UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
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MEMORANDUM

SUBJECT: Use of Low Flow Augmentation By Point Sources To Meet Water Quality Standards

FROM: Assistant Administrator for Enforcement (EN-329)
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TO: Regional Administrators
State NPDES Directors

Introduction

Questions have been raised recently about the propriety of the use of low flow augmentation as an alternative to treatment by point sources to meet water quality standards. Some point source dischargers have proposed to augment stream flow either through impoundment and subsequent release or by adding water from another water body or groundwater.

Policy

While EPA policy does not categorically forbid the use of flow augmentation or dilution to meet water quality standards, EPA policy discourages the use of flow augmentation as an alternative to treatment for meeting water quality standards. Low flow augmentation cannot be

considered as a substitute for the use of adequate treatment to meet water quality standards; rather, it can only be considered as a supplement to adequate treatment. It is EPA policy that Best Available Technology ("BAT", see Section 301(b)(2)(A)) defines the minimum level of treatment which is "adequate" and which serves as the threshold for the consideration of low flow augmentation as a supplement to meet water quality standards. 1/ National BAT is defined for many facilities by EPA guidelines and limitations promulgated under the authority of sections 301 and 304 of the FWPCA. For those facilities not covered by such national guidelines, an individualized BAT should be developed by the permitting authority in accordance with section 402(a)(1) of the FWPCA.

We recognize, however, that in some limited circumstances it may not be feasible to require BAT as a prerequisite to the use of low flow augmentation. There may be circumstances where it is not practical or feasible to require such technology for individual facilities since BAT may represent more than the maximum use of technology within the economic capability of the owner or operator. It is therefore EPA policy that BAT serve as the presumptively applicable threshold for consideration of low flow augmentation, but that a discharger may present evidence that less stringent effluent limitations than those required by BAT are "adequate treatment" in regard to his facility. A discharger is required to bear the full burden of demonstrating that BAT should not be required for his facility.

If a discharger is relieved of the BAT requirement, he should still be required to install the closest approach to BAT which is possible considering the technological or economic limitations which have been demonstrated. In no instance may the treatment requirements be lowered below those required by BPT. All exemptions from the BAT threshold should be considered temporary and should be reviewed when the permit expires. 2/

1/ Although the discussion which follows specifically addresses point sources other than publicly owned treatment works, a similar policy restricting the use of flow augmentation is to be applied to publicly owned treatment works. See attached memorandum, Appendix A, dated January 16, 1973.

2/ BAT would presumably be required by §301(b)(2)(A) in a renewal permit unless a §301(c) waivers were applicable. In that case, the same data should be relevant to determining whether low flow augmentation should be permitted to achieve water quality standards.

Discussion

EPA's position is based upon both the general legislative intent expressed in the FWPCA and the specific language and legislative history of Section 102(b) of the Act. The ultimate goal of the FWPCA as expressed in Section 101 is the elimination of the discharge of all pollutants into navigable waters by 1985. The Act throughout places an emphasis on the control and reduction of the discharge of pollutants by point sources as interim goals. Technology-based effluent limitations are required by Section 301 of the Act for all point sources. A standard of "best practicable technology" (BPT) is required by 1977, and a more stringent standard of "best available technology" (BAT) is required by 1983 for industrial point sources. For publicly owned treatment works, secondary treatment is required by 1977 and "best practicable waste treatment technology" (BPWTT) by 1983.

In addition, the FWPCA establishes as a national goal that "wherever attainable, an interim goal of water quality 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". (Section 101(a)(2)). Recognizing that this goal would not always be met through the treatment required by the technology-based effluent limitations, Congress provided for a water quality standards program in Section 303 of the Act, and also provided that more stringent effluent limitations be imposed upon dischargers when necessary to meet water quality standards, (Section 301(b)(1)(C)) or when required for the more general maintenance and attainment of water quality (Section 302).

