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OIL VS. OYSTERS—LESSONS FOR ENVIRONMENTAL REGULATION OF INDUSTRIAL SITING FROM THE HAMPTON ROADS REFINERY CONTROVERSY

*Richard A. Liroff**

I. INTRODUCTION

A decade long controversy in Portsmouth, Virginia over the siting of a large, and as yet unbuilt, oil refinery has become a symbol of much that is wrong with the administration of America's environmental laws. Proponents of the multi-million dollar project complain that it has become entangled hopelessly in regulatory red tape; the Clean Air Act and prolonged disputes among federal agencies have been particular sources of frustration. Opponents of the project contend that its proposed site is one of the worst possible locations on the East Coast for a refinery, and claim that it threatens Virginia's valuable oyster population. They also say that it will add to local air pollution problems and threaten the Chesapeake Bay's recreational resources. They have advanced these arguments in the many forums provided by state and federal regulatory agencies.

How great a risk does the refinery pose to environmental quality, especially to the oyster population? How suitable is the site for a refinery and is it as poor relative to other locations as its

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opponents claim? Is the refinery really needed? More importantly, from an institutional and legal perspective, how well have these questions been addressed in the regulatory process, and how might they have been addressed better? The Conservation Foundation examined the project's odyssey through the regulatory maze because, in many ways, the controversy has highlighted the difficulties our environmental laws pose for those wishing to develop new industrial facilities. These problems include, for example, multiple permit requirements, fragmented jurisdictions and a high level of uncertainty in planning. Analysis of the Portsmouth project was part of a major study by The Conservation Foundation of conventional and innovative regulatory processes across the United States and overseas.¹ The study's principal objectives were identification of ways to speed decisions and increase certainty in industrial planning while, at the same time, protecting the environment and natural resources.

This article has two purposes: first, to see how, when, and by whom the environmental issues raised by the proposed siting were treated in the regulatory process. This review should dispel some of the myths that have arisen from the controversy, including the belief that the site was environmentally, the worst possible choice on the East Coast, and that the Clean Air Act was a primary culprit in the refinery's delay. A second purpose is identification of ways the siting process for the refinery might have been improved. Section II examines the project, the regional environmental resources at risk, project proponents and opponents, and the major regulatory requirements. Section III takes a close look at how oil spills, wastewater discharges, the need for the project, alternative site locations, and air quality effects were considered by regulatory bodies. Based on experience, in Portsmouth and elsewhere, Section IV proposes ways to better siting decisions.

II. SETTING THE STAGE

A. Project Location, Purpose, and Benefits

In 1974, the Hampton Roads Energy Company (HREC) proposed the construction of an oil refinery, and an associated

1. The principal product of the study is C.J. DUERKSEN, ENVIRONMENTAL REGULATION OF INDUSTRIAL PLANT SITING—How To Make It Work Better (1983).

marine terminal, on a 623-acre parcel of industrially zoned land on the Elizabeth River in Portsmouth. The refinery would be a large one by industry standards, having a capacity to refine 175,000 barrels per day of crude oil, and could be expanded to process 250,000 barrels per day.² The marine terminal could handle two 85,000 dead weight ton tankers and four barges.³ Storage capacity would be provided for 12 million barrels of crude oil and products.⁴ The facility would desulfurize and produce light products, such as gasoline and jet fuel, from sour, heavy crudes, and would depend on imports from the Middle East.⁵ The refinery's products would replace imports of refined products to the East Coast from refineries on the Gulf Coast and in the Caribbean.⁶

Vessels serving the refinery would pass through Hampton Roads, one of the nation's busiest harbors, as measured by both ship movements and cargo tonnage.⁷ It is the largest coal export harbor on the East Coast, and is home to several military facilities, including a major naval base.⁸ Substantial shipments of petroleum already traverse the harbor and the Chesapeake Bay. Still, refinery proponents regard the harbor as relatively safe because of the low number of serious oil spills caused by ship collisions. In addition, many precautions would be taken in the project's operation, to reduce oil spills from vessels loading and

2. United States Army Engineer District, Norfolk, Virginia, Final Environmental Impact Statement. Hampton Roads Energy Company's Portsmouth Refinery and Terminal, Portsmouth, Virginia (Permit Action) 1 (Aug. 1977) [hereinafter cited as Corps FEIS]. The Corps FEIS is Exhibit 214 in the administrative record in the lawsuit challenging the permit issued by the Corps for the project. See *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983). Copies of this and other EISs cited in this article can also be found in the author's files. Unfortunately, non-current EISs are not readily available to the public. One commercial source is Information Resources Press, 1700 North Moore Street, Arlington, Virginia. A noncommercial source is the Transportation Library, Northwestern University, Evanston, Illinois 60201.

