

ulations allow EPA broad authority to regulate well injection practices.<sup>344</sup> Although many states have undertaken to regulate underground waste disposal, there is a wide variation in the extent and effectiveness of their efforts.<sup>345</sup> While the UIC regulations set minimum requirements for all the states to meet, the states may choose to exercise stricter control over the underground disposal of wastes in their states. Furthermore the consolidated permit application procedures will allow applicants to apply more easily for permits under the UIC program and the other included programs in jurisdictions where the EPA Administrator has primary responsibility. Hopefully, once states assume primary responsibility for their own programs they will also adopt the theory of consolidated permit applications.

In addition, signs of a wider recognition of the hazardous effects of deep well injection on groundwater are encouraging. The company that pioneered deep well injection as a waste disposal method has stopped drilling new wells.<sup>346</sup> A governor who once told environmentalists he wasn't interested in pollution declared a moratorium on new hazardous waste permits.<sup>347</sup>

The advancements made by the enactment of the SDWA, the promulgation of the UIC program regulations, and the efforts of individual states to regulate well injection must continue.

#### IV. RECENT DEVELOPMENTS IN SEWAGE

TREATMENT ..... SARAH SIEGEL

##### A. Introduction

Concern for the quality of our nation's waters led Congress to enact amendments to the Federal Water Pollution Control Act

---

344. See *SDWA Oversight*, *supra* note 249, at 30 (statement of Jacqueline M. Warren).

345. See notes 285-92 and accompanying text *supra*.

346. Dow Chemical pioneered the use of individual deep injection wells, but has now discontinued drilling new wells and is phasing out existing wells. See H.R. REP. No. 1185, 93d Cong., 2d Sess., *reprinted in* [1974] U.S. CODE CONG. & AD. NEWS 6481.

347. Louisiana Governor Edwin Edwards declared a moratorium on new hazardous waste permits five years after he told environmentalists he was not interested in their concerns. See Desmond, *Chemical Waste Haunts Louisiana Swamp*, Buffalo Courier-Express, *reprinted in RCRA Oversight*, *supra* note 291, at 24.

(FWPCA) in 1972.<sup>348</sup> Congress established as a goal the elimination of the discharge of pollutants into the nation's waterways by 1985.<sup>349</sup> In furtherance of that goal, Congress delegated broad powers to the Administrator of the Environmental Protection Agency (EPA) to establish minimum acceptable emission levels for various types of waste.<sup>350</sup> Compliance with those standards requires local governments to provide adequate treatment systems for wastewater from

---

348. 33 U.S.C. §§ 1251-1375 (1976 & Supp. III 1979). Although the official title of the 1972 provisions described the legislation as "amendments," in actuality they replace entirely the previous Federal Water Pollution Control Act. 33 U.S.C. § 1151-75 (1970).

Federally funded waste treatment programs are not new. The 1948 Federal Water Pollution Control Act, originally intended to be a temporary measure, allocated \$1 million per year over a five year period to state agencies for research regarding the control of industrial waste discharge. Water Pollution Control Act, ch. 758, 62 Stat. 1155 (1948). Water pollution control legislation enacted in 1956 provided funding for 40% of the cost of construction of "necessary treatment works to prevent the discharge of untreated or inadequately treated sewage or waste into any waters." S. REP. NO. 630, 93d Cong., 1st Sess. 2 (1973), *reprinted in* [1973] U.S. CODE CONG. & AD. NEWS 3362, 3363. In 1965, the Federal Water Pollution Control Act made funding in excess of \$100 million in construction grants available to states; the precise amount of each grant was contingent upon the recipient's establishment of enforceable water quality standards and compliance with local or regional comprehensive plans. *Id.* at 3-5. For an extensive discussion of the history of the Act see Shinn, *The Federal Grant Program to Aid Construction of Municipal Treatment Plants*, 48 TUL. L. REV. 85, 86-88 (1973).

349. 33 U.S.C. § 1251(a)(1) (1976 & Supp. III 1979). An interim goal of the Act was to achieve, where possible, "water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water" by July 1, 1983. *Id.* § 1251(a)(2).

By 1976, however, it was clear that the 1985 goal would not, in all likelihood, be achieved. See Final Recommendations to be sent to Congress by National Commission on Water Quality on Amending the Federal Water Pollution Control Act, 6 ENVIR. REP. (BNA) 1890, 1891 (1976). Nonetheless, the 1977 amendments retained the original goals. See 33 U.S.C. § 1251(a)(1), (2) (1976 & Supp. III 1979).

350. 33 U.S.C. §§ 1311-13, 1316-19 (1976 & Supp. II 1978). Section 1311 states that discharge of any pollutant by any person shall be illegal except where such discharge is in compliance with effluent discharge limitations established by the Administrator of the Environmental Protection Agency. Section 1312 authorizes the Administrator to set even more stringent standards for areas requiring such measures. In Section 1313, Congress empowered the Administrator to approve or reject state discharge standards and promulgate regulations for states not establishing such standards on their own initiative. Further, the Administrator may set limitations for specified new sources under Section 1316 and specifically for toxic materials pursuant to Section 1317. Congress required owners and operators to cooperate with the Administrator in monitoring discharge and made provision for periodic inspection in Section 1318. Section 1319 allows for enforcement through issuance of compliance orders, civil actions, and criminal penalties. A judicially recognized presumption exists in

homes and businesses. In essence, the amendments force municipalities having inadequate or outdated facilities to either remodel existing systems or undertake the construction of new ones.

The FWPCA amendments broadly define "waste treatment works" (WTWs) to include virtually any method or system for preventing, reducing, or disposing of municipal waste.<sup>351</sup> In the typical sewage system, "building sewers" of various lengths and sizes convey municipal sewage from homes, schools or businesses to "collector sewers", which in turn carry the sewage to larger "interceptor lines."<sup>352</sup> The wastewater travels through interceptor sewers to treatment plants where it is treated and then discharged into nearby lakes, rivers or oceans. Section 1291 of the Act directs the Administrator to authorize funding for construction of a sewage collection system which replaces or rehabilitates an existing WTW or which constitutes a community's initial system.<sup>353</sup>

By the early 1970's, sewer systems served approximately seventy

---

favor of the effluent limitations. See *E.I. DuPont de Nemours & Co. v. Train*, 541 F.2d 1018, 1026-27 (4th Cir. 1976), *aff'd* in part, 430 U.S. 112 (1976).