Sections 301(b)(1)(C) and 302 both emphasize that water quality goals are to be achieved by limitations on the amount of pollutants which are discharged into the nation's waters. While flow augmentation may result in the reduction of the concentration of pollutants in the receiving water, it does not reduce the actual quantity of pollutants which are discharged and which enter the watercourse. 3/ Thus flow augmentation provides no limitation on the discharge of pollutants as contemplated in the Act and is inconsistent with the statutory scheme of the Act. Judicial analysis of comparable provisions of The Clean Air Act, discussed below, strongly supports this interpretation.

Water quality standards consist of designated uses and water quality criteria necessary to support such uses. Water quality criteria

3/ In fact, the addition of water to the watercourse will increase the quantity of pollutants.

consist of both narrative and numerical criteria. For the most part, numerical criteria are expressed in terms of concentrations in the receiving water (i.e. "there shall be no more than X parts per million of nickel".) Since the standards are primarily expressed in terms of concentrations of pollutants in the receiving water, increasing the flow of stream to reduce the concentration of effluents in the stream appears to be a pragmatic alternative to treatment as a method for reducing the concentration of pollutants. The Act itself is silent on the question of whether this alternative is proper and legal as a method of meeting water quality standards based on concentrations.

The Act does however address the question of flow augmentation in a related context. Section 102(b)(1) provides that:

> (b)(1) In the survey or planning of any reservoir by the Corps of Engineers, Bureau of Reclamation, or other Federal agency, consideration shall be given to inclusion of storage for regulation of stream flow, except that any such storage and water releases shall not be provided as a substitute for adequate treatment or other methods of controlling waste at the source.

The type of flow augmentation suggested by Section 102(b) involves the impounding of water in a water body by a Federal agency and releasing it in the water body during periods of low flow. The type of flow augmentation considered in this memo consists of a private discharger either taking water from one body of water and adding it to the flow of another body of water during periods of low flow or impounding water for subsequent release during low flow periods.

We believe, however, that the principles of low flow augmentation are similar in both circumstances. The main principle is stated in 102(b): "[low flow augmentation]. . . shall not be provided as a substitute for adequate treatment or other methods of controlling waste at the source."

For purposes of Section 102(b) the Agency has traditionally defined "adequate treatment" as Best Available Technology and has further defined the circumstances under which low flow augmentation through impoundment may be considered as a method for achieving water quality standards. We attach a memorandum from former EPA Administrator William Ruckelshaus which addresses this issue.

The legislative history suggests that the minimal level of "adequate treatment" which must be instituted prior to the consideration of flow

augmentation to meet water quality standards is best available technology. In his testimony before the House Committee on Public Works on December 7, 1972, EPA Administrator Ruckelshaus responded to a question regarding "pollution dillution":

> . . . we don't believe that the solution to pollution is dilution. We don't believe that dilution should be a substitute for quality treatment facilities using whatever technology is available. The problem with the New River and the Kanawha River is that in certain periods of the year the flow is so low in that river that even putting the best available technology on the industries that are there is not going to provide adequate protection for that water quality.
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> . . . the best technology should be applied but that at that point if you can't preserve the water quality, it may be necessary to increase the flow. (Legislative History, p. 1228).

The legislative history of the FWPCA clearly discourages flow augmentation as a method for achieving water quality standards. Senator Muskie, in presenting the Conference Report on the Act to the Senate attached as Exhibit 1, the following:

POLLUTION DILUTION

> The Conference agreement specifically bans pollution dilution as an alternative to waste treatment. At the same time the agreement recognizes that stream flow augmentation may be useful as a means of reducing the environmental impacts of runoff fron non point sources. (Legislative History, p. 166.)

This language is also included in the Conference Report itself (Legislative History, p. 284).

