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Better than Best: A Crosscurrent in the Federal Water Pollution Control Act Amendments of 1972

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On the eve of an anticipated congressional reevaluation of the Federal Water Pollution Control Act Amendments of 1972, Professor Goldfarb examines and analyzes what he believes to be a particularly troublesome problem in the Act. It is the author's thesis that the Act's dual policies of attaining water of swimmable quality and of establishing national effluent limitations are in conflict. The sources and practical implications of this conflict are explored, and recommendations for remedial legislation propounded.

BETTER THAN BEST: A CROSSCURRENT IN THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972*

*William Goldfarb***

THIS is a propitious moment for an evaluation of the Federal Water Pollution Control Act Amendments of 1972.[1] The National Commission on Water Quality's report to Congress is expected to be released early in 1976.[2] Congress itself, recently preoccupied with proposed amendments to the Clean Air Act, will soon turn its attention to possible "mid-course corrections" in the Act. Already, congressional subcommittees are holding preliminary hearings and exam-

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1. Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1251 to 1376 (Supp. III, 1973)) (hereafter referred to as "The Act"). This article will refer to the section numbers which appear in Pub. L. No. 92-500 because practitioners and scholars alike invariably allude to this long and complicated piece of legislation in terms of these unofficial section numbers (*e.g.*, "a 208 planning agency"). Citations will be to both the public law and the Code.
2. *See* notes 94 to 96 and accompanying text.

ining staff reports with regard to the Act.[3] There seems to be little doubt that 1976 will be a year of virtually hectic activity in the area of water law.

The purpose of this article is to examine and analyze what this author believes to be a major crosscurrent in the Act—the "better than best" problem. This is an inconsistency which inheres in the Act, and its troublesome effects are becoming manifest as the Act is implemented. Indeed, this particular problem threatens the conceptual coherence and feasibility of the Act.

INTRODUCTION

On October 18, 1972, the House of Representatives overrode President Nixon's veto and enacted Public Law Number 92-500. Shortly after its passage, Senator Muskie described it as "one of the most significant pieces of legislation enacted by the 92d Congress" and "a major revision of existing water pollution laws."[4] Nevertheless, it is still not generally recognized that by means of the Act Congress undertook nothing less than to redefine water pollution itself.

Traditionally, the implicit legal definition of water pollution had been "any condition which interferes with the desired use of a waterway."[5] In the eyes of the law at least, a body of water was seen to be polluted if society could not utilize it for a desired purpose.[6] For example, if society was satisfied that a particular river be aesthetically tolerable and fit for navigation, the law did not afford remedies or sanctions unless it smelled foul or corroded hulls. One river,

3. *See* 5 BNA ENVIRONMENT REP. CURRENT DEV. 1893-1912; 6 BNA ENVIRONMENT REP. CURRENT DEV. 131-32.

4. Letter from Senator Edmund S. Muskie, Chairman, Subcommittee on Air and Water Pollution, to Senator Jennings Randolph, Chairman, Committee on Public Works, Dec. 20, 1972, *reprinted in* ENVIRONMENTAL POLICY DIV. OF THE CONG. RES. SERV., A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972 (Senate Public Works Comm. Print 1973) (hereinafter cited as LEGISLATIVE HISTORY).

5. The concept of "desirable use" is discussed in DAVIES, THE POLITICS OF POLLUTION 20-21 (1970). However, since "desirable" has certain normative connotations, references will here be made to "desired use."

6. This is, of course, an oversimplification. However, in the interests of exposition and brevity, problems of social consensus and public goods will not be considered here.

the Cuyahoga in Ohio, was not considered legally objectionable until it caught fire, because the desired use of that river was the disposal of waste.

In keeping with the "desired use" concept, federal water pollution control law prior to 1972[7] was based upon stream-use classifications and water quality standards.[8] States were first urged and later required to classify interstate and then navigable waters in categories ranging from Class A (swimming) down to Class D (agricultural and industrial use). Although the federal government retained a nominal power of review, the classification of individual waterways within a state was actually discretionary with state officials.[9] Once stream-use classifications had been established, a state was to apply water quality standards to each waterway thus classified, depending on its designated use.[10] Water quality standards are measurements of the amounts and concentrations of substances and materials which can be present in a waterbody at any given time so that it may remain compatible with its designated use. For example, if a stream was expected to support a naturally propagated trout population the water quality standard for dissolved oxygen would have been set at seven parts per million (ppm), whereas a standard of three ppm would have been acceptable for a Class D waterway. In theory at least, states were then to translate water quality standards into effluent limitations—maximum allowable rates of discharge, concentrations, or amounts of undesirable substances which may be released from discharge points into a waterway—based on water quality standards, water quality modeling, and wasteload allocations. But pre-1972 federal law did not require the states to set effluent

7. The Water Pollution Control Act of 1948, ch. 758, 62 Stat. 1155; the Water Pollution Control Act Amendments of 1956, ch. 518, 70 Stat. 498; Act of July 20, 1961, Pub. L. No. 87-88, 75 Stat. 204; The Water Quality Act of 1965, Pub. L. No. 89-234, 79 Stat. 903; The Clean Water Restoration Act of 1966, Pub. L. No. 89-753, 80 Stat. 1246; The Water Quality Improvement Act of 1970, Pub. L. No. 91-224, 84 Stat. 91. Despite differing titles, all legislation subsequent to 1948 constituted amendments to the Water Pollution Control Act.
8. Terminology in this area is somewhat amorphous. "Water quality standards" is often taken to mean stream-use classifications plus the water quality criteria necessary to protect them. This article will use "water quality standards" synonomously with "water quality criteria."
9. ZWICK & BENSTOCK, WATER WASTELAND 265 (1971).
10. Which might have been its "desired use" but not its "best use" in the sense of fitness or convenience.

limitations, and, for reasons which will be set forth below, most states did not do so.[11]

The liabilities of the "desired use" concept and its attendants (stream-use classifications and water quality standards) soon became apparent. States, under pressure from industry, set classifications and standards at low levels—in some cases even lower than current conditions and in others at levels which would have significantly degraded relatively pure waters.[12] If citizens or local governments protested, industry simply threatened to move to another locality or state where more stream mileage was devoted to the disposal of industrial wastes.