3. *Id.*

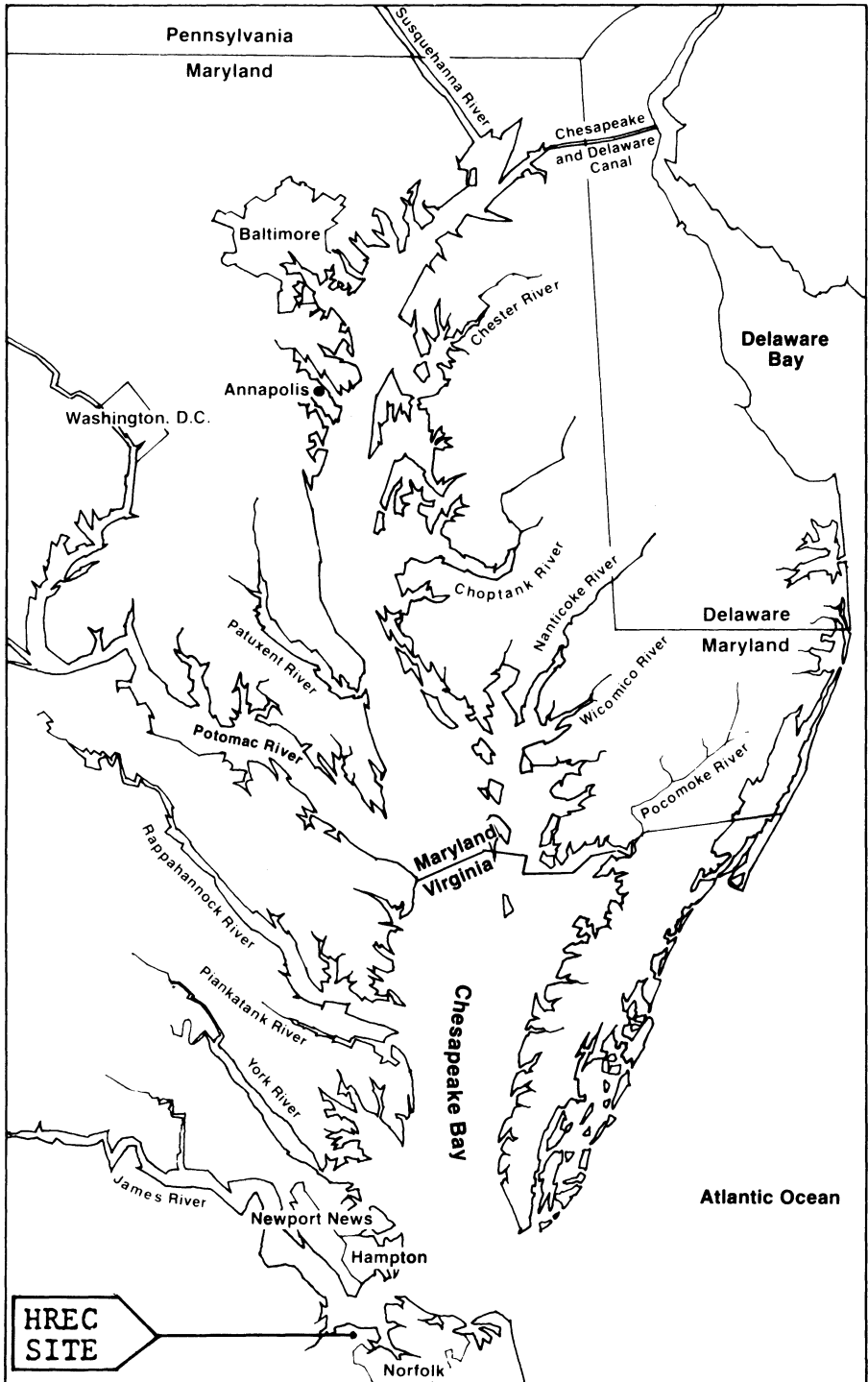
4. *Id.*

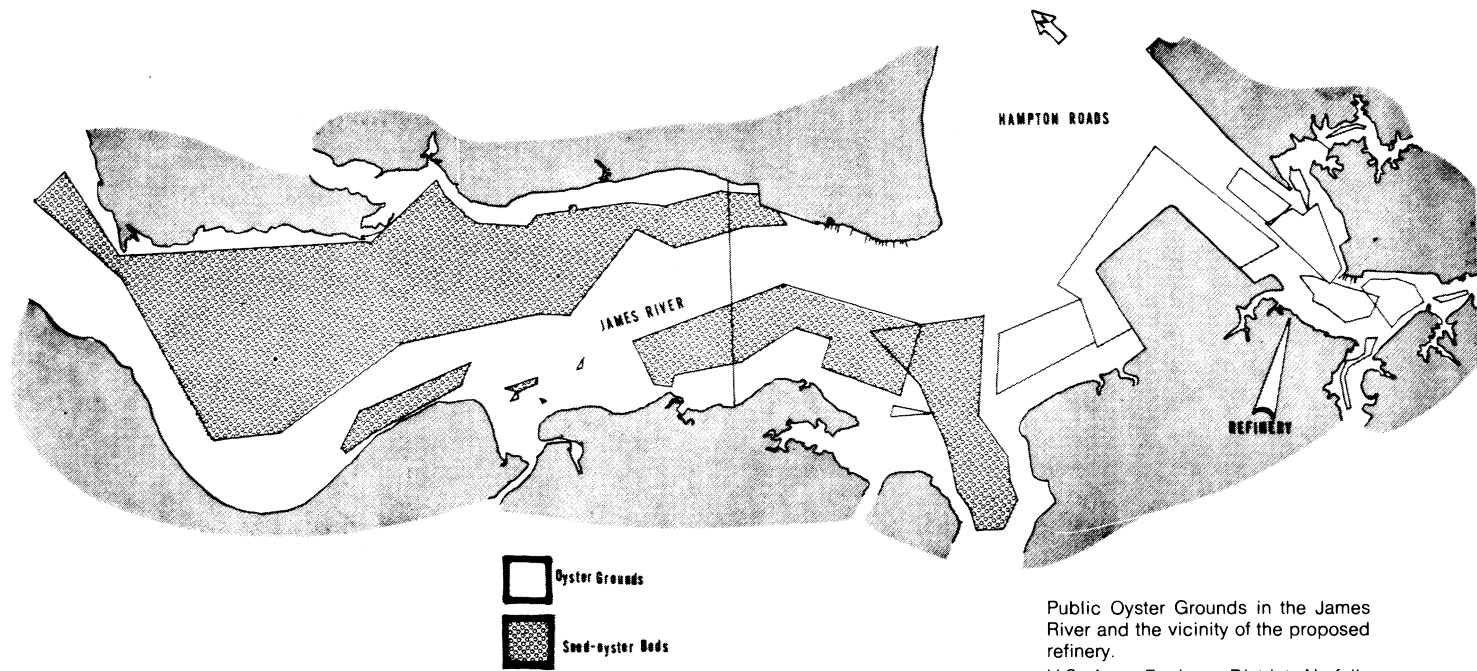
5. Office of the Assistant Secretary of the Army, Civil Works, OASA (CW) Evaluation of the Hampton Roads Energy Company Permit Case—A Proposed Refinery and Terminal Complex to be Constructed in Portsmouth, Virginia 1 (Oct. 1979) [hereinafter cited as Army Staff Paper]. The Army Staff Paper is Exhibit 1164 in *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983). "Sour" crudes are those containing relatively high levels of sulfur.

6. *Id.* at 23.

7. Corps FEIS, *supra* note 2, at 2-66.

8. See UNITED STATES CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, COAL EXPORTS AND PORT DEVELOPMENT—A Technical Memorandum (April, 1981) (available from U.S. Government Printing Office).





Public Oyster Grounds in the James River and the vicinity of the proposed refinery.

U.S. Army Engineer District, Norfolk, Virginia. Final Environmental Impact Statement: Hampden Roads Energy Companies' Portsmouth Refinery And Terminal, Portsmouth, Virginia (Permit Action, Aug. 1977).

unloading at the terminal,⁹ and advanced technologies would be used to reduce emissions of air pollutants and discharges of water pollutants from the refinery.