This policy parallels our policy in regard to the use of "Tall Stacks" for diffusion under the Clean Air Act which has been upheld by the Courts. Like the FWPCA, the Clean Air Act establishes a scheme for controlling the effects of pollution in which emission limitation

is preferred over mere diffusion of pollutants. Section 110(a)(2)(B) of the Clean Air Act directs the Administrator to approve a State implementation plan for the control of pollution if:

> it includes emission limitations, schedules, and timetables for compliance with such limitations, and such other measures as may be necessary to insure attainment and maintenance of such primary and secondary standard, including but not limited to, land use and transportation controls.

This language has been interpreted by the Fifth Circuit Court of Appeals in NRDC v. EPA, 489, F. 2d 390 (1974), reversed in part on other grounds sub nom Train v. NRDC, 421 U.S. 60 (1975), as providing that dispersion enhancement techniques are an appropriate part of a State's pollution control strategy only:

> (1) if it is demonstrated that emission limitation regulations included in the plan are sufficient standing alone, without the dispersion strategy, to attain the standards; or (2) if it is demonstrated that emission limitation sufficient to meet the standard is unachievable or infeasible and that the State has adopted regulations which will attain the maximum degree of emission limitation achievable. NRDC v. EPA, at 410.

The Fifth Circuit decision has recently been followed by the Sixth Circuit in Big Rivers v. EPA, 523 F. 2d (1975), cert. denied 96 S. Ct. 1663 (1976), and by the Ninth Circuit in Kennecott Copper Corp v. EPA, 526 F. 2d 1149 (1975), cert. denied, 96 S. Ct. 1665 (1976).

The regulatory scheme which EPA has developed for implementing the provisions of Section 110(a)(2)(B) is parallel to the policy stated in this letter. In general, a source is required to apply the "best available control technology" (BACT) before diffusion can be considered as an acceptable method of achieving ambient air standards. If in an individual situation the application of BACT would be economically infeasible or would constitute poor engineering practice, a source may be granted the right to use dispersion techniques in combination with meeting the less stringent standard of "reasonably available control technology" (RACT) on a temporary basis if steps are taken toward the eventual application of BACT. It was this scheme -- the functional equivalent of treating BAT as the presumptively applicable threshold for consideration of flow augmentation and allowing for the possibility of individual exceptions -- which was upheld by the Ninth Circuit in Kennecott Copper, supra.

Finally, it should be noted in drawing this parallel between air and water pollution control strategies that there are even stronger policy reasons for limiting the use of flow agumentation than there are for limiting dispersion enhancement techniques for air, since flow augmentation may have serious, undesirable effects upon the dilution water source or upon the receiving water. The removal of water from a water body will obviously decrease the flow downstream from the diversion and accordingly increase the concentration of pollutants in that segment of the water body. This increase may effect existing or designated uses. The decrease in flow may itself impair existing or designated uses ranging from industrial or agricultural water supply to recreation. Increasing the flow in the receiving water may result in scouring or erosion. Water diversion may also have adverse effects upon the water table. More generally, such tampering with flow may have long-term adverse impacts upon the aquatic environment.

Flow augmentation in no way provides for the reduction of pollutants which is the basis of the water pollution control program envisioned by the FWPCA. Flow augmentation will reduce the concentration of pollutants in a river by increasing the river's flow with water from another source. It will not however reduce the mass of pollutants in the receiving water.

Thus, flow augmentation may only be considered as a method of achieving water quality standards when adequate treatment is not sufficient to achieve such standards. Even in such situations, flow augmentation is not necessarily acceptable. A case by case consideration must be given to its utilization, and the discharger who proposes to utilize flow augmentation must demonstrate the propriety of such flow augmentation. Such a demonstration must consider both the economic and environmental impacts of flow augmentation in both the receiving water and the dilution water source including its effect upon aquatic life. In addition, the demonstration must consider alternatives which could be utilized to meet water quality standards such as advanced waste treatment techniques, land disposal, land management practices, process and procedure innovations, and changes in operating methods. The burden rests upon the discharger to demonstrate that flow augmentation is the preferred economic and environmental method to achieve water quality standards.