Secondly, in most cases water quality standards are unenforceable, and unless directly related to effluent limitations, they cannot be converted into effluent limitations for specific dischargers without sophisticated load allocations based on the hydrological, biological, and other factors which determine the assimilative capacity of a waterway.[13] Wasteload allocations, in turn, must be developed from water quality models which reflect the condition of the waterway, its assimilative characteristics, and the potential effects of discharges on it. But water quality modeling is still an inexact exercise at best, especially with regard to discharged substances other than BOD[14] or suspended solids. Consequently, prior to 1972 most states did not even attempt to set effluent limitations; and state enforcement mechanisms were only invoked in cases where "the discharge of matter . . . reduce[d] the quality of . . . waters below the water quality standards . . . ."[15] But assimilative capacities of even individual waterways are variable, depending on factors like

11. New Jersey, for example, has never promulgated statewide effluent limitations.
12. The deficiencies of pre-1972 federal law are ably documented and recounted in ZWICK & BENSTOCK, *supra* note 9, which, despite having been published prior to passage of the Act, remains an invaluable introduction to water pollution control law.
13. For example, each waterbody has the capacity to degrade a certain quantity of organic matter (biochemical oxygen demand or BOD for short) depending on its surface area, temperature, turbidity, flow rate, etc.
14. Water quality modeling must also take account of the interactions among pollutants; *e.g.*, BOD and heat: warmer water can mean diminished assimilative capacity.
15. This is the language of the Water Quality Act of 1965, Pub. L. No. 89-234, § 10(a)(5), 79 Stat. 903, which most states used as a model.

volume, temperature, and turbidity. How then was a discharger to know what levels or quality of discharge would "violate water quality standards" at any particular time? And, how could an enforcement agency have determined which of a number of dischargers to a particular waterway was responsible, if, in fact, the water quality for a paramater like BOD was reduced below the applicable standard? What about a situation where the water quality in a downstream reach was lowered by cumulative discharges from upstream areas (perhaps located in a different state) where water quality standards were more lenient? These are situations which frequently arose under pre-1972 federal water pollution control law; and it should be clear that water quality standards without effluent limitations are valueless for enforcement purposes except in rare instances of flagrant violations such as spills.

Thus, it can be seen that federal water pollution control law prior to 1972, based as it was on the water quality standard approach, was conceptually unsound and destined inevitably to fail.[16]

The approach of the Act was to retain water quality standards as a secondary line of defense,[17] but to rely primarily on uniform national effluent limitations based on achievable technology. The Federal Environmental Protection Agency (EPA) has issued, or is in the process of issuing, uniform effluent limitations for industrial subcategories, regardless of location or the condition of waterbodies on which particular plants are sited.[18] The Act establishes a two-stage program for the application of effluent limitations to existing industrial dischargers. The first stage (Phase I) calls for the installation of "best practicable tech-

16. In addition, enforcement efforts prior to 1972 were feeble indeed. *See* ZWICK & BENSTOCK, *supra* note 9, chs. 6, 14-15.

17. *See* text *infra* pp. 11-14.

18. EPA did not meet its statutory deadline (October 18, 1973) for the issuance of effluent guidelines for all industrial point source categories. *See* COMP. GEN. REPORT, IMPLEMENTATION OF FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS IS SLOW (Dec. 1974); Natural Resources Defense Council, Inc. v. Train, 6 E.R.C. 1033 (D.D.C. Nov. 15 and 17, 1973), *stayed in part*, 7 E.R.C. 1123 (D.C. Cir. Oct. 3, 1974), *rev'd in part* 510 F.2d 692 (D.C. Cir. 1974).

nology currently available" (BPTCA) by 1977,[19] and Phase II for "best available technology economically achievable" (BATEA) by 1983.[20] New sources are subject to "national standards of performance" which "reflect the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants."[21] Additional effluent limitations govern toxic substances,[22] pretreatment of industrial wastes prior to discharge into municipal waste treatment systems,[23] and oil and hazardous substances.[24] Publicly owned treatment works are expected to achieve the equivalent of secondary treatment by 1977.[25] States may promulgate their own effluent limitations, but they must be at least as stringent as those applied pursuant to the Act.[26]

Section 101 of the Act, the "Declaration of Goals and Policy" section, attests to Congress' rejection of the "desired use" concept:

> (a) The objective of this Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—
>
> (1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;
>
> (2) it is the national goal that wherever attainable, an interim goal of water quality

19. Pub. L. No. 92-500, § 301(b)(1)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(1)(A) (Supp. III, 1973)).
20. Pub. L. No. 92-500, § 301(b)(2)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(2)(A) (Supp. III, 1973)).
21. Pub. L. No. 92-500, § 306(a)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1316(a)(1) (Supp. III, 1973)).
22. Pub. L. No. 92-500, § 307(a), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1317(a) (Supp. III, 1973)).
23. Pub. L. No. 92-500, § 307(b), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1317(b) (Supp. III, 1973)).
24. Pub. L. No. 92-500, § 311, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1321 (Supp. III, 1973)).
25. Pub. L. No. 92-500, § 301(b)(1)(B), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(1)(B) (Supp. III, 1973)).
26. Pub. L. No. 92-500, § 510, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1361 (Supp. III, 1973)).

> which provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water be achieved by July 1, 1983;
>
> (3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited.[27]

No longer is the discharge into waterways viewed as a legal right which is exercisable within certain limits, but it has become an infringement on the right to clean waters—an aberration which is being tolerated while mitigative technology or nonpolluting alternative processes and disposal systems are developed in response to the 1977 and 1983 phased reductions in effluent limitations.[28]

The Act encompasses a threefold strategy for achieving the requirements of Section 301 and the goals of Section 101: 1) the construction grants program; 2) comprehensive waste treatment management planning; and 3) the National Pollutant Discharge Elimination System (NPDES). The construction grants program and the planning provisions of the Act are both vital and controversial, but are only tangentially related to the "better than best" problem which is the focus of this article. It is, however, necessary for the reader to possess at least a rudimentary understanding of the NPDES program.