The City of Portsmouth welcomes the estimated \$87 million the project would add to the city's current real estate tax base of \$390 million.¹⁰ The approximately 3,000 construction workers that would be employed to construct the refinery would earn about \$59 million.¹¹ The project, when operational, would employ 500 people.¹² Its annual payroll would be approximately \$8.8 million.¹³

B. Regional Environmental Resources

The controversy over the refinery has focused on many environmental issues, including the effect of the refinery's emissions on air quality.¹⁴ For the most part, however, public debate centered on the impact of the facility on water quality. Among the water quality issues, the principal worry concerns the fate of the local seed oyster population. Seventy-five percent of the oysters harvested in Virginia depend on seed oysters derived from the James River.¹⁵ The Elizabeth River on which the refinery site is located, flows into the James downstream from the oyster seed beds; however, tidal flows could wash oil upstream and damage the beds. Damage to oysters from the refinery's wastewater discharges is also feared. The seed beds are regarded as unique and irreplaceable, and attempts to replicate them have been unsuccessful.¹⁶ In 1976, the value of the adult oysters developed from the James River seed beds was \$3.9 million.¹⁷

Opponents of the project have also expressed concern that oil spills from ship collisions could harm the Chesapeake Bay's blue crab fishery as well as its enormous recreational resources.¹⁸

