made for Bayshore by Ohio EPA.

V. Ohio EPA Must Not Grant a Variance for Bayshore’s Thermal Discharges until All Procedures Required by Clean Water Act Section 316(a), U.S. EPA and Ohio Implementing Regulations, and Applicable Agency Guidance Are Followed.

The Draft Permit must also be substantially revised to ensure that Bayshore’s thermal discharges comply with effluent limitations that ensure compliance both with BAT and thermal water quality standards or an appropriately supported thermal variance that complies with Clean Water Act Section 316(a), U.S. EPA and Ohio implementing regulations, and procedures outlined in applicable agency guidance. As the Fact Sheet for the Draft Permit notes, “[t]he impacts of the thermal discharge from the Bayshore Station have been somewhat controversial for a number of years. Concerns have been expressed regarding the size of the thermal plume, and its impact on recreational activities in Maumee Bay.” (Fact Sheet at 9.) Despite noting these concerns, however, Ohio EPA has not taken any steps in the Draft Permit to limit thermal discharges from Bayshore, nor has it required an adequate demonstration from FirstEnergy that Bayshore’s thermal discharges are eligible for a variance.

Section 316(a) of the Clean Water Act authorizes state permitting authorities to grant variances from thermal discharge limits only when the permit applicant has demonstrated that a less stringent standard is available “that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water.” 33 U.S.C. § 1326(a); *see also In re Dominion Energy Brayton Point, L.L.C.*, NPDES Appeal 03-12, 2006 WL 3361084, slip op. at 85 (E.A.B. Feb. 1, 2006) (“[T]hermal pollutants will be regulated as any other pollutant unless an owner or operator of a point source can prove that a modified thermal limitation can be applied which will assure protection and propagation of a balanced indigenous population.”) (citing Clean Water Act legislative history), attached as Ex. E.

A “balanced indigenous population” is defined by U.S. EPA regulations to mean “a biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollution tolerant species.” 40 C.F.R. § 125.71(c). The U.S. Environmental Appeals Board has held that a balanced indigenous population cannot simply be defined as the status quo population of species that are currently inhabiting the receiving water body – and thus, *ipso facto*, able to tolerate whatever thermal pollution is currently being discharged – but rather, to determine what a balanced indigenous population must look like, the permitting authority must consider what species would inhabit the receiving water body if it were not degraded by thermal discharges. *In re Dominion Energy Brayton Point, L.L.C.*, NPDES Appeal 03-12, 2006 WL 3361084, slip op. at 89-93 (E.A.B. Feb. 1, 2006), attached as Ex. E; *see also In re Entergy Nuclear Vermont Yankee Discharge Permit 3-1199*, -- A.2d --, 2009 WL 4878507, ¶ 27 (Vt. Dec. 18, 2009) (“[N]otwithstanding the type of demonstration an applicant puts forward, the [Clean Water Act] and its regulations require analysis of the proposed thermal variance in the context of past discharges.”), attached as Ex. H. This interpretation is consistent with the purpose of the Clean Water Act. *See In re Pub. Serv. Co. of Ind., Inc.*, 1 E.A.D. 590, 604 (Adm’r 1979) (“Section 316(a) must, like any other provision of the Act, be read in a manner which is consistent with the Act’s general purposes. Consequently, § 316(a) cannot be read to mean that a balanced indigenous population is maintained where the species composition, for example, shifts . . . from

a thermally sensitive to thermally tolerant species. Such shifts are at war with the notion of ‘restoring’ and ‘maintaining’ the biological integrity of the Nation’s waters.”), attached as Ex. I.

U.S. EPA regulations implementing Section 316(a) provide that “[a]t the expiration of the permit, any discharger holding a section 316(a) variance should be prepared to support the continuation of the variance with studies based on the discharger’s actual operation experience.” 40 C.F.R. § 125.72 (note).