In accordance with the philosophical orientation of the Act, "the discharge of any pollutant by any person shall be unlawful" except pursuant to the provisions of the Act.[29] "Discharge of a pollutant" is defined as "(A) any addition

27. Pub. L. No. 92-500, § 101, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1251 (Supp. III, 1973)).

28. LEGISLATIVE HISTORY, at 1460. The uniform effluent limitation strategy and the zero discharge goal are not without their critics. *See* ACKERMAN, ACKERMAN, & HENDERSON, THE UNCERTAIN SEARCH FOR ENVIRONMENTAL QUALITY (1974). Moreover, it it anticipated that effluent limitations will generate a great deal of litigation, and literally hundreds of suits have already been brought seeking to have specific guidelines and limitations struck down. *See, e.g.*, E.I. DuPont de Nemours & Co. v. Train, 383 F. Supp. 1244 (W.D.Va. 1974) (upholding EPA's subcategorization strategy); CPC International, Inc. v. Train, 7 E.R.C. 1887 (8th Cir. May 5, 1975) (striking down new source guidelines and pretreatment standards for corn wet milling industry).

29. Pub. L. No. 92-500, § 301(a), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(a) (Supp. III, 1973)).

of any pollutant to navigable waters[30] from any point source,[31] (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."[32] Subsequent to December 31, 1974, discharges are unlawful unless in conformance with an NPDES permit.[33] Such a permit contains the appropriate effluent limitations, compliance schedules for incremental steps, and self-monitoring and reporting requirements.[34] Permits may be issued for a maximum of five years,[35] but the "first round" of permits is generally limited to three years.[36] The Act provides for the delegation of permit-issuing authority to the states, with EPA retaining the right to veto individual state permits.[37] Permits for ocean discharges, disposal of sewage sludge, and dredge spoil dis-

30. "Navigable waters" is defined very broadly in the Act as "waters of the United States, including the territorial seas." Pub. L. No. 92-500, § 502(7), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1362(7) (Supp. III, 1973)). This is a great improvement over prior law which relied on traditional definitions of navigability in some instances and "interstate waters" in others. Thus far, courts have interpreted "waters of the United States" quite liberally. *See* United States v. Ashland Oil & Transp. Co., 504 F.2d 1317 (6th Cir. 1974) (nonnavigable tributary of navigable stream); United States v. Holland, 373 F. Supp. 665 (M.D.Fla. 1974) (nonnavigable mosquito canals and wetlands); Leslie Salt Co. v. Froehlke, 7 E.R.C. 1311 (N.D.Cal. Dec. 9, 1974) (tidelands above mean high water mark held within the jurisdiction of the Corps of Engineers pursuant to Section 404 of the Act requiring a Corps permit for the discharge of dredged or fill material into navigable waters); Weiszmann v. Corps of Eng'rs, 7 E.R.C. 1523 (S.D.Fla. Feb. 12, 1975) (manmade canals connected to tidal waters through aquifer); Natural Resources Defense Council, Inc. v. Callaway, 392 F. Supp. 685 (D.D.C. 1975) (Corps ordered to expand its definition of "navigable waters" included in regulations promulgated pursuant to Section 404 of the Act); PFZ Properties, Inc. v. Train, 393 F. Supp. 1370 (D.D.C. 1975) (nontidal mangrove swamps); United States v. Smith, 7 E.R.C. 1937 (E.D.Va. April 21, 1975) (wetlands above mean high water mark).
31. Pub. L. No. 92-500, § 502(12), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1362(12) (Supp. III, 1973)). "Point source" is defined in Pub. L. No. 92-500, § 502(14), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1362(14) (Supp. III, 1973)).
32. Pub. L. No. 92-500, § 502(12), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1362(12) (Supp. III, 1973)).
33. Pub. L. No. 92-500, § 402(k), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1342(k) (Supp. III, 1973)). Partly because of the delay in issuing effluent guidelines (*see* note 18, *supra*), EPA did not issue permits to all applicants by December 31, 1974. But EPA claims that permits for all "major dischargers" were issued by then, and that all remaining permits will be issued by the end of 1975. 5 BNA ENVIRONMENT REP. CURRENT DEV. 1268.
34. Pub. L. No. 92-500, §§ 304, 402, 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1314, 1342 (Supp. III, 1973)); 40 C.F.R. pt. 125 (1974).
35. Pub. L. No. 92-500, § 402(b)(1)(B), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1342(b)(1)(B) (Supp. III, 1973)).
36. Three years is a convenient time limit for compliance schedules because of the 1977 BPTCA requirement.
37. Pub. L. No. 92-500, §§ 402(b)-(f), 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1342(b)-(f) (Supp. III, 1973)); 40 C.F.R. pt. 124 (1974). As of June 1, 1975, twenty-two states had instituted their own approved permit programs.

posal are covered by separate sections of the Act.[38] Discharges into publicly owned treatment works do not require a permit,[39] but pretreatment effluent limitations must nevertheless be met.[40]

"Whenever, on the basis of any information available to him, the Administrator finds that any person is in violation" of the Act or any condition of an NPDES permit issued by EPA or a state he "shall" take enforcement action.[41] Where the permit has been issued by EPA the Administrator may proceed by compliance order or civil action.[42] In case of a violation of a permit issued by a state under an approved permit program the Administrator may either proceed initially by compliance order or civil action, or he may notify the state and allow it thirty days to commence "appropriate enforcement action" before taking action himself.[43] Civil penalties of up to $10,000 per day of violation can be imposed on violators of the Act.[44] Willful or negligent violations can be criminal offenses punishable by "a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or by both."[45] Emergency enforcement powers are provided in cases of "imminent and substantial endangerment to the health of persons or to the welfare of persons . . . ."[46] Citizens may sue dischargers directly to enforce effluent limitations, compliance schedules, or reporting requirements contained in permits or federal or state compliance orders; or they may

38. Pub. L. No. 92-500, §§ 403, 405, 404, 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1343, 1345, 1344 (Supp. III, 1973)).
39. Pub. L. No. 92-500, §§ 301(a), 502, 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1311(a), 1362 (Supp. III, 1973)). *See also* 40 C.F.R. pt. 125 (1974).
40. Pub. L. No. 92-500, § 307(b), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1317(b) (Supp. III, 1973)).
41. Pub. L. No. 92-500, § 309(a)(1)(3), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1319(a)(1)(3) (Supp. III, 1973)). As to enforcement under the Act, *see* Ipsen & Raisch, *Enforcement Under the Federal Water Pollution Control Act Amendments of 1972*, 9 LAND & WATER L. REV. 369 (1974).
42. Pub. L. No. 92-500, § 309(a)(3), (b), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1319(a)(3), (b) (Supp. III, 1973)).
43. Pub. L. No. 92-500, § 309(a)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1319(a)(1) (Supp. III, 1973)).
44. Pub. L. No. 92-500, § 309(d), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1319(d) (Supp. III, 1973)).
45. Pub. L. No. 92-500, § 309(c)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1319(c)(1) (Supp. III, 1973)).
46. Pub. L. No. 92-500, § 504, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1364 (Supp. III, 1973)).

sue the Administrator for failure to perform a nondiscretionary duty.[47] Liability for discharges of oil or hazardous substances is covered by a separate section of the Act.[48]

The foregoing brief and necessarily superficial overview of the Act will hopefully provide an introduction to the remainder of the article, which will deal with the "better than best" problem and its alleviation.