9. See *infra* text at note 40.

10. Corps FEIS, *supra* note 2, at 4-37.

11. Army Staff Paper, *supra* note 5, at 23.

12. Corps FEIS, *supra* note 2, at 4-33.

13. Army Staff Paper, *supra* note 5, at 23.

14. See *infra* text and notes at notes 167-86.

15. Corps FEIS, *supra* note 2, at P-11.

16. *Id.*

17. Army Staff Paper, *supra* note 5, at 35.

18. These and other objections to the refinery are reported in Sulzberger, *Fight on Virginia Refinery Pits Energy Against Ecology*, N.Y. Times, Aug. 7, 1979, at A1, col. 4, and Carter, *Virginia Refinery Battle: Another Dilemma in Energy Facility Siting*, 199 SCIENCE 668-71 (1978).

Much of the female blue crab population of the Chesapeake Bay "overwinters" in lower sections of the bay near to or in the channels used by ships serving Hampton Roads.¹⁹ The Chesapeake, the largest estuary in North America, provides over twenty-five percent of the national catch of oysters, and more blue crabs than all other areas of the nation combined.²⁰ In 1977, the commercial harvest of blue crabs from the bay was valued at nearly \$12.7 million.²¹

C. Opponents and Proponents

Approximately eighty percent of HREC is owned by Cox Enterprises of Atlanta, Georgia, a communications conglomerate, but HREC's creator is refinery entrepreneur John Evans, who has attempted to site refineries in several locations across the United States.²² Portsmouth's mayor, Richard Davis, who strongly backed the project, chaired the Democratic Party in Virginia and was elected the state's Lieutenant Governor in 1981. HREC's attorney, Gerald Baliles, was also well-connected politically, and was elected Virginia's Attorney General in 1981. While Virginia's Republican governors during the 1970s supported the project, HREC's Democratic political connections were to become an undercurrent in public debate over a federal permit for the project during the Carter Administration.²³ Adding to the political overtones of the controversy was the fact that Cox Enterprise news-

19. Office of the Chief of Engineers, Department of the Army, Washington, D.C., Final Supplement to Final Environmental Impact Statement. Hampton Roads Energy Company's Portsmouth Refinery and Terminal, Portsmouth, Virginia (Permit Action) 2-9 (Sept. 1978) [hereinafter cited as Corps FSEIS]. The Corps FSEIS is Exhibit 734 in *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983). More recent investigations indicate that fewer (but still a large proportion of) female blue crabs may overwinter in the lower sections of the bay than was thought in 1978. Letter from Jeter M. Watson, Chesapeake Bay Foundation, to Richard A. Liroff (Feb. 1, 1982).

20. United States Environmental Protection Agency, Research Summary: Chesapeake Bay 1-2 (May 1980) (EPA Office of Research and Development, Report No. EPA-600/8-80-019).

21. Corps FSEIS, *supra* note 17, at 2-9. This is a "dockside" value. The retail value was nearly \$40 million. See Complaint of the Plaintiff at 7, *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983).

22. For a description of Evans's activities in Maine, see P. BRADFORD, *FRAGILE STRUCTURES* (1975). Bradford reports that Evans's refinery in Hawaii was commended by the local American Lung Association affiliate for its extra efforts and accomplishments in controlling pollution, suggesting a willingness by Evans to be responsive to environmental concerns.

23. See *A Newspaper Chain Wades into Oil Refining*, BUSINESS WEEK 27-28 (Feb. 5, 1979).

papers were active and strong supporters of Jimmy Carter's presidential bid in 1976.²⁴

Opposition to the refinery was led initially by citizens organized as the Tidewater Refineries Opposition Fund, based in neighboring Newport News. They were succeeded by Citizens Against the Refinery's Effects, a group based in neighboring Norfolk. Opposition to the refinery has also come from seafood trade associations, civic associations, some local medical societies, and other environmental organizations. The refinery has also been opposed by state and federal agencies knowledgeable about fishery resources including the Virginia Institute of Marine Sciences, the Bureau of Shellfish Sanitation in the Virginia Department of Health, the National Marine Fisheries Service in the United States Department of Commerce's National Oceanic and Atmospheric Administration, and the United States Fish and Wildlife Service within the United States Department of the Interior.

D. Regulatory Requirements

The site for HREC's project was purchased by a subsidiary of Cox Enterprises in April 1974, and HREC filed its initial applications for major environmental permits in March 1975. Review of the project in courts and agencies was a long and complex process,²⁵ in part because authority for reviewing the project's environmental impact was highly fragmented. For example, the project's impact on marine resources was reviewed by two state agencies issuing three environmental certifications. Its impact on air quality was reviewed by federal and state air quality agencies, each of which issued air quality permits. No state agency had authority to review comprehensively all of the refinery's environmental impacts and to issue a permit based on such a review.