In determining whether to grant a continuation of a thermal variance, Ohio EPA must follow the requirements of O.A.C. 3745-2-08. Among other things, Ohio EPA must “define the location where discharge-induced mixing ceases,” O.A.C. 3745-2-08(C)(2); must “[d]emonstrate that the mixing zone would not otherwise interfere with the designated or existing uses of the receiving water or downstream waters,” *id.* 3745-2-08(C)(7); and must “[d]emonstrate that the mixing zone does not interfere with or prevent the recovery of an aquatic community or species population that could reasonably be expected when previously limiting water quality conditions improve,” *id.* 3745-2-08(C)(15). Ohio EPA must also ensure that daily average numeric temperature criteria are met, *id.* 3745-2-08(M), and that the thermal mixing zone complies with “Guidelines for the Submittal of Demonstrations Pursuant to Sections 316(a) and 316(b) of the Clean Water Act and Chapter 3745-1 of the Administrative Code,” a guidance document issued in 1978, *id.* 3745-1-03(A)(4). The 1978 guidance document further provides that thermal mixing zones will be defined by setting a Btu/hr effluent limitation on specific point sources depending on “the effect that the size of the mixing zone has on the populations and communities of the receiving water bodies.” (1978 Guidance Document at 28.) Such effluent limitations should be determined taking into account the following factors: “1) site-specific biological, chemical, and physical information provided by the applicant; 2) temperature standards or other temperature criteria applicable to receiving water body; and, 3) how well information submitted by an applicant demonstrates that a thermal mixing zone will ensure the protection and propagation of a balanced, indigenous community.” (*Id.*)

There is no indication that either FirstEnergy or Ohio EPA has ever conducted the kind of rigorous, site-specific evaluation of Bayshore’s thermal discharges that these rules require as a prerequisite to Bayshore receiving a thermal variance. As Tetrattech observed, although FirstEnergy submitted a thermal modeling study to Ohio EPA in 2003, “[b]ecause of the way delta T and the thermal plume were defined, the information provided in this report does not describe the areal extent of the thermal plume.” (Tetrattech Report at 12.) Tetrattech found that “[t]he inability to accurately quantify the thermal mixing zone’s areal extent represents a fundamental deficiency” in FirstEnergy’s modeling that prevented Tetrattech from evaluating whether Bayshore’s thermal discharges were in fact in compliance with Clean Water Act Section 316(a) and its implementing regulations. (*Id.* at 13.)

Tetrattech further noted that “no data or bases [have been] provided that describe the thermal tolerances of species of concern that might reside within the thermal plume.” (*Id.*) In other words, neither First Energy nor Ohio EPA appears to have ever defined the “balanced, indigenous population” of aquatic species that Clean Water Act Section 316(a) requires Ohio EPA to ensure are protected by thermal discharge standards. This is a clear requirement of the

federal statute, and the failure by either FirstEnergy or Ohio EPA to evaluate this issue means that a renewal of FirstEnergy's thermal variance would be unreasonable and unlawful. *See In re Entergy Nuclear Vermont Yankee Discharge Permit 3-1199*, -- A.2d --, 2009 WL 4878507, ¶ 38 (Vt. Dec. 18, 2009) (noting that U.S. EPA guidance "recommends the selection of between five and twelve species" to define a representative population, "giv[ing] special consideration" to "[t]he most thermally sensitive species") (citations and internal quotation marks omitted), attached as Ex. H.

Finally, Tetrattech noted that "the existing thermal discharge may conflict with the narrative standards of OAC Rule 3745-1-04 by contributing to the algal blooms that have occurred repeatedly over the last several years." (Tetrattech Report at 13.) Ohio EPA does not appear to have evaluated this issue at all in connection with preparation of the Draft Permit.

In short, as noted by Tetrattech, Ohio EPA's process for evaluating FirstEnergy's request for a continuance of a thermal variance appears to have been fundamentally flawed. The Draft Permit fails to contain any Btu/hour effluent limitation for Bayshore's thermal discharges, let alone the rigorous analysis that is required in connection with establishing a thermal mixing zone. The Draft Permit must be substantially reevaluated by Ohio EPA before any thermal variance can be lawfully issued in order to ensure that Section 316(a) of the Clean Water Act, U.S. EPA implementing regulations, the Ohio Administrative Code, and Ohio EPA's 1978 guidance document are all appropriately followed. Based on the currently available record, it appears that none of those sources of authority have been carefully considered or scrupulously followed in connection with this permitting process.