I. BETTER THAN BEST

We have seen that Phase I effluent limitations based on BPTCA must be achieved by 1977, and Phase II limitations based on BATEA by 1983 in the process of attaining national goals of "swimmable"[49] water quality by 1983 and zero discharge by 1985. However, it should be clear that on heavily polluted waterways even the universal application of BATEA will not result in swimmability due to the large number of dischargers to such waterways and/or the prevalence of nonpoint source pollution.[50] Reconciling the national goal of swimmability with uniform national effluent limitations is the genesis of the "better than best" problem.

The Act attempts to deal with this problem in two distinct but interrelated ways: water quality *derived* effluent limitations; and water quality *related* effluent limitations.

Pursuant to Subsection 301(b)(1)(C) of the Act, not only must technology-based effluent limitations be achieved during Phase I but also "not later than July 1, 1977, any more stringent limitation, including those necessary to meet *water quality standards*, treatment standards, or schedules of compliance, established pursuant to any State law or regulations . . . or any other Federal law or regulation, *or re-*

47. Pub. L. No. 92-500, § 505(a)(2), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1365(a)(2) (Supp. III, 1973)).

48. Pub. L. No. 92-500, § 311, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1321 (Supp. III, 1973)).

49. Another way of describing the 1983 interim goal of "recreation in and on the water."

50. Pollution which is not discharged from "any discernible, confined and discrete conveyance"; *e.g.*, runoff from construction sites, agricultural runoff, and urban stormwater runoff. The Act does not require NPDES permits for nonpoint source discharges.

quired to implement any applicable water quality standard established pursuant to this Act."[51]

In light of the Introduction, the reader may be surprised to learn that the Act perpetuates the water quality standards approach to water pollution control. After all, did not the failure of this strategy lead directly to the passage of the Act with its emphasis on uniform national effluent limitations founded upon technological availability? Indeed, the original drafters of the Act, the staff of the Subcommittee on Air and Water Pollution of the Senate Public Works Committee working under the supervision of Senator Muskie, were committed to substituting the technology-based effluent limitation approach for the allegedly discredited water quality standards approach.[52] As a result, although the Senate bill[53] contained a provision similar to Section 301(b)(1)(C)[54] it was restricted to water quality standards "established pursuant to the Federal Water Pollution Control Act prior to the date of the enactment of this Act." The Senate bill did not provide for post-enactment revision and approval of water quality standards. The House, on the other hand, was not willing to forego water quality standards. Congressman Blatnik, Chairman of the House Public Works Committee and one of the sponsors of the House bill,[55] had been one of the architects of the Water Quality Act of 1965 which codified the water quality standards approach.[56] Also, there was feeling in the House that the novel effleunt limitation approach might prove unsuccessful, and therefore water quality standards should be retained "just in case."[57] Finally, members of the House envisioned "a dual approach; . . . whichever is the stronger shall apply."[58]

51. Pub. L. No. 92-500, § 301(b)(1)(C), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(1)(C) (Supp. III, 1973)) (emphasis added).
52. LEGISLATIVE HISTORY, at 1419-28, especially 1426.
53. S. 2770, 93rd Cong., 1st Sess. (1972).
54. S. 2270, 93rd Cong., 1st Sess. (1972); Pub. L. No. 92-500, § 301(b)(1)(C), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311 (b)(1)(C) (Supp. III, 1973)).
55. H.R. 11896, 93rd Cong., 1st Sess. (1972).
56. ZWICK & BENSTOCK, *supra* note 9, at 143.
57. LEGISLATIVE HISTORY, at 724.
58. *Id.* at 488.

As a result, the House bill contained a new section which is substantially similar to Section 303 of the Act.[59] Section 303 provides for the completion of standard setting for interstate waters,[60] extends water quality standards to intrastate waters,[61] establishes procedures for the periodic review and revision of standards,[62] and requires a continuing water quality planning process of each state.[63] Water quality standards developed pursuant to Section 303 "shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this Act. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial and other purposes, and also taking into consideration their use and value for navigation."[64] One of the most perplexing aspects of the Act is the relationship of this standard—which appears, at least in part, to reinstate the "desired use" concept—to the swimmability goal of Section 101 and the uniform effluent limitations of Section 301. Whether justifiably or not, EPA, in implementing the water quality standards program, has interpreted this language as requiring that water quality standards be at least stringent enough to provide "for recreational uses *in and/or on* the water and for the preservation and propagation of desirable species of aquatic biota . . . ."[65] Recreational uses "on the water" require a less stringent water quality and constitute a lower use classification (secondary contact recreation) than the national goal of "recreational activities *in and on* the water."[66] In short, despite EPA's strict interpretation of

59. H.R. 11896, 93rd Cong., 1st Sess. (1972); Pub. L. No. 92-500, § 303, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313 (Supp. III, 1973)).
60. Pub. L. No. 92-500, § 303(a)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(a)(1) (Supp. III, 1973)).
61. Pub. L. No. 92-500, §§ 303(a)(2), (3), 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1313 (a)(2), (3) (Supp. III, 1973)).
62. Pub. L. No. 92-500, § 303(c), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(c) (Supp. III, 1973)).
63. Pub. L. No. 92-500, § 303(e), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(e) (Supp. III, 1973)).
64. Pub. L. No. 92-500, § 303(c)(2), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(c)(2) (Supp. III, 1973)).
65. EPA, GUIDELINES FOR DEVELOPING OR REVISING WATER QUALITY STANDARDS UNDER THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, 4 (1973).
66. Pub. L. No. 92-500, § 101(a)(2), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1251(a)(2) (Supp. III, 1973)).