351. The 1972 Amendments do not define any specific type of sewerage system. Instead, the definition of "treatment work" includes "any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewerage . . . including . . . sewers, . . . collection systems . . . and other equipment" as well as "any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste." 33 U.S.C. 1292(2)(A), (B) (1976 & Supp. III 1979).

352. An interceptor sewer is "a sewer whose primary purpose is to transport wastewaters from collector sewers to a treatment facility." 40 C.F.R. § 35.905(2)(c) (1981).

353. 33 U.S.C. § 1291 (1976 & Supp. III 1979). This section reads as follows: No grant shall be made for a sewage collection system under this subchapter unless such grant (1) is for replacement or rehabilitation of an existing collection system and is necessary to the total integrity and performance of the waste treatment works serving such community, or (2) is for a new collection system in an existing community with sufficient existing or planned capacity adequately to treat such collected sewage . . . .

*Id.* EPA regulations elaborate on these restrictions:

Replacement or major rehabilitation of an existing sewer system may be approved only if cost-effective; the result must be a sewer system design capacity equivalent to that of the existing system plus a reasonable amount for future growth. For purposes of this section, a community would include any area with substantial human habitation on October 18, 1972, as determined by an evaluation of each tract (city blocks or parcels of 5 acres or less . . .) . No award may be made for a new sewer system in a community in existence on October 18, 1972, unless the Regional Administrator further determines that:

(a) The bulk (generally two-thirds) of the expected flow (flow from existing

percent of the total population of the United States.<sup>354</sup> Systems having waste treatment plants, however, served only one third of that group.<sup>355</sup> Further, only half of those dependent on sewers were served by facilities which met or exceeded EPA pollution discharge standards.<sup>356</sup> In response, Subchapter II of the amendments authorized massive federal funding for sewage system construction projects<sup>357</sup>—\$18 billion for the first three years alone.<sup>358</sup> By 1978, the EPA had issued several thousand grants for construction of municipal treatment facilities<sup>359</sup> and estimated that it would continue to

plus projected future habitations) from the collection system will be for waste waters originating from the community . . . in existence on October 18, 1972;

(b) The collection system is cost-effective;

(c) The population density of the area to be served has been considered in determining the cost-effectiveness of the proposed project.

40 C.F.R. § 35.925-13 (1981). For a discussion of cost effectiveness guidelines see text accompanying note 26-62 *supra*.

354. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE SECOND ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 145 (1971).

355. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE FIRST ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 35 (1970).

356. *Id.*

357. 33 U.S.C. 1281(g)(1) (1976 & Supp. III 1979). Under the relevant provisions of the statute, "The Administrator [of the Environmental Protection Agency] is authorized to make grants to any state, municipality or intermunicipal or interstate agency for the construction of publicly owned treatment works." The avowed purpose of the grants provision of Subchapter II is "to require and to assist the development and implementation of waste treatment management plans and practices . . ." See § 1281(a). See also S. REP. NO. 414, 92d Cong., 1st Sess. 5-6, 34-35, (1971), reprinted in [1972] U.S. CODE CONG. & AD. NEWS 3668, 3672-73, 3701 (Inadequate funding assistance for local waste treatment facilities' construction created a serious backlog. Subchapter II was designed to meet that need.)

358. 33 U.S.C. § 1281 (1976 & Supp. III 1979). In 1977, Congress reauthorized the construction grant program of the 1972 amendments. At that time, it allocated \$4.5 billion for fiscal year 1978 and \$5 billion for each fiscal year 1979-1982. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE NINTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 110 (1978).

359. According to a report issued by the Council on Environmental Quality, the Environmental Protection Agency (EPA) had issued approximately 4600 such grants by 1978. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE NINTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 144 (1978). The EPA itself, however, reported that 7600 projects were underway as of January 1, 1977. Note, *Sewers, Clean Water and Planned Growth: Restructuring the Federal Pollution Abatement Effort*, 86 YALE L.J. 733, 737 n.2 (1977) [hereinafter cited as *Sewers, Clean Water and Planned Growth*] (citing *Environmental Protection Agency Transition Papers to Incoming Carter Administration on Areas of Agency Jurisdiction*, 6 ENVIR. REP. (BNA) 1309 (1977)).

make awards at an average rate of about 2,000 per year.<sup>360</sup>

Applications for grants under Subchapter II must comport with a three step process: 1) identification of a proposed facilities plan,<sup>361</sup> 2) preparation of construction drawings,<sup>362</sup> and 3) actual construction of the project.<sup>363</sup> Generally, each step receives separate funding.<sup>364</sup> While the applicant is primarily responsible for the WTWs' design, three statutory provisions limit the applicants discretion. Sections 1292<sup>365</sup> and 1284<sup>366</sup> of the FWPCA require cost effectiveness analysis and reserve capacity restrictions, respectively. Section 316 of the Clean air Act<sup>367</sup> (CAA) ties funding of each phase of a waste treatment project to the recipient's successful completion of the preceding step.<sup>368</sup>

Facilities planning consists of plans and studies which demonstrate

360. *Id.*

361. *See* text accompanying note 369, *infra*.

362. In a request for funding of a step 2 project to prepare construction plans, the applicant must include the following: a facilities plan, information regarding proposed sites, proposed sub-contracts, required comments from relevant local, state and federal agencies, a value engineering commitment if anticipated construction costs exceed \$10 million, an intermunicipal agreement where appropriate, a construction work schedule, evidence of compliance with all other relevant sections of the FWPCA and any other federal law or regulation, and a plan for public participation. 40 C.F.R. § 35.920-3(b)(1)-(10) (1981).

363. Prior to receiving a grant for actual construction, the applicant must demonstrate satisfactory compliance with all requirements of the two preceding phases. It must also submit drawings and specifications suitable for solicitation of bids, and an operation and maintenance schedule. Further, it must demonstrate additional community involvement if the public participation required at earlier stages so warrants. 40 C.F.R. 35.920-3(c)(1)-(5) (1981). As in step 2, the recipient must meet all pertinent requirements of the National Environmental Policy Act (42 U.S.C. §§ 4321-69 (1976 & Supp. III 1979)) 40 C.F.R. 35.925-8(a) (1980).