It is also worth noting that, if Ohio EPA agrees with our comments above that wet cooling towers should be required at Bayshore as BAT for reducing the impingement and entrainment of fish, then this compliance measure would also substantially reduce thermal discharges from the plant. (*See* Tetrattech Report at A-1 (listing mechanical draft wet cooling towers as the only feasible, cost-effective Clean Water Act Section 316 compliance measure and noting that it would address both fish impingement and entrainment and thermal discharges).) Thus, although the requirements of Sections 316(a) and (b) are legally distinct, they serve complementary purposes, both of which are served by a requirement that Bayshore implement wet cooling towers or an equally effective method of reducing cooling water use. *See In re Dominion Energy Brayton Point, L.L.C.*, NPDES Appeal 03-12, 2006 WL 3361084, slip op. at 8-9 (E.A.B. Feb. 1, 2006), attached as Ex. E.

VI. Effluent Temperature Monitoring at Outfall 001 Should Be Continuous.

A continuous monitoring device for temperature of effluent from Outfall 001 is considered state of the art and should be provided instead of the once per day monitoring frequency provided in the Draft Permit at Outfall 001.

VII. Ohio EPA Must Impose a WQBEL for TRC at Outfall 001.

The Draft Permit contains an effluent limitation for Total Residual Chlorine (“TRC”) at Outfall 001 of 0.20 mg/l, restricted to no more than 2 hours of discharge per day. (Draft Permit at 2.) According to the Fact Sheet for the Draft Permit, this effluent limitation is derived from “Federal Effluent Guidelines for steam-electric power plants.” (Fact Sheet at 14.) Indeed, as a TBEL, this provision in the Draft Permit is consistent with U.S. EPA regulations establishing Effluent Limitation Guidelines for the steam-electric power source category. *See* 40 C.F.R. § 423.13(b)(1)-(2) (setting TBEL of 0.20 mg/l for TRC, restricted to 2 hours per day, for facilities greater than 25 MW).

However, where a more stringent state water quality standard exists, as it does in Ohio, a NPDES permit must adhere to the stricter state water quality standard. 33 U.S.C. §§ 1311(b)(1)(C), 1370; 40 C.F.R. § 122.44(d)(1); *EPA v. State Water Resources Control Board*, 426 U.S. 200, 205 (1976). As noted in Table 6 of the Fact Sheet for the Draft Permit, for TRC discharges into Lake Erie, the Inside Mixing Zone Maximum water quality criterion in the Waste Load Allocation model is 0.038 mg/l, the Maximum Aquatic Life water quality criterion is 0.019 mg/l, and the Aquatic Life water quality criterion is 0.011 mg/l. (Fact Sheet at 23.) No explanation is provided as to why a WQBEL was not set for TRC at Outfall 001. Nor is there any indication that a variance from the applicable WQS has ever been issued for TRC at Outfall 001.

Although the Draft Permit limits TRC discharges at Outfall 001 to two hours per day, this is not in and of itself adequate to ensure that aquatic life will be protected. Chlorine is an acute toxin that could be very harmful to aquatic life. We are unaware of any evidence that demonstrates that regular two hour acute exposures to TRC that exceed the applicable numeric criterion will not be deleterious to aquatic life. Moreover, the federal Clean Water Act and its U.S. EPA and Ohio implementing regulations clearly provide that the discharge must meet the water quality criteria inside the mixing zone unless authorized by a variance, which has not been issued here. *See, e.g., Citizens Committee to Preserve Lake Logan v. Williams*, Case No. EBR 75-40, 1977 WL 10269, at *14 (Ohio E.B.R. May 27, 1977) (holding that all effluent limitations in NPDES permits must include “explicit verification” that water quality standards will not be violated); *Am. Paper Inst. v. U.S. EPA*, 996 F.2d 346, 350 (D.C. Cir. 1993) (“[O]nce a water quality standard has been promulgated, section 301 of the CWA requires *all* NPDES permits for point sources to incorporate discharge limitations necessary to satisfy that standard.”) (emphasis added).