the 303 standards they are inconsistent with the swimmability goal. But perhaps the two sets of criteria can be reconciled in the context of enforcement chronology.[67]

Section 303 also establishes a procedure for the attainment of water quality standards:

> Each state shall identify those waters within its boundaries for which the effluent limitations required by section 301(b)(1)(A) . . . are not stringent enough to implement any water quality standards applicable to such waters. The state shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.[68]
>
> Each state shall establish for the waters [so] identified . . . , the total maximum daily load . . . . 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.[69]

Maximum daily loads must be submitted to the Administrator, who is authorized to set alternative loadings if he finds a state's to be inadequate. Moreover, maximum loadings are to be converted into effluent limitations (*i.e.*, allocated among dischargers to a particular waterway) by means of the state's continuing planning process, which must include "effluent limitations and schedules of compliance at least as stringent . . . as any requirements contained in any applicable water quality standard in effect under authority of this section."[70] Finally, as we have seen, any such more stringent effluent limitations must be achieved by July 1, 1977.

It is crucial to recognize that economic, social, and technological factors are irrelevant to the 303 process. Water

67. *See* text *infra* pp. 16-17.
68. Pub. L. No. 92-500, § 303(d)(1)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(d)(1)(A) (Supp. III, 1973)).
69. Pub. L. No. 92-500, § 303(d)(1)(C), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(d)(1)(C) (Supp. III, 1973)).
70. Pub. L. No. 92-500, § 303(e)(3)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(e)(3)(A) (Supp. III, 1973)).

quality standards assuring at least secondary contact recreation must, during Phase I, be translated directly into effluent limitations and implemented by way of the NPDES program.[71] For this reason, such effluent limitations will be referred to as "water quality derived effluent limitations." It should be clear at this point that something more than BATEA might well be required in order to implement water quality derived effluent limitations where severely polluted waterways are concerned.

The "better than best" situation is also addressed by Section 302 of the Act, entitled "Water Quality Related Effluent Limitations":

> (a) Whenever, in the judgment of the Administrator, discharges of pollutants from a point source or group of point sources, with the application of effluent limitations required under section 301(b)(2) of this Act, would interfere with the attainment or maintenance of that water quality in a specific portion of the navigable waters which shall assure protection of public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water, effluent limitations (including alternative control strategies) for such point source or sources shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality.
>
> (b)(1) Prior to establishment of any effluent limitation pursuant to subsection (a) of this section, the Administrator shall issue notice of intent to establish such limitation and within ninety days of such notice hold a public hearing to determine the relationship of the economic and social costs of achieving any such limitation or limitations, including any economic or social dislocation in the affected community or communities, to the social and economic benefits to be obtained (including

71. An applicant for an NPDES permit must furnish EPA with a certification from the state where the discharge originates that the discharge complies with Section 301. The permit must be conditioned so as to insure compliance with applicable water quality requirements, and the permit cannot be issued unless such compliance can be insured. Pub. L. No. 92-500, §§ 401(a)(1), (2), 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1341(a)(1), (2) (Supp. III, 1973)).

> the attainment of the objective of this Act) and to determine whether or not such effluent limitations can be implemented with available technology or other alternative control strategies.
>
> (2) If a person affected by such limitation demonstrates at such hearing that (whether or not such technology or other alternative control strategies are available) there is no reasonable relationship between the economic and social costs and the benefits to be obtained (including attainment of the objective of this Act), such limitation shall not become effective and the Administrator shall adjust such limitation as it applies to such person.[72]

The imposition of water quality related effluent limitations must be preceded by a delicate balancing of economic, social, and technological considerations.[73]

Water quality related effluent limitations differ from water quality derived effluent limitations in a number of significant ways. First, water quality related effluent limitations do not involve water quality standards as such. Indeed, the Senate drafters of Section 302 intended it to replace water quality standards in that "any balancing of costs and benefits should take into account the nature of the receiving waters and the feasibility of their use for recreational purposes, and the recreational and aesthetic values of maintaining a balanced population of shellfish, fish and wildlife in the particular waterway."[74] Water quality standards are to be utilized only insofar as they provide data for setting water quality related effluent limitations.[75]

Secondly, the development of water quality related effluent limitations entails a comprehensive and individualized analysis of economic, social, and technological costs and benefits.[76] The drafters of Section 302 realized that in extreme cases requiring better than best available technology

72. Pub. L. No. 92-500, §§ 302(a), (b)(1), (b)(2), 86 Stat. 816 (1972) (codified at 33 U.S.C. §§ 1312(a), (b)(1), (b)(2) (Supp. III, 1973)).
73. The relationship between (b)(1) and (b)(2) of Section 302 is not entirely clear, especially as regards whether technological availability can be a factor in making a determination under (b)(2). Unavailability of technology may, of course, give rise to economic and social costs.
74. LEGISLATIVE HISTORY, at 1465-66.
75. *Id.* at 1464.
76. The geographical scope of Section 302(b)(1) is also unclear.

would result in curtailed production and even plant closures[77] —measures which should not be taken precipitously or cavalierly. In contrast, the setting of water quality derived effluent limitations is a virtually automatic process of extrapolation from water quality models and wasteload allocations.

Thirdly, Sections 302 and 303 encompass different standards. Water quality derived effluent limitations are a function of wasteload allocations drawn from water quality standards which, at least as interpreted by EPA, reflect secondary contact uses. Water quality related effluent limitations, on the other hand, are directed toward "recreational activities in and on the water," which is the 1983 interim goal.

Fourthly, water quality derived effluent limitations are primarily a Phase I phenomenon. Water quality standards are more lenient than the 1983 goal, and water quality derived effluent limitations must be achieved by 1977. Section 303 presupposes that water quality standards will continue after the termination of Phase I;[78] and presumably these standards will be upgraded to the national goal during Phase II. As for water quality related effluent limitations, they are oriented toward the 1983 goal and are intended to be implemented during Phase II.