364. 40 C.F.R. § 35.903(a) (1981). In some cases, however, the Regional Administrator may award a grant for a project involving a combination of steps 2 and 3. 40 C.F.R. §§ 35.903(b), 35.909 (1981). This is possible only in circumstances where the population of the community the facility is to serve is 25,000 or fewer and where total anticipated costs for steps 2 and 3 combined do not exceed \$3 million. 40 C.F.R. 35.909(a)-(c) (1981). Further, while step 2 and step 3 grants approved independently may be awarded for either an entire step or a segment thereof (40 C.F.R. §§ 35.903(b), 35.905 (1981)) in a joint award, segmenting is not permitted. 40 C.F.R. §§ 35.903(b), 35.909(b)(2) (1981).

365. 33 U.S.C. 1292(2)(B), (C) (1976).

366. 33 U.S.C. 1284(a)(5) (1976 & Supp. III 1979).

367. 42 U.S.C. 7616 (1976 & Supp. III 1979).

368. *See* notes 363-64 *supra*.

that the proposed treatment facility is necessary and that it is the most cost effective of all feasible alternatives.<sup>369</sup> The effectiveness analysis enables the agency to determine the most economical means of meeting water quality goals while considering social and environmental factors.<sup>370</sup> An analysis must include consideration of unquantifiable as well as monetary costs<sup>371</sup> because of WTW can have a dramatic impact on the location, pace and extent of growth in the community it serves.<sup>372</sup>

This article will examine the three above mentioned statutory limits on WTW construction, with particular emphasis on the cost effectiveness guidelines. It will then discuss judicial interpretation of those provisions and, finally, conclude by exploring their significance for the future.

### B. *Cost Effectiveness Guidelines—The Application Requirements*

All facilities planning for Subchapter II grants must comply with the cost effectiveness guidelines. The guidelines first require the applicant to identify all feasible alternative waste management systems<sup>373</sup> and then to systematically screen them to determine those capable of meeting local standards.<sup>374</sup> Next, the applicant must ana-

---

369. See 40 C.F.R. § 35.917-1 (1981).

370. Federal Water Pollution Control Act Cost Effectiveness Guidelines, 40 C.F.R. § 35, app. A (1981).

371. See text accompanying notes 380-81, *supra*. In effect, this provision represents an attempt to avoid a major problem of cost benefit analysis—assigning monetary values to factors that have no relationship to the marketplace. The fact that costs such as use and recovery of energy and scarce resources and recycling of nutrients must be included in both monetary cost analysis and the discussion of non-monetary factors highlights the difficulties inherent in cost effectiveness analysis. For a thorough discussion of the theoretical and practical aspects of cost benefit analysis see PESKIN & SESKIN, *COST-BENEFIT ANALYSIS AND WATER POLLUTION POLICY* (1975).

372. *Sewers, Clean Water and Planned Growth*, *supra* note 359, at 737. In the last ten years, the role of sewage treatment has become one of major importance. The dramatic rise in the sheer numbers of waste treatment works has only accelerated this trend. Indeed, they have replaced highways as the capital improvement most determinative of local development patterns. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, *THE FIFTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY* 37 (1974). See note 413 *infra*.

373. These alternatives should represent a wide variety of systems including those discharging into water, land application systems, on site systems and those that are decentralized. 40 C.F.R. §§ 35.900-970, app. A § 5a (1981).

374. *Id.* § 5b.

lyze and evaluate the alternatives in accordance with the guidelines.<sup>375</sup> The regulations specify that the effort and level of sophistication involved in the analysis should be commensurate with the project's size and importance.<sup>376</sup> They do not, however, suggest any criteria for determining the significance of a project.

Having selected various proposed WTW projects for analysis, the grant applicant calculates each proposal's total resource cost over a twenty year period. The EPA recognizes the limitations of both financial and natural resources and therefore requires determination of resource costs through evaluation of "opportunity costs"<sup>377</sup>—the cost of foregoing the benefits of other options inherent in the project ultimately approved.<sup>378</sup> Non-monetary factors include primary and secondary environmental effects, implementation capability, performance reliability, use and recovery of energy, and scarce resources.<sup>379</sup> Monetary values include all construction costs, startup costs, annual operating and maintenance expenses, ultimate salvage value of the facility itself and any land purchased for use in the treatment process.<sup>380</sup> The system which has the lowest present worth or annual value is the most cost efficient system—unless non-monetary costs are overriding.<sup>381</sup>

Finally, the guidelines require the applicant to undertake a cost-effectiveness analysis of the size and staging capacities of both treatment plants and interceptor sewers.<sup>382</sup> Factors which must be considered include population projections, estimates of wastewater flow, including industrial flows, and flow reduction and staging of both treatment plants and interceptors.<sup>383</sup> If, however, a state develops guidelines for cost-effective sizing and staging, and if they receive approval from the Regional Administrator, the state may substitute such guidelines for corresponding sections of the federal regula-

---

375. *Id.* § 5b, c. See notes 417-29 and accompanying text *infra*.

376. 40 C.F.R. app. A, § 5d (1980).

377. *Id.* § 6a.

378. P. SAMUELSON, *ECONOMICS*, 472-73 (9th ed. 1973).

379. Agency regulations require non-monetary effects to be presented descriptively. 40 C.F.R. § 35, app. A, § 6a (1981).

380. *Id.* § 6c.

381. *Id.* § 6a.

382. *Id.* § 8. See text accompanying notes 407-14 *infra*.

383. 40 C.F.R. § 35, app. A § 8 (1981).

tions.<sup>384</sup> State guidelines must be at least as stringent as their federal counterparts.<sup>385</sup> In addition, the state must have held at least one public hearing on the proposed state guidelines prior to submission of the guidelines for EPA approval.<sup>386</sup>

The first factor an applicant must analyze in determining cost-effective facility capacity is population projections for the community the WTW is to serve.<sup>387</sup> Estimates are based on the disaggregation of state population projections<sup>388</sup> developed by the Department of Commerce.<sup>389</sup> The agency adopted the disaggregation method of estimating population, despite widespread opposition,<sup>390</sup> in order to promote consistency between projections on the local level and state-wide and national estimates. According to the agency, such consistency discourages inordinantly high local projections and thereby helps prevent urban sprawl.<sup>391</sup>

Estimates of future wastewater flow, the second consideration in analyzing cost-effectiveness, are based on the "average daily base flow" (ADBF) from residential, institutional, commercial and industrial sources combined.<sup>392</sup> The regulations include an allowance in

---

384. *Id.* § 9.