Accordingly, there is no legal or factual basis for concluding that the TBEL in the Draft Permit for TRC at Outfall 001 will adequately protect water quality standards. Ohio EPA must set a WQBEL for TRC at Outfall 001.

VIII. Language in Part V of the Draft Permit Improperly Exempts Coal Pile Runoff From Effluent Limits For Up To Three Years.

Part V.A of the Draft Permit addressing coal pile runoff improperly purports to exempt coal pile runoff discharges from effluent limitations for three years. (*See* Draft Permit at 38 (stating that discharges from coal pile runoff shall comply with Total Suspended Solids and pH limits “no later than three years after the effective date of this permit”).

NRDC has objected to this permit language with respect to other NPDES permits issued by Ohio EPA, and we have been told that this language is simply “boilerplate” that would not be applied to any particular facility to which its application would be unlawful. We are unable to imagine *any* circumstance, however, under which a three-year exemption from Total Suspended Solids and pH effluent limitations for coal pile runoff (which are, as we understand them, TBELs) would be lawful under the federal Clean Water Act.

As a general rule, the CWA requires that dischargers comply immediately with all TBELs, in furtherance of the statute’s goal that all discharges of pollution ultimately be eliminated. *See* 33 U.S.C. § 1311(b) (requiring compliance with BAT limitations no later than March 31, 1989). Under Ohio regulations, compliance schedules may be incorporated into NPDES permits only under narrowly defined circumstances, and even then typically only for water quality-based effluent limitations. *See* O.A.C. 3745-33-05(F) (defining circumstances under which compliance schedule may be set for water quality-based effluent limitations); *see also* 40 C.F.R. § 122.47.

Accordingly, as there is no lawful justification for the three-year exemption from coal pile runoff effluent limitations in Part V.A of the Permit, Ohio EPA should remove the unlawful language from the Draft Permit – and stop including this unlawful language in future draft and final NPDES permits for other facilities.

IX. Monitoring Must Be Required on Weekends and Holidays.

The Final Effluent Limitations and Monitoring Requirements in the Draft Permit for Outfalls 001, 002, and 003 are objectionable because the Draft Permit attempts to exclude FirstEnergy from monitoring requirements on Saturdays, Sundays and Holidays. (Draft Permit at 3, 4, 6, 7.) There is no basis in law for claiming that weekends and holidays should be exempted from monitoring requirements. This is especially true with respect to effluent limitations such as pH and temperature, which should be subject to automatic continuous monitoring. As published the Draft Permit excludes continuous monitoring for pH from weekend/holiday monitoring and data retention.

X. Conclusion

For at least the foregoing reasons, Ohio EPA must either deny FirstEnergy’s application for renewal of its NPDES permit for Bayshore, and for a mercury variance, or at a minimum

issue a substantially revised draft permit for public review and comment. If you have any questions, please contact Thomas Cmar at 312-651-7906 or tcmar@nrdc.org.

Thank you for providing us with this opportunity to comment.

Sincerely,



Shannon Fisk
Thomas Cmar
Attorneys
Natural Resources Defense Council

Sandy Bihn
Executive Director/Waterkeeper
Western Lake Erie Waterkeeper

Marc Smith
Great Lakes State Policy Manager
National Wildlife Federation

Keith Dimoff
Executive Director
Ohio Environmental Council

Sandy Buchanan
Executive Director
Ohio Citizen Action

Nachy Kanfer
Midwest Field Organizer
Sierra Club

Rick Graham
President
Izaak Walton League of America
Ohio Division

CC: Sean Ramach, U.S. EPA Region V