Finally, water quality related effluent limitations and water quality derived effluent limitations are ordinarily established by different levels of government. The former can only be set by the Administrator,[79] while the latter are generally developed by the states.[80] And, although the Act is indefinite on this point, it appears as though water quality derived effluent limitations will be tested in state courts[81]

77. LEGISLATIVE HISTORY, at 1464-65.

78. Water quality standards must be examined for possible revision "at least once each three year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972." Pub. L. No. 92-500, § 303(c)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(c)(1) (Supp. III, 1973)).

79. Under Senate Bill 2770 (93rd Cong., 1st Sess. (1972)) both the states and the Administrator could initiate a 302 proceeding, but all such authority granted to the states was deleted by the Conference Committee. LEGISLATIVE HISTORY, at 305.

80. Unless the states refuse to act or act in an unsatisfactory manner.

81. This, at least, is the informal position of EPA.

whereas suits involving water quality related effluent limitations will be heard in federal courts.[82]

That Sections 302 and 303 of the Act contain different processes serving different purposes was recognized by Congress in Subsection 302(c): "The establishment of effluent limitations under this section shall not operate to delay the application of any effluent limitation established under section 301 of this Act." And, as we have seen, Subsection 301 (b)(1)(C) incorporates water quality derived effluent limitations.

As yet, of course, we have had no experience with water quality related effluent limitations, but Section 303 is already proving to be troublesome. Under EPA regulations[83] states must delineate waterways as either "effluent limited" (where the water quality standard is now being met or there is reasonable assurance that it will be met by the application of federal effluent guidelines based on BPTCA) or "water quality limited" (where the condition of the water precludes attainment of the water quality standard, even if all point sources provide levels of treatment based on BPTCA). With regard to water quality limited stretches, states must develop water quality models, make wasteload allocations, and establish water quality derived effluent limitations as part of the continuing planning process.[84] Any such more stringent effluent limitations are to be enforced through the NPDES permit program either directly in the case of a state which has an approved permit program or through the state certification process[85] where it does not. In New Jersey, the most heavily industrialized and densely populated state in the nation, it has been estimated that nearly eighty per cent of the state's waterways are water quality limited; and preliminary studies of these waterways indicate that a substantial part of their pollution load is "background pollution" (*i.e.*, untraced—and perhaps un-

82. Pub. L. No. 92-500, § 509(b)(1), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1369(b)(1) (Supp. III, 1973)).

83. 40 C.F.R. pts. 130, 131 (1974).

84. Pub. L. No. 92-500, § 303(e)(3)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(e)(3)(A) (Supp. III, 1973)).

85. *See* note 71 *supra*.

traceable—pollution from unknown point sources and non-point sources such as runoff from construction sites, agricultural runoff, and urban stormwater runoff). Consequently, if Section 303 is applied and enforced as written the result will be plant closures on a massive scale in a state which is now suffering under an unemployment rate of over twelve per cent. Furthermore, if plants in areas such as New Jersey are required to install better than best available technology the goal of national uniformity will be abandoned and forum shopping by industry will again become prevalent.[86]

The magnitude of the "better than best" problem is manifested by the variety of expedients which have been proposed to resolve it. At first, EPA took the position that an NPDES permit based on water quality derived effluent limitations could not require a discharger to go above BATEA effluent limitations unless the cost-benefit analysis of Section 302 had been completed. In other words, EPA's initial view was that Sections 302 and 303 constituted a single process. However, EPA's Office of General Counsel "has recently re-examined this question. It has concluded that the requirement of meeting water quality standards exists independently of Section 302, and that accordingly effluent limitations designed to meet water quality standards are *not* subject to the cost-benefit analysis of Section 302."[87]

Another possible answer is the exemption procedure contained in EPA's *Guidelines for Developing or Revising Water Quality Standards* (1973). Three-year exemptions for particular waterways from "secondary contact" water quality standards are available in cases of "naturally occurring poor quality, man-made pollution or . . . technological limitations prohibiting improvement of water quality to the degree necessary."[88] However, it is submitted that this procedure

86. This would have disastrous consequences for the planning mechanisms of the Act, especially areawide waste treatment management planning under Section 208. Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1288 (Supp. III, 1973)).
87. *See* Memorandum from Russell E. Train to Regional Administrators, Dec. 26, 1974, and attached letter.
88. EPA, GUIDELINES FOR DEVELOPING OR REVISING WATER QUALITY STANDARDS UNDER THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, 4 (1973).

is gratuitous and without basis in the Act in general or Section 303 in particular. Moreover, such exemptions would appear to contravene both the "enhance the quality of water and serve the purposes of the Act" standard of Section 303 and the Act's explicit objective "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[89] For these reasons in addition to the dubious legal status and internal inconsistency of the Guidelines,[90] it is probable that such exemptions would not survive court challenges.

EPA has also considered the application of special effluent limitations to severely polluted stretches such as the Mahoning Valley in Ohio,[91] a wholesale revision of water quality standards to reflect cost constraints,[92] and the adoption of a dual set of water quality standards for each waterway—one enforceable set reflecting cost constraints and a second unenforceable set describing "desired but unattainable quality."[93] Without going into detail, it seems clear that each of these alternatives is of doubtful legality, impractical, and inconsistent with the goals of the Act.

It is of the greatest importance that the "better than best" problem be resolved expeditiously. The 1977 deadline for the achievement of water quality derived effluent limitations cannot be met in many industrial areas of the United States. In New Jersey, for example, the process of water quality modeling for water quality limited stretches is not expected to be completed for some time. It may be years before wasteload allocations and effluent limitations are developed for all such stretches in the state. Moreover, the formulaic imposition of water quality derived effluent limitations would exacerbate the state's already

89. Pub. L. No. 92-500, § 101, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1251 (Supp. III, 1973)).

90. These "internal guidelines" have not been promulgated as regulations. Moreover, the above quoted standard for exemptions granted under the guidelines is not fully congruent with EPA's letter of instructions with regard to implementing them (Memorandum from Robert W. Fri to Regional Administrators, Nov. 8, 1972), which speaks of "defensible socio-economic analyses."

91. 5 BNA ENVIRONMENT REP. CURRENT DEV. 1997, 1985.

92. 6 BNA ENVIRONMENT REP. CURRENT DEV. 2012.

93. *Id.* quoting an EPA draft issue paper.

precarious economic condition. Such an unacceptable result might be used to discredit and eviscerate the Act itself.