385. *Id.* § 9a.

386. *Id.* § 9b.

387. *Id.* § 8a.

388. The guidelines require each state to break down its total population projection into three categories: 1) regional planning areas designated by section 208 of the FWPCA (which requires state governors to identify areas which have "substantial water pollution control problems," 33 U.S.C. 1288(a)(2) (1976 & Supp. III 1979); 2) other standard metropolitan statistical areas (SMSA's) note included in section 208 planning areas; 3) non-SMSA counties or districts. In disaggregating population totals, the state must consider projected economic activity identified in metropolitan and regional comprehensive development plans. 40 C.F.R. § 35, app. A § 8a(2) (1981).

389. If the state had independently prepared population projections prior to June 28, 1978, those estimates may be used providing, however, that state projections for the year 2000 do not exceed Commerce Department estimates for that date by more than five percent. If the difference exceeds that amount the state must justify the discrepancy based on factors not considered in federal estimates. Such factors might include military base openings of industrial development. *Id.* at § 8a(1).

390. When the EPA solicited comments prior to final approval of the regulations, a number of those responding, particularly agencies responsible for area-wide planning, opposed the disaggregation approach contending that population forecasting is a policy matter best implemented at the local level. 43 Fed. Reg. 44,033 (1978).

391. *Id.*

392. 40 C.F.R. app. A § 8b(2) (1981).

the ADBF for potential growth in industry.<sup>393</sup> Under the preferred method of estimating wastewater flow, the applicant uses the ADBF, as derived from various records, to determine existing per capita flows. Future flow can then be estimated by multiplying the per capita figure by the projected population.<sup>394</sup> Alternatively, where water-use records are nonexistent or inadequate, an applicant may calculate ADBF by multiplying the total present and future population by gallon per capita per day allowances provided by the EPA.<sup>395</sup> Those allowances do not increase over time despite some estimates that per capita wastewater usage has been steadily increasing over the last ten years.<sup>396</sup>

The third required element in cost-effectiveness analysis is wastewater flow reduction.<sup>397</sup> In addressing this element, regulations require the applicant to develop measures to reduce the flow.<sup>398</sup> The applicant must estimate the costs of implementing flow reduction, including regulatory costs.<sup>399</sup> In addition, he must project the decrease in energy usage resulting from decreased wastewater flow.<sup>400</sup> Finally, the applicant must determine the net cost saving from flow reduction over a twenty-year planning period.<sup>401</sup> According to the EPA, the reduced size of sewage facilities will account for the bulk of the cost saving attributable to flow reduction.<sup>402</sup>

The final element in the cost-effectiveness analysis is the division of

---

393. *Id.* § 8b(2)(b).

394. *Id.* § 8b(2)(a).

395. *Id.* § 8b(2)(b).

396. 43 Fed. Reg. 44,034 (1978). EPA contends, however, that the general nationwide trend is toward a decrease in per capita wastewater usage due to public education, increasing personal water conservation habits, and conservation requirements in local ordinances. 43 Fed. Reg. 44,034 (1978).

397. The applicant must include a discussion of flow reduction measure in all cost effectiveness analyses, unless either the existing ADBF from the area is less than 70 gallons per capita per day or the total population of the community does not exceed 10,000. 40 C.F.R. § 35, app. A § 8c (1981).

398. *Id.* § 8c(1). Other measures which must be evaluated include installation of water meters, use of retrofit toilet dams and low-flow showers in existing residences, and amendment of local building and plumbing codes to incorporate mandatory installation of water-saving devices in new homes, hotels, motels, and institutions. *Id.*

399. *Id.*

400. *Id.* § 8c(3).

401. *Id.* § 8c(2).

402. *Id.*

waste facility construction into stages.<sup>403</sup> Construction of treatment plants must be staged in order to reduce the high construction costs that accompany large, idle reserve capacities.<sup>404</sup> Interceptor pipe sizes, while generally based on a twenty year staging period, may be calculated on a staging period of as long as forty years.<sup>405</sup> In no case may plant capacity funded through the Subchapter II program exceed the capacity deemed necessary for flow during an initial staging period.<sup>406</sup> Calculation of capacity requirements for the initial staging period is perhaps the most important issue in determining the completed capacity.

The regulations specify two methods by which applicants can determine the initial staging period for treatment plants. Under the first, the potential recipient must analyze a minimum of three staging periods—10, 15 and 20 years—and then choose the least costly.<sup>407</sup> Alternatively, the applicant may compute the ratio of the expected wastewater flow at the end of the twenty year planning period to the flow at the time the facility becomes operational; the resulting ratio is then applied to an EPA table to determine the maximum initial stag-

---

403. *Id.* § 8e.

404. 43 Fed. Reg. 44,033, 44,034 (1978). Section 201 requires local governments to finance twenty-five percent of the total construction costs for WTWs as well as all continuing maintenance and operating expenses. *Cf.* 33 U.S.C. 12 (1976 & Supp. III 1979). ("The amount of any grant for treatment works . . . shall be 75 per centum of the cost of construction thereof.")

Even in light of the fact that the federal government absorbs three-fourths of the planning and construction costs, there is growing concern about the ability of municipalities to meet maintenance and operating costs. A 1978 EPA survey of 258 facility plans for communities of under 50,000 revealed that in 40% of those towns, total average costs of the planned systems would exceed \$100 per year for each homeowner. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE NINTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 144 (1978). In ten per cent of communities surveyed, costs averaged in excess of \$200 per year. *Id.* For residents in communities with fewer than 10,000 homeowners, projected annual costs were at least \$300 per year. *Id.* By contrast, former EPA Administrator Douglas Costle has suggested that the annual homeowner costs in small towns should be between \$66 and \$130. *Id.* at 146. In order to reduce the burden these added expenses ultimately imposed on the individual taxpayer, cities and counties generally encourage maximum allowable growth within their political boundaries. *Sewers, Clean Water and Planned Growth*, *supra* note 359, at 741 (citing EPA Region III, Staff Paper on Reserve Capacity (1975) (unpaginated).