The fragmentation had several consequences. First, even though each specific impact within an agency's jurisdiction might satisfy discrete legal standards, not until the United States Corps of Engineers became involved did any agency have the authority to consider whether its cumulative environmental impact made the project unacceptable when balanced against the refinery's benefits. Second, those opposing the refinery were given a num-

24. *Id.* at 28.

25. The Appendix of the article traces the long permitting and litigation history of the project, between 1974 and 1983.

ber of opportunities in many different forums to raise their objections to the project, most of which concerned the resulting risk to shellfish from ship accidents causing oil spills. While refinery proponents might have regarded the opponents as taking unfair advantage of the multiple forums, in one sense, it was beneficial that authority to review the consequences of spills was so fragmented; the initial information on spills given to state regulatory authorities was deficient, while subsequent reviews by federal agencies generated significantly improved information.

The principal environmental certifications which HREC had to obtain to construct the facility included the following:

1. A "subaqueous permit" from the Virginia Marine Resources Commission.²⁶ The permit was required because the proposed marine terminal would involve construction on and dredging of state bottom lands in the Elizabeth River.

2. A "401 Certificate" from the State Water Control Board. Under the terms of Section 401 of the Federal Water Pollution Control Act,²⁷ the board had to certify that the proposed dredging and construction for the marine terminal would comply with applicable water quality standards and Virginia water quality laws.

3. An "NPDES Permit," also from the State Water Control Board. This permit was required by Section 402 of the Federal Water Pollution Control Act,²⁸ because the refinery would discharge wastewater into navigable waters of the United States.²⁹

4. A "Dredge and Fill Permit" from the United States Army Corps of Engineers. This was required by Section 404 of the Federal Water Pollution Control Act and Section 10 of

26. See VA. CODE § 62.1-3 (1950). This statute requires that encroachments on state bottom lands be authorized either by statute or by permit from the Marine Resources Commission. The Commission, in its permitting, must take into account *inter alia* the benefits of a project, its effect on marine and fisheries resources, its effect on other reasonable and permissible uses of state bottom lands, and water quality standards established by the State Water Control Board. In addition to its regulatory authority over state-owned bottom lands, the VMRC also has regulatory jurisdiction over commercial and sports fishing, marine fish, marine shellfish, and marine organisms in the tidal waters of Virginia.

27. 33 U.S.C. § 1341 (1982).

28. 33 U.S.C. § 1342 (1982).

29. An NPDES permit places quantitative limits upon the discharge of pollutants from a facility. Virginia had been delegated authority by the Environmental Protection Agency to issue the NPDES permit, as provided for by the Federal Water Pollution Control Act, 33 U.S.C. § 1342 (1982). In issuing the permit, the board can take into account a host of factors, principally the type of industrial facility applying for the permit, the quality of the receiving waters, and applicable state water quality standards. The Environmental Protection Agency can veto a state-issued permit.

the Rivers and Harbors Act of 1899.³⁰ The permit was required because HREC was proposing to dredge and construct a pier in navigable waters.³¹

5. In conjunction with the Corps of Engineers' consideration of a dredge and fill permit, the Corps would be required to comply with the terms of the National Environmental Policy Act,³² which orders preparation of an environmental impact statement for any major federal action significantly affecting the quality of the environment.

6. An air permit from the Virginia State Air Pollution Control Board. Although the permit would be issued by the state, it had to satisfy the requirements of the federal Clean Air Act. The permit was required because the project would be a major new source of oxidants in a region that exceeded federal ambient standards for oxidants.³³

7. A "PSD Permit" from the United States Environmental Protection Agency. This second air pollution permit was required under the federal Clean Air Act's "prevention of significant deterioration" program.³⁴ This permit was necessary because the project would be a source of pollutants, such as sulfur dioxide, whose ambient levels in the region did not exceed federal ambient standards, but whose emission levels would nevertheless have to be controlled tightly to prevent significant deterioration of regional air quality.

Because of the diversity of interests of the various agencies with jurisdiction over the project, no two agencies examined the same factors in reviewing the environmental impact of the HREC facility. Depending on their view of their legal authority, state and federal regulators issuing these permits either addressed or

30. 33 U.S.C. §§ 403, 1344 (1982).

31. The Corps' permit decision takes into account a broad range of factors, balancing "the benefits which reasonably may be expected to accrue from the proposal . . . against its reasonably foreseeable detriments." Factors which may be relevant include conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, navigation, recreation, water quality, and so on. See Corps FEIS, *supra* note 2, at i.

32. 42 U.S.C. §§ 4321-4361 (1976 & Supp. V 1981).

33. 42 U.S.C. §§ 7410, 7501-7508 (1976 & Supp. V 1981). The Clean Air Act is discussed in greater detail, *infra*, text and notes 167-86. An "ambient standard" pertains to concentrations of a pollutant in the atmosphere. The federal ambient standard for oxidants is now referred to as a federal ambient standard for ozone. An "emission standard" limits the discharge of these pollutants from industrial plants and other man-made sources.

34. 42 U.S.C. §§ 7470-7478 (1976 & Supp. V 1981). In essence, HREC needed a permit from the state to allow it to emit pollutants which already were plentiful in the region, and a permit from EPA allowing it to emit pollutants which were *not* yet plentiful, and which would not be allowed to become so. The net result was tight controls on both types of pollutants.

ignored oil spill and wastewater discharge issues, the need for the project, and the relative merits of the proposed project location compared to alternative sites. Section III addresses each of these interrelated issues in turn, and then addresses the discrete issue of the project's impact on air quality.

III. POINTS OF CONTROVERSY

A. *Oil Spill Risks*

The preeminent issue in the Hampton Roads refinery controversy has been the risk of oil spills from ships travelling to and from the refinery. Opponents and proponents of the project have argued in several regulatory forums over the magnitude and acceptability of the risk. Opponents of the project fear that a combination of human errors, weather conditions, and tides could produce an oil spill that would severely damage or even wipe out the shellfishery in the Chesapeake Bay. The proponents consider the chance of such an occurrence to be both speculative and slight.

Projecting the chance of ship accidents and spills has involved review of data on ship movements and accidents, not only in the Hampton Roads region, but also in the nation and the world. It has also involved simulation of spills by computers and in hydrological models of the region. It has required making assumptions about future ship movements associated with HREC's operations and accounting for a myriad of other factors which affect the likelihood and seriousness of a spill. These variables include the spill's point of discharge, amount and composition of the spill, wind and tide conditions, dispersion patterns, and the effectiveness of cleanup efforts.³⁵

How, when, and by whom estimates were to be developed, and how oil spill estimates were to be used were points of controversy during the review of the project. In addition, even when an agency decided to examine the risk of oil spills, the information necessary to do an adequate evaluation was not always available. Some regulators agreed that the risk of oil spills from ship accidents was within their jurisdictions; other regulators disagreed. HREC's representatives discouraged state agencies from interpreting their jurisdiction broadly to include examination of oil

35. Corps FEIS, *supra* note 2, at Appendix C.

spill risk. For example, HREC's permit application to the Virginia Marine Resources Commission for its marine terminal focused narrowly on dredging and cargo transfer issues, without addressing oil spill risk. The State Water Control Board expressed concern over spills. Unsure about its authority to evaluate spill risk, and without the benefit of spill simulations, however, the Board granted HREC a wastewater discharge permit. It was not until the Corps of Engineers became involved that a government agency could rely on sophisticated oil spill analysis that went beyond the preliminary analysis conducted by the Coast Guard. For its Section 404 permit, the Corps of Engineers requested a computerized oil spill simulation by HREC's consultant, and conducted a simulation on its own hydrological scale model of the Chesapeake Bay. The Corps' initial environmental impact statement, however, failed to highlight the importance of the oyster seed beds, and the Corps' own simulation did not come until very late in the decision making process for the Corps' dredge and fill permit.

These problems associated with the examination of oil spill risk—controversy over jurisdiction and delayed development of an adequate data base—contributed to the complexity and resulting delay of the HREC application review process. The assessment of oil spill risk and the consideration of the potential environmental threat from oil spills during the eight years that the Hampton Roads refinery has been under review will now be examined.

1. State Water Quality Review

a. Virginia Marine Resources Commission

One regulatory agency which might have considered the risk of oil spills from ship collisions, but did not, was the Virginia Marine Resources Commission (VMRC), which issued a "subaqueous permit" for the facility in 1975.³⁶ The VMRC, whose statutory

36. Sources for this section include the transcript of the Virginia Marine Resources Commission (VMRC) public hearing of September 16, 1975 [hereinafter cited as Sept. 16 Transcript]; the transcript of the VMRC's meeting of October 28, 1975 [hereinafter cited as Oct. 28 Transcript]; and briefs of the plaintiff and defendant in *Tidewater Refineries Opposition Fund v. Marine Resources Comm.*, No. 2381-G (Cir. Ct. for City of Newport News, June 14, 1976). The briefs, which cite to the transcript, are in the author's files. The transcripts themselves are available from the Virginia Marine Resources Commission, 2401 West Avenue, Newport News, Virginia 23607. See also Rowe, *Panel Delays Permit*

mandate is to protect Virginia's marine resources,³⁷ heard brief testimony regarding accidents and safety in Hampton Roads harbor.³⁸ Those testifying about the project's environmental impact, however, seemed primarily worried about the impact of the refinery's treated wastewater on marine life.³⁹ It also appeared that the commissioners were mostly concerned with oil spills from loading and unloading at the terminal, and with the effect of dredging during construction of the terminal on shellfish populations, rather than the risks posed by oil spills resulting from ship collisions. By a four to three vote, the Commission approved a permit for the project, attaching conditions restricting dredging, ordering deployment of a state of the art spill containment system at the terminal, and requiring compliance with state water quality standards established by the State Water Control Board.⁴⁰ In issuing the permit, the VMRC thus addressed the reduction of risks to the shellfish population from dredging and from spills during loading and unloading; but spills from ship collisions were left unaddressed, and the impact of wastewater discharges on shellfish was left to be dealt with by the State Water Control Board.

The Tidewater Refineries Opposition Fund filed suit challenging the permit.⁴¹ The group was principally concerned with wastewater discharges from the the refinery, and argued that the VMRC should not have acted on its subaqueous permit until a permit for the refinery's wastewater discharges had been issued by the State Water Control Board.⁴² The VMRC responded that it was only required to consider the environmental effects of the marine terminal portion of the project, and that the State Water

for *Marine Terminal*, *Virginian-Pilot*, Sept. 17, 1975, at B1; *Intent to Appeal Filed on Refinery Terminal*, *Virginian-Pilot*, Nov. 27, 1975.

37. The VMRC, in awarding permits, is guided by Article XI, § 1 of Virginia's Constitution. This section of Virginia's Constitution states that "it shall be the Commonwealth's policy to protect its . . . lands and waters from pollution, impairment or destruction, for the benefit, enjoyment and general welfare of the people of the Commonwealth." See also note 26.

38. See Sept. 16 Transcript, *supra* note 36, at 48.

39. At this time, HREC was planning to discharge its wastewater into a proposed regional treatment plant. It was feared that chlorination of the wastewater could create substances poisonous to marine life. See Sept. 16 Transcript, *supra* note 36, at 102-106.

40. Oct. 28 Transcript, *supra* note 36, at 41-42. The permit, MRC 75-62, is reproduced in the Corps' FEIS, *supra* note 2, at L-2 to L-5.

41. *Tidewater Refineries Opposition Fund v. Marine Resources Commission*, No. 2381-G (Cir. Ct., for City of Newport News, June 14, 1976).

42. Plaintiff's brief, *Tidewater Refineries Opposition Fund*, at sections I and II.

Control Board, when regulating wastewater discharges, was required to consider the impact on marine resources.⁴³ The VMRC's action was upheld in an oral opinion of the Virginia Circuit Court for the City of Newport News in 1976.

b. State Water Control Board

The initial proceeding before the State Water Control Board (SWCB) involved the issuance of a "401 Certificate," a certification under the Federal Water Pollution Control Act⁴⁴ that the proposed dredging and construction for the marine terminal would comply with applicable water quality standards and Virginia water quality laws. Like the VMRC, the SWCB was principally concerned about the immediate impact of dredging and the prevention of spills from loading and unloading when the terminal was in operation. Appearing before the SWCB, the Tidewater Refineries Opposition Fund argued that the Board could not limit its review solely to the marine terminal's construction and operation, but must also consider the effluent from the related refinery.⁴⁵ HREC's attorney countered that within the narrow confines of the Section 401 proceeding, the SWCB did not have to address the refinery portion of the project, and that the refinery's effluent would still have to satisfy other regulatory requirements.⁴⁶ Because it would later consider the environmental impact of the refinery's effluent, the board agreed that its review should be limited to construction and operation of the marine terminal. In January 1976, it unanimously approved issuance of the certificate.⁴⁷ The certificate included conditions governing operating procedures during loading and unloading, disposal of dredged materials and bilge water, and related matters.⁴⁸

The SWCB reviewed the project a second time in 1976 and early 1977 when HREC applied for an NPDES permit⁴⁹ governing the discharge of wastewater from its proposed refinery into navigable waters.⁵⁰ HREC had once considered discharging 445,000 gallons

43. Defendant's brief, *Tidewater Refineries Opposition Fund*, at 3-7.

44. 33 U.S.C. § 1342 (1982).

45. Transcript of SWCB meeting, Jan. 8-9, 1976, at 10-12 (copy in author's files).

46. *Id.* at 13-14.

47. *Id.* at 33-39.

48. The certificate is reproduced in the Corps FEIS, *supra* note 2, at K-1 to K-4.

49. See *supra* text and notes at note 29.

50. The application was filed on October 19, 1976. The SWCB's proceedings are described in H. Gabel & B. Seng, A Case Study of the Hampton Roads Energy Company

of daily wastewater to a regional sewage treatment facility, but then decided to treat the waste itself, using an unconventional advanced treatment process expected to be especially effective.⁵¹ This new plan required approval by the SWCB. The wastewater issue, however, was dwarfed by disputes over whether the SWCB was required to take into account oil spills from ship collisions when issuing its permit. This issue, as well as the data available on ship collisions, was the principal focus of board meetings during a three-month period between December 1976 and February 1977.⁵²

At the SWCB's initial hearing on the permit, the jurisdiction of the Board was discussed. While HREC's attorney argued that the Board had no statutory authority to consider marine accidents,⁵³ opponents of the refinery contended that oil spills would destroy the important James River oyster seed beds,⁵⁴ and that the Board could consider the risk of oil spills from ship accidents. The SWCB concluded that it could consider evidence of oil spills which were likely to occur as a result of the refinery's location and operation. Moreover, it determined that a permit could be denied if the Board found that the threat of oil spills presented an unacceptable risk to state waters.⁵⁵

In considering the permit, the SWCB staff drew on Coast Guard

24-30 (1980) (unpublished manuscript produced at the Colgate Darden Graduate School of Business Administration and Energy Policy Studies Center, University of Virginia, Charlottesville). See also *Virginia Oyster Packers & Planters Assoc. v. State Water Control Bd. & Hampton Roads Energy Co.*, No. A-609 (Cir. Ct. for City of Richmond, May 2, 1978).

51. See *supra* note 39; H. Gabel & B. Seng, *supra* note 50, at 24.

52. The discussion of the SWCB meetings, unless otherwise indicated, is based on transcripts of the meetings in the author's files. Copies are available also from the State Water Control Board, 2111 North Hamilton Street, Richmond, Virginia 23230.

53. This argument, made in HREC's brief, is referred to in H. Gabel & B. Seng, *supra* note 50, at 28. While the effort by HREC's attorney to limit jurisdiction may have been tactically appropriate from a legal perspective, as a matter of political strategy, it probably was harmful. It may well have fanned skepticism by those citizens who might have wondered what there was to hide. Moreover, Jeter Watson, of the Chesapeake Bay Foundation, has noted that, "experience shows that agencies approve permits even when they consider a broad range of factors; in fact they may even more readily approve because they have so considered, and thus feel the record won't be seriously questioned." Telephone Interview with Jeter Watson (March 19, 1984).

54. The testimony is referred to in a January 9, 1977 Memorandum from Assistant Attorneys General David Evans and Timothy G. Hayes to Board Members, Hampton Roads Energy Company NPDES Permit Application, p. 1 (copy in author's file) [hereinafter cited as January 9 Memorandum].

55. See *id.*

files for data on spills in the Hampton Roads area.⁵⁶ The data indicated that, compared to spills from loading and unloading, the risk of spills from such "transit accidents" as collisions, groundings, and rammings was negligible. The files revealed that a transit accident in 1974 had spilled ten gallons of oil, and another in 1975 had spilled twenty-five gallons.⁵⁷ As small as these historical discharges from ship accidents in Hampton Roads might have been, the staff was wary about using them to develop projections for the future. The staff also noted that neither the amount of any accidental spill nor its costs could be readily predicted.⁵⁸

After an initial deadlock, the Board decided, by a narrow margin, to approve the permit.⁵⁹ Attached to the permit was a condition requiring HREC to submit an oil spill control program for the SWCB's approval, at least 180 days prior to initial loading or unloading at the terminal.⁶⁰ The plan was to provide for prompt containment, cleanup, and removal of every oil spill in local waters from vessels serving the refinery.⁶¹

The statements by SWCB members explaining their votes for and against the permit reflected some of the major arguments that had been advanced by both sides in the controversy. The SWCB members opposing the permit stated that: 1) the Virginia Constitution provides that oyster beds, rocks and shoals are resources to be held in trust by the state for its citizens, and these cannot be bargained away or exchanged for economic development;⁶² 2) the refinery would increase oil spills in Hampton Roads;⁶³ and 3) the Virginia Institute of Marine Sciences (VIMS) and the Bureau of Shellfish Sanitation had declared that an oil spill could have catastrophic effects upon the priceless oyster

56. SWCB memorandum, *Staff Responses to Questions Raised by the Board Members at the Hampton Roads Energy Company's Public Hearing* (Dec. 23, 1976).

57. *Id.* at 1.

58. The staff observed that a single spill of 6000 barrels from an accident in Chesapeake Bay ten months earlier had caused approximately \$700,000 in damages. *Id.* at 3.

59. See transcript of January 31, 1977 SWCB meeting, at 35; transcript of February 18, 1977 meeting, at 22. The permit, No. VA0053171, is reproduced in Corps' FEIS, *supra* note 2, at Q-A-2 to Q-A-8 [hereinafter cited as SWCB permit].

60. See SWCB permit, *supra* note 57, at Appendix B.