This is a critical period for the Act. Pursuant to Section 315 of the Act the National Commission on Water Quality[94] will shortly report to Congress on "all of the technological aspects of achieving, and all aspects of the total economic, social, and environmental effects of achieving or not achieving, the effluent limitations and goals set forth for 1983 . . . ."[95] It is expected that Congress will make "mid-course corrections"[96] in the Act on the basis of this report. There is a real danger that the entire Act may be jeopardized by the infeasible and unrealistic requirements of Section 303.

What then can be done? Unfortunately, the two safety valves provided by the Act refer only to Phase II. Subsection 101(a)(2) states the national goal that "*wherever attainable*, an interim goal of water quality which provides for . . . recreation in and on the water be achieved by July 1, 1983."[97] Subsection 301(c) makes available variances from BATEA "with respect to any point source for which a permit application is filed after July 1, 1977, upon a showing by the owner or operator of such point source satisfactory to the Administrator that such modified requirements (1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants." Neither of these subsections can be taken to affect the mandated achievement of water quality derived effluent limitations by 1977.

It is the recommendation of this author that the Act be amended to require that a Section 302 type cost-benefit analysis be undertaken whenever, pursuant to Section 303, better than BATEA would be necessary to implement water

94. This is the National Study Commission referred to in Section 315. Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1325 (Supp. III, 1973)). The NCWQ was to report to Congress by October 18, 1975, but it is not anticipated that the report will be completed until early 1976. 6 BNA ENVIRONMENT REP. CURRENT DEV. 252.
95. Pub. L. No. 92-500, § 315(a), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1325(a) (Supp. III, 1973)).
96. LEGISLATIVE HISTORY, at 175.
97. Pub. L. No. 92-500, § 101(a)(2), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1251(a) (Supp. III, 1973)) (emphasis added).

quality derived effluent limitations. Furthermore, the Act should be amended to allow for selective three-year postponements of the 1977 deadline for achieving such effluent limitations in cases where density of population and industrialization or present water conditions preclude attainment. Since most of the new hearings will presumably relate to these same areas, postponements will also permit the hearing process to run its course before expiration of the attainment period.

Conclusions and Recommendations

Two of the main currents of the Act—uniform national effluent limitations based on achievable technology and enhanced water quality culminating in swimmability by 1983—are in conflict. In order to promote progress toward the 1983 goal, the Act requires that water quality derived effluent limitations be attained by 1977—the end of Phase I. This means that on water quality limited stretches industry may well be compelled to install something more than "best available technology economically achievable" so as to meet water quality standards reflecting secondary contact uses. Moreover, water quality derived effluent limitations must be achieved by 1977 regardless of economic and social costs.

The effectuation of such a policy could entail a number of undesirable results: 1) plant closures or production cutbacks in heavily industrialized areas; 2) the relocation of industry from water quality limited areas to effluent limited areas and the consequent degradation of presently high water quality in the latter; 3) the precipitous use of untested technology which may have adverse effects on the environment; and 4) a reaction against the laudable purposes of the Act and an obstruction of the water pollution control effort.

These consequences could be forestalled by amending the Act to correct a congressional oversight and reinstate the original intention of the Senate drafters as embodied in Section 302 of the Act—that better than BATEA should not be required unless it is justified after a cost-benefit analysis of economic, social (including environmental), and technological costs and benefits. Specifically, the Act should be amend-

ed to provide that a Section 302 type cost-benefit analysis be undertaken whenever, pursuant to Section 303, better than BATEA would be necessary to achieve water quality derived effluent limitations.

II. THERMAL POLLUTION

The "better than best" problem occurs in a somewhat different context where discharges of heat are concerned. Under the Act heat discharged into water is a pollutant.[98] And, just like other dischargers point dischargers of heat must achieve effluent limitations based on BPTCA or any more stringent limitations required by state laws or applicable water quality standards by 1977,[99] and effluent limitations based on BATEA by 1983.[100] However, once technology-based effluent limitations for heat have been set, heat is treated differently from other discharged substances. Subsection 316(a) of the Act states:

> With respect to any point source . . . , whenever the owner or operator . . . can demonstrate . . . that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure the projection [*sic*] and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made, the Administrator . . . may impose an effluent limitation . . . with respect to the thermal component of such discharge (taking into consideration the interaction of such thermal component with other pollutants), that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water.[101]

98. Pub. L. No. 92-500, § 502(6), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1362(a)(6) (Supp. III, 1973)).
99. Pub. L. No. 92-500, § 301(b)(1)(C), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(1)(C) (Supp. III, 1973)).
100. Pub. L. No. 92-500, § 301(b)(2)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(2)(A) (Supp. III, 1973)).
101. Pub. L. No. 92-500, § 316(a), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1326(a) (Supp. III, 1973)). The House's explicit reason for treating heat differently (S. 2770, 93rd Cong., 1st Sess. (1972)) did not contain a provision distinguishing between heat and other discharges) was that the effects of heat are somehow of a "temporary and localized nature" (LEGISLATIVE HISTORY, at 267) and thus "heat is less harmful than most pollutants" (*id.* at 273). This is certainly a debatable conclusion.

It is apparent that this subsection does not contain a cost-benefit analysis of economic, social, and environmental factors: only the "balanced indigenous population" test is at issue in a 316(a) hearing. Regrettably, the absence of such a process is impeding the effort to control thermal pollution.

EPA has issued effluent guidelines[102] for the largest source of heat discharges—steam electric power generating.[103] For new sources in this subcategory the guidelines (based on cooling tower technology) call for "no discharge of heat from the main condensers."[104] However, the guidelines specifically exempt most existing plants as either "old plants"[105] or "small plants."[106] Therefore, federal effluent guidelines do not cover most existing power plants or any sources of heat other than power plants. Where applicable federal effluent guidelines do not exist, EPA regional offices can either engage in the questionable practice of setting effluent limitations without effluent guidelines or else leave it to the states to set effluent limitations by deriving them from water quality standards. In general, the latter course has been followed with regard to thermal pollution.