405. 40 C.F.R. § 35, app. A § 8f(2) (1981). *See* note 413 and accompanying text *infra*.

406. 40 C.F.R. § 35, app. A § 8e(1) (1981).

407. *Id.* § 8e(1)(a).

ing period.<sup>408</sup> Under this latter approach, the greater the projected growth, the smaller the staging period, and hence the plant capacity. In all cases, the staging period must be longer than ten but not more than twenty years.<sup>409</sup> In order for the capacity of an interceptor to be based on a staging period greater than twenty years, the applicant must demonstrate that the larger pipe size would reduce primary and secondary environmental impacts and would be consistent with projected land use patterns.<sup>410</sup> Underlying all interceptor staging analysis guidelines is EPA's recognition that the location and length of interceptors will influence growth and therefore must be planned with care.<sup>411</sup>

---

408. *Id.* § 8e(1)(b).

409. *Id.* § 8e(1)(b)(2).

410. 40 C.F.R. § 35, app. A § 8f(2) (1981). Primary environmental impacts which the applicant must consider include destruction of the natural landscape, sedimentation, erosion, noise and short term disruption of daily activity.

*Id.* at § 8f(2)(a)(i)(ii). Secondary impacts to be analyzed are as follows: 1) pressure to amend local ordinances and comprehensive plans to allow growth at higher densities than were allowed previously; 2) incentive to accelerate growth rate in order to decrease the per household cost of construction (*see note 407 infra*); 3) effects of cultural changes on the natural environment. 40 C.F.R. § 35, app. A § 8f(2)(b)(i)-(iii) (1981).

When the initial draft of the 20 year staging period for interceptors was published, it met with considerable opposition. Several commentators suggested that such pipes should be sized for a 40 to 50 year period, arguing that they would be less expensive and, in many cases, produce fewer detrimental impacts to the environment. The Administrator disagreed noting that in EPA's experience, the cost of initially sizing a pipe for 20 years and later adding another 20-year pipe was equivalent to that of building a 40 year pipe. 43 Fed. Reg. 44,034 (1978).

411. 40 C.F.R. § 35, app. A § 8f (1981). the Agency's concerns are justified. Typically, in regional WTWs built prior to the enactment of the cost effectiveness analysis requirement, interceptors ran for long distances between well-developed areas. SCS ENGINEERS, WASTEWATER MANAGEMENT FOR NEW HOUSING DEVELOPMENT 18-19 (1977) (prepared for the Department of Housing and Urban Development, Office of Policy and Research). The authors of at least one study have asserted that the practice of routing interceptors through vacant land has had more effect on land use than any other decision involving WTW's. U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE FIFTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 37 (1974). These routing patterns significantly increase the number of buildable lots available in previously vacant or underdeveloped areas. *Id.* According to a 1974 study commissioned by the EPA, one half of the 52 WTW's surveyed serviced vacant land. *Sewers, Clean Water and Planned Growth, supra* note 359, at 744 n.50 (citing 1 URBAN SYSTEMS RESEARCH AND ENGINEERING, INC., INTERCEPTOR SEWERS AND SUBURBAN SPRAWL: THE IMPACT OF CONSTRUCTION GRANTS ON RESIDENTIAL LAND USE 150-153 (1974)). Such property is extremely attractive to developers who, absent public sewage facilities, must either pass the price of private systems on to the customer or absorb the costs themselves. *Sewers, Clean*

The EPA designed the cost-effectiveness guidelines to promote the best possible use of both monetary and non-monetary resources in achieving the goals of the FWPCA. Such careful allocation is not only laudable but also essential in a time when economic conditions necessitate significant cutbacks in awards for programs such as Subchapter II.<sup>412</sup> Funding decisions are, essentially, facility allocation decisions, based on factors affecting both existing development and future growth. Both funding and facility allocation decisions are governed by, and significantly influence, local and regional growth plans. In the short run, a community may experience a growth spurt upon completion of a construction project and in response to a significant rise in a system's capacity.<sup>413</sup> This is particularly true where temporary growth moratorium orders<sup>414</sup> are effective pending completion of facilities necessary to service additional development.<sup>415</sup>

---

*Water and Planned Growth*, *supra* note 359, at 744. Developers tend to move immediately to the end of a new line in order to take advantage of both the facility itself and the relatively inexpensive real estate prices on the urban fringe. SCS ENGINEERS, SEWER MORATORIA: CAUSES, EFFECTS, AND ALTERNATIVES, *supra* note 375, at 18. The result may be undesirable growth patterns, such as "leapfrogging." U.S. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY, THE FIFTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 37 (1974).

412. For example, in an effort to comply with the Carter Administration's request to reduce federal spending, EPA placed an \$800 million ceiling on funding for municipal wastewater treatment facilities for fiscal year 1980. It was simply not possible, therefore, for all Title II eligible projects to receive grants. A combination of a number of complex factors was involved in allocating available funding. For a full discussion see [1980] 11 ENVIRONMENTAL REPORTER (BNA) 90 (June 6, 1980), 450 (July 25, 1980).

413. *Sewers, Clean Water and Planned Growth*, *supra* note 359, at 742-43.

414. In 1972, the New York Court of Appeals upheld the constitutionality of a zoning ordinance which, in conjunction with a comprehensive plan, controlled development. The ordinance required that approval of building permits be tied to the proximity of the project to capital improvement facilities such as sewers. *Golden v. Planning Board of the Town of Ramapo*, 30 N.Y.2d 359, 285 N.E.2d 291, 334 N.Y.S. 2d 138 (App. Div. 1972), *appeal dismissed*, 409 U.S. 1003 (1972). Similarly, in 1976, the Ninth Circuit upheld the constitutionality of zoning ordinances linked to the availability of public facilities and the promotion of local comprehensive growth management plans. *Construction Industry Ass'n of Sonoma County v. City of Petaluma*, 522 F.2d 897 (9th Cir. 1975), *cert. denied*, 424 U.S. 934 (1976).

415. *Sewers, Clean Water, and Planned Growth*, *supra* note 359, at 742. The experience of two New Jersey towns provides an example of this situation. In 1965, the town of East Windsor, New Jersey undertook a major waste treatment project to substantially enlarge existing capacity. The neighboring community of West Windsor did not follow suit. While the number of residential building permits issued in West Windsor dropped, the number issued in East Windsor rose twelvefold in anticipation of project completion. *Id.*

On the other hand, local governments can permit growth to continue only so long as public facilities remain adequate to service continued development.<sup>416</sup> The essential provisions of EPA's cost effectiveness guidelines demonstrate the agency's concern for the impact of Subchapter II projects on the communities they are to serve.

### C. Cost Effectiveness Guidelines and the Courts

Judicial interpretation of the cost effectiveness guidelines has been minimal. In fact, the guidelines have been at issue in only one case, *Maryland ex rel Burch v. Costle*.<sup>417</sup> Plaintiffs, State of Maryland, Montgomery and Prince George's Counties and the Washington Suburban Sanitary Commission<sup>418</sup> (WSSC), sought judicial review of the Administrator's decision to halt processing of a WSSC application for a Subchapter II grant to fund construction of a proposed sewage treatment plant.<sup>419</sup> The proposed facility would be located twenty miles up the Potomac River from the District of Columbia, and would treat a maximum 60 million gallons per day.

The Administrator based his decision<sup>420</sup> on two grounds. First,

---

416. See *Robinson v. City of Boulder*, 190 Colo. 357, 547 P.2d 228 (1976) (municipalities have a duty to supply residents with access to basic public facilities). Continued growth has induced cities and towns to impose sewer moratoria, temporary bans on additional connections to sewer systems, with increasing frequency. Between 1970 and 1976, in 400 communities surveyed, an average of forty-five new moratoria were imposed annually. *Id.* at 12. A total of 312 went into effect in that time. Rivkin, *Sewer Moratoria As A Growth Control Technique in Management and Control of Growth: Issues, Techniques, Problems, Trends*, vol. II, 473 (1975). A 1976 survey conducted of moratorium areas, indicated that several factors induce such bans, including growth control policies and inadequacy of existing facilities. *Id.* at 9. Communities may choose not to expand or update insufficient facilities and thereby compel moratoria. *Id.* at 474-77, n.96. A moratorium acts as a long-term growth control device as it may take up to ten years to plan, finance and actually construct new facilities. *Id.* at 18 n.28.

417. *State of Maryland ex rel. Burch v. Costle*, 452 F. Supp. 1154 (D.D.C. 1978).

418. The Washington Suburban Sanitation Commission is a bi-state agency authorized by Maryland law with jurisdiction over the water and sewage facilities of Montgomery and Prince George's Counties. *Id.* at 1155 n.1.

419. *Id.* at 1155. The estimated total cost of the proposed facility exceeded \$400 million. *Id.*

420. The sequence of relevant events prior to the Administrator's decision is as follows. The WSSC submitted a formal application for federal funding for the project in March, 1976. EPA's Region III office subsequently indicated to the plaintiffs, in writing, that the Agency had "serious reservations" regarding the size and cost of the plant. In response, plaintiffs submitted an 84-page document in support of the project. *Id.* at 1156. At the request of the applicants the Administrator appointed an

EPA's analysis of population projections for the county in which the facility was to be built indicated a need for a maximum sewage treatment capacity of only 35 million gallons per day. In contrast, the WSSC estimated the required capacity to be 60 million gallons per day.<sup>421</sup> Second, the Administrator concluded that, because the WSSC's application lacked adequate analysis of less costly alternatives, it did not satisfy the Title II cost effectiveness analysis guidelines. EPA's own investigation revealed that two alternatives existed, each substantially less costly than that originally proposed.<sup>422</sup> Plaintiff claimed that at least one of the EPA's suggestions did not constitute a "feasible alternative" within the meaning of the guidelines because construction of that plant would engender political opposition.<sup>423</sup>

The complaint alleged that both the EPA's review of the grant application and suspension of the project constituted violations of the FWPCA.<sup>424</sup> The district court first found that under Section 1284(a)(5) of the FWPCA,<sup>425</sup> the Administrator must find that the size and capacity of a proposed treatment plant directly relate to the determined public need.<sup>426</sup> The court then affirmed the Administrator's determination that plaintiff's proposal did not satisfy the statutory guidelines.<sup>427</sup> In upholding the Administrator's determination that construction of a treatment plant in Prince George's County was

---

executive panel consisting of EPA's Region III Administrator, the National Program Manager for the Title II program, and an EPA official with expertise in economic and program analyses to review the proposal. The panel issued a report and distributed it to all concerned. Public hearings were held in August of 1976. *Id.*

421. *Id.* at 1156. The Administrator found that a 60 million gallon per day treatment plant was justified under these circumstances only if Montgomery County committed the plant to treatment of sewage from other areas in the Washington metropolitan area. He also found that no such agreements had been executed. *Id.*

422. *Id.* The two alternative sites would have been approximately \$44 million and \$145 million less expensive than that proposed by the plaintiffs. *Id.*

423. *Id.* at 1158.

424. *Id.* Plaintiffs also alleged that the Administrator's failure to complete an environmental impact statement on the grant application prior to making his decision constituted a violation of the National Environmental Policy Act (NEPA) 42 U.S.C. § 4332 (1976 & Supp. I 1977). The court found this complaint to be completely groundless. It found that section 511(c)(1) of the FWPCA 33 U.S.C. § 1371(c)(1) (1976 & Supp. 1977), which speaks to NEPA requirements, applies only to the *provision* of construction funds. 452 F. Supp. at 1159.

425. 33 U.S.C. 1284(a)(5) (1976 & Supp. I 1977).

426. 452 F. Supp. at 1158.

427. *Id.*

a "feasible alternative" despite widespread political opposition, the court ruled that political opposition constitutes a "non-monetary factor" that should be accounted for descriptively in a cost-effectiveness analysis.<sup>428</sup> While EPA regulations do not require that the most cost-effective alternative be selected, the court found the regulations to require that such alternatives be studied and compared.<sup>429</sup>

There are striking similarities between the *Maryland* Court's reading of the cost-effectiveness analysis and judicial interpretation of the environmental impact statement (EIS) requirement in NEPA.<sup>430</sup> Like the cost-effectiveness guidelines, a major component of an EIS is an in-depth discussion of alternatives to the proposed action.<sup>431</sup>

428. 452 F. Supp. 1154, 1158-59.

429. 33 U.S.C. § 1284(a)(5) (1976 & Supp. I 1977).

430. 42 U.S.C. § 4332(c) (1976 & Supp. III 1979). The statutory requirement is as follows:

The Congress authorizes and directs that to the fullest extent possible . . . all agencies of the federal government shall—

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and ir retrievable commitments of resources which would be involved in the proposed action should it be implemented.

431. 42 U.S.C. § 4332(c)(iii) (1976 & Supp. III 1979). The corresponding regulations state that "a review and analysis of alternatives is the heart of the EIS." The discussion of alternatives must:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

42 C.F.R. § 1502.14 (1980). The EIS must thoroughly consider alternatives to the

NEPA's EIS requirements have proved to be effective devices in challenging "federal actions affecting the quality of the human environment."<sup>432</sup> The paucity of caselaw suggests that the significance of the cost-effectiveness analysis requirement as a legal device may not be as great as that of the EIS. It is possible, however, that when the District Court's interpretation of the cost-effectiveness analysis requirement is reviewed in light of current trends toward a decrease of available funding for the Subchapter II programs, its potential for becoming a powerful tool for allocating scarce financial resources will be recognized.

---

proposed project and in so doing must provide sufficient data to allow an analysis of those alternatives. *Natural Resources Defense Council, Inc. v. Callaway*, 524 F.2d 79, 87-88 (2d Cir. 1975); *Friends of the Earth v. Coleman*, 513 F.2d 295, 297 (9th Cir. 1975). The preparing agency cannot ignore an alternative simply because it is not within its jurisdiction. *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 834-5 (D.C. Cir. 1975). The EIS need not be exhaustive; it need not discuss every conceivable detail in any way related to the proposed project. It must, however, be compiled in good faith, contain enough information to make an informed decision possible, and enable the Administrator to make a reasoned choice from among the alternatives presented. *County of Suffolk v. Secretary of the Interior*, 562 F.2d 1368, 1375 (2d Cir. 1977).

432. See text accompanying notes 415-25 *supra*. There is an extensive body of caselaw involving challenges to federal actions by allegations of EIS inadequacy. NEPA provides no standard of review for compliance with procedural requirements. See 42 U.S.C. §§ 4321-47 (1976 & Supp. III 1979). The courts' decisions, in assessing the adequacy of an EIS, are often guided by the purpose the statement serves. Therefore if an EIS has been prepared in good faith and contains information sufficient to enable the Agency to fully consider relevant factors, it will be upheld. See, e.g., *County of Suffolk v. Secretary of the Interior*, 562 F.2d 1368, 1375 (2d Cir.), *cert. denied*, 434 U.S. 1064 (1978); *Sierra Club v. Froehlke*, 534 F.2d 1289, 1300 (8th Cir. 1976); *Natural Resources Defense Council, Inc. v. Callaway*, 524 F.2d 79, 83 N.12 (2d Cir. 1975); *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 834, 837 (D.C. Cir. 1971). Even where the court found the EIS research inadequate, the statement was upheld because "the significant environmental effects were recognized and presented . . . in a way which afforded the decisionmaker an opportunity to properly weigh them." *Sierra Club v. Morton*, 510 F.2d 813, 818-19 (5th Cir. 1975).

When a claimant alleges that an EIS has failed to adequately consider the alternatives to the proposed action, the reviewing court will apply a "rule of reason" test, evaluating the reasonableness of the Administrator's action. 524 F.2d 79, 93 n.12 (2d Cir. 1975); *Sierra Club v. Morton*, 510 F.2d 813, 818-19 (5th Cir. 1975); *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 837, 837-38 (D.C. Cir. 1972). An agency's justification for failure to discuss alternatives must be rationally based. *Natural Resources Defense Council, Inc. v. Morton* 458 F.2d 827, 834, 837-38 (D.C. Cir. 1972).

#### D. *Reserve Capacity Requirements*

Section 1284 of the FWPCA provides that before approving a Subchapter II construction grant, the EPA Administrator must determine that the size and capacity of the entire project—including reserve capacity—directly relate to the needs of the community it is to serve.<sup>433</sup> The section distinguishes between reserve capacity approved for construction and that capacity the Administrator deems eligible for construction grants. In considering whether to authorize construction at all, the Administrator bases his decision on a comparison of the cost of building reserves with the cost of constructing the remainder of the facility and the cost of expanding reserve capacity at a future date.<sup>434</sup> Given the requirement that the Administrator consider efforts to reduce wastewater flow, and assuming there is a trend toward a decrease in per capita wastewater usage,<sup>435</sup> it is logical to assume a decrease in necessary treatment capacity. In light of prevalent inflationary economic trends, however, construction costs can only rise. Unless the decrease in average wastewater flow per capita keeps pace with inflation, the Administrator will be hard pressed to rule that the entire waste treatment project should not be built simultaneously.

Determinations regarding the grant eligibility of reserves are based

---

433. U.S.C. § 1284(a)(5) (1976 & Supp. III 1979).

§ 1284. Limitations and conditions

(a) Before approving grants for any project for any treatment works under section 1281(g)(1) of this title the Administrator shall determine—

\*\*\*

(5) that the size and capacity of such works relate directly to the needs to be served by such works, including sufficient reserve capacity. The amount of reserve capacity provided shall be approved by the Administrator on the basis of a comparison of the cost of constructing such reserves as a part of the works to be funded and the anticipated cost of providing expanded capacity at a date when such capacity will be required, after taking into account, in accordance with regulations promulgated by the Administrator, efforts to reduce total flow of sewage and unnecessary water consumption. The amount of reserve capacity eligible for a grant under this subchapter shall be determined by the Administrator taking into account the projected population and associated commercial and industrial establishments within the jurisdiction of the applicant to be served by such treatment works as identified in an approved facilities plan, an areawide plan . . . or an applicable municipal master plan of development. For the purpose of this paragraph, and any such plan, projected population shall be determined on the basis of the latest information available from the United States Department of Commerce or from the States as the Administrator, by regulation, determines appropriate.

434. *Id.*

435. *See* note 398 *supra*.

on population and anticipated commercial and industrial development.<sup>436</sup> The methods of determining population estimates prescribed in the cost-effectiveness guidelines are applicable in the reserve capacity provisions as well.<sup>437</sup> Those provisions involve the same considerations and concerns regarding growth and community development.<sup>438</sup>

Despite the similarities between the guidelines for grant eligible reserve capacity and required elements of the cost-effectiveness analysis, it is unclear whether the former is superceded by the latter. As a practical matter, an acceptable cost-effectiveness analysis would more than adequately describe the factors required in grant eligibility considerations. Indeed, an applicant must assess reserve capacity projections under Section 1292.<sup>439</sup> Legislative clarification of the interrelationship between these two sections would be welcome. Regardless, Section 184 serves as a limitation on Subchapter II funding, and therefore supports the FWPCA's commitment to prevent negative secondary effects such as undesirable development.

#### E. *Section 316 of the Clean Air Act*

Section 316 of the Clean Air Act (CAA)<sup>440</sup> also imposes important restrictions on grant awards for construction of waste treatment facilities. It authorizes the Administrator to withhold funds if proposed facilities fail to comply with CAA emissions standards<sup>441</sup> or if the CAA state implementation plan (SIP) does not expressly provide for the increase in emissions generated by a treatment plant.<sup>442</sup> If construction of a WTW results in additional air pollution in an area which has not attained its emissions level goals, quantification of emissions, for purposes of the SIP, must include pollutants resulting from "areawide and non-major stationary source growth,"<sup>443</sup> such as increased traffic, housing and commercial activity.

Section 316 applies to all three phases of Subchapter II construc-

---

436. 33 U.S.C. § 1284(a)(5) (1976 & Supp. III 1979).

437. See notes 388-91 and accompanying text *supra*.

438. *Id.* See also note 412 and accompanying text *supra*.

439. See notes 387-96 and accompanying text *supra*.

440. 42 U.S.C. § 7616 (Supp. III 1979).

441. *Id.* § 7616(b)(1).

442. *Id.* § 7616(b)(2).

443. *Id.* § 7616(b)(4).

tion programs.<sup>444</sup> Applicants must consider the provisions of this section with particular care during the facilities planning stage to avoid increasing the potential for delay at later stages.<sup>445</sup> The applicant's facilities plan must include consideration of control techniques adequate to meet state and federal emissions standards, or the applicant will lose eligibility for awards at subsequent stages.<sup>446</sup> Similarly, an applicant for a step 3 grant must demonstrate acquisition of all necessary air pollution control permits or face denial of an award.<sup>447</sup>

Section 316 requires applicants, and eventually the Administrator, to assess both primary and secondary impacts of WTW construction.<sup>448</sup> By empowering the Administrator to withhold Subchapter II funding for inadequate consideration of pollution sources, Congress demonstrated its willingness to limit WTW-engendered growth through controls designed to protect the environment.

#### F. Conclusion

An effective WTW construction program is essential to promote the Congressional objective of restoring and maintaining "the chemical, physical and biological integrity of the Nation's Waters."<sup>449</sup> Congress enacted the three provisions discussed above, two in the FWPCA itself and one in the CAA, to help safeguard the entire natural and human environment while alleviating the water pollution problem. The cost effectiveness guidelines and reserve capacity restrictions in Sections 1292 and 1284 attempt to avoid unplanned, undesirable growth and development, minimize air as well as water pollution, and halt ill-advised use of land.<sup>450</sup> In section 316 of the CAA, Congress empowered the EPA administrator to withhold Subchapter II grants when WTW projects would, directly or indirectly, exacerbate existing air pollution problems.<sup>451</sup> Congress and the EPA must not abandon their efforts to promote the environmental goals embodied in the current statutes, however, because the EPA has not

---

444. 42 U.S.C. § 7616 (Supp. III 1979). See text accompanying notes 361-63 *supra*.

445. 45 Fed. Reg. 53383 (1980).

446. *Id.* at 53386.

447. *Id.*

448. *Id.* at 53387 n.2.

449. 33 U.S.C. § 1251(a) (1976).

450. See notes 18-19, 373-439 and accompanying text *supra*.

451. See notes 440-48 and accompanying text *supra*.

yet shown that the Subchapter II provisions will achieve their objectives.

## V. DEVELOPMENTS IN MUNICIPAL SLUDGE

DISPOSAL..... KAY HEIDBREDER

### A. Introduction

Sludge, the odorous residue from sewage treatment processes, poses a serious threat to the public health environment because of the large quantities of pollutants found in the residue. In addition, experts predict that American wastewater treatment facilities will greatly increase sludge production in future years.<sup>452</sup> Municipalities, therefore, face an ever expanding need for safe and efficient sludge disposal techniques. Congress, recognizing the possibility of adverse effects, enacted legislation requiring that disposal techniques not be environmentally dangerous.<sup>453</sup>

Sewage consists of the organic wastes and wastewater used by residential, industrial and other users. Wastewater treatment facilities subject sewage to a number of processes that remove or modify the organic wastes present in the wastewater, and then return the cleansed water to the water stream,<sup>454</sup> disposing of the residual sludge. Treatment facilities employ one or a combination of the following three treatment processes:<sup>455</sup> (1) *primary treatment*, a physical process whereby the solids are filtered from the wastewater;<sup>456</sup>

452. In 1972, sewage treatment facilities produced 10,000 dry tons of sludge per day. By 1985, approximately 17,000 dry tons per day are expected to be produced. LEAGUE OF WOMEN VOTERS, *MUNICIPAL SLUDGE: WHAT SHALL WE DO WITH IT?* 1 (1976).

453. See, e.g., Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251, § 1345(a) (1976 & Supp. III 1979) (The Act prohibits, subject to exceptions, the disposal of any sludge into navigable waters if such disposal would cause pollutants to enter the water.); Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. §§ 6901, 6944 (1976) (Sanitary landfill disposal cannot have an adverse impact on the environment).

454. The Clean Water Act, 33 U.S.C. § 1251 (1976 & Supp. 1979) regulates the treatment level waste water must receive before being returned to the water stream. *Id.* § 1311.

455. Each treatment process refers to a specific phase of treatment. Not all treatment plants utilize each of the three major categories of treatment phases. D. BAUMANN & D. DWORIN, *WATER RESOURCES FOR OUR CITIES* 27 (1978). [hereinafter cited as *WATER RESOURCES*].

456. Primary treatment is a physical process. Often, primary treatment involves allowing the sewage to collect in a basin. Solid materials settle to the bottom for