For the purposes of the Act the term "water quality standards" includes thermal water quality standards.[107] Pursuant to Section 303 "each state shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under Section 301 are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife."[108] As with other pollutants, maximum daily thermal loads must be

102. Effluent guidelines for industrial subcategories are issued by EPA pursuant to Section 304, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1314 (Supp. III, 1973)), and the EPA Regional Offices or the states, as the case may be, develop effluent limitations for particular dischargers in the course of issuing NPDES permits.

103. 40 C.F.R. pt. 423 (1974).

104. 40 C.F.R. § 423.15(1) (1974), subject to certain exceptions.

105. 40 C.F.R. §§ 423.30-.34 (1974).

106. 40 C.F.R. §§ 423.20-.26 (1974).

107. Pub. L. No. 92-500, § 303(h), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(h) (Supp. III, 1973)).

108. Pub. L. No. 92-500, § 303(d)(1)(B), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(d)(1)(B) (Supp. III, 1973)).

developed[109] and thermal effluent limitations derived therefrom.[110] These thermal effluent limitations can then be tested in a 316(a) hearing. The thermal effluent limitation which emerges from a 316(a) proceeding would have to be achieved by 1977.[111]

The gap in federal regulation of heat discharges has placed the states in a difficult position. Where thermal water quality standards are being exceeded a state is expected to allocate the thermal load among the various dischargers of heat to the subject waterway. But, in contradistinction to other pollution control technology, heat reduction is presently an all-or-nothing affair.

At present, the only proven methods of reducing waste heat are cooling ponds and cooling towers, which transfer waste heat to the air rather than the cooling water source.[112] In general, cooling ponds are impracticable because of the large amount of land needed for storage and drainage. That leaves cooling towers as the only available demonstrated control technology. However, there are a number of environmental problems associated with cooling towers. Because a great deal of water is evaporated, cooling towers can diminish water supply in areas where water is scarce or during periods of drought. Secondly, 400 foot cooling towers are unsightly, especially in flat, open-space areas. Moreover, "evaporative cooling towers release damaging chemicals and large quantities of moisture to the atmosphere which can cause fog and icing on roads. Icing can also form on powerlines, thereby contributing to the unreliability of power supply. At fossil-fueled plants, smoke plumes can interact with water vapor from a cooling tower, thereby precipitating sulfuric

109. Pub. L. No. 92-500, § 303(d)(1)(D), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(d)(1)(D) (Supp III, 1973)).

110. Pub. L. No. 92-500, § 303(e)(3)(A), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1313(e)(3)(A) (Supp. III, 1973)).

111. Pub. L. No. 92-500, § 301(b)(1)(C), 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1311(b)(1)(C) (Supp. III, 1973)).

112. Thus, pursuant to 40 C.F.R. pt. 423 (1974), there is no effluent guideline for existing sources based on BPTCA, only one calling for "no discharge" based on BATEA (cooling towers or cooling ponds). The following discussion is based on FABRICANT & HALLMAN, TOWARD A RATIONAL POWER POLICY 99-103 (1971); CLARK & BROWNELL, ELECTRIC POWER PLANTS IN THE COASTAL ZONE: ENVIRONMENTAL ISSUES VIII-6 to -8 (1973).

acid solutions."[113] Where plants draw cooling water from salt water sources there is also the possibility of salt fallout.

Moreover, cooling towers are energy and capital intensive. The capital cost of a cooling tower averages from eight to thirteen million dollars for a 1000 megawatt nuclear plant,[114] and the minimum cost of a cooling tower is several millions of dollars. How then is a state to deal with an old and fully depreciated oil refinery, for example, which is admittedly violating water quality standards but would be forced to close down rather than install a cooling tower? And what of multiple dischargers of heat to a particular waterway? Should all plants be required to install cooling towers? Only the largest dischargers? Or only the most profitable operations? And how can questions like these, in addition to the environmental ramifications of cooling towers, be addressed in the context of Section 316(a) as it now stands?

Consequently, there is every reason for EPA or the affected state to obviate cooling towers by manipulating inscrutable concepts like "mixing zones" and "zones of passage"[115] or defining "the protection and propagation of a balanced, indigenous population . . ." so broadly as to allow for the exercise of virtually unlimited discretion.[116]

There is greater justification for reading Section 302 into 316(a) than there is for reading 302 into 303 because 302, like 316(a), operates independently of traditional water quality standards, and 302 contains language similar to that found in 316(a).[117] But Sections 302 and 316(a) serve anti-

113. FABRICANT & HALLMAN, *supra* note 112, at 100-01.

114. CLARK & BROWNELL, *supra*, note 112, at III-5.

115. *See* EPA GUIDELINES FOR DEVELOPING OR REVISING WATER QUALITY STANDARDS UNDER THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, 25-26 (1973). Zwick and Benstock's criticisms of mixing zones and fish corridors are as appropriate today as they were when WATER WASTELAND was published in 1971, at least with regard to thermal pollution. ZWICK & BENSTOCK, *supra* note 9, at 276-77.

116. It is suggested that 40 C.F.R. pt. 122 (1974), does just this.

117. Under Section 302, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1312 (Supp. III, 1973)), the Administrator can set stricter effluent limitations where technology-based effluent limitations would "interfere with the attainment or maintenance of that water quality in a specific portion of the navigable waters which shall assure the protection and propagation of a balanced population of shellfish, fish and wildlife . . . ." This is similar to the "balanced indigenous population" test of Section 316(a), Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1326(a) (Supp. III, 1973)).

thetical purposes. Section 302 is intended to establish stricter effluent limitations than would ordinarily be imposed, while 316(a) provides for variances from what the Act defines as excessively strict limitations.

Thus, the Act should be amended to include a 302 type cost-benefit analysis in the 316(a) process. And selective three-year extensions of the 1977 deadline should be provided for where 316(a) hearings are delaying the establishment of thermal effluent limitations so as to render timely compliance impossible.

Conclusions and Recommendations

The Act treats heat differently from other pollutants: variances from technology-based or water quality derived thermal effluent limitations are available if the "balanced, indigenous population" test is met. But Section 316(a) does not allow for a consideration of economic and social factors or environmental factors other than the condition of the receiving waterway. This omission is aggravating problems caused by the gaps in federal regulation of heat discharges, the "all or nothing" character of heat control technology, and the economic, social, and environmental disadvantages of cooling towers. Thus, the Act should be amended to include a 302 type cost-benefit analysis in the 316(a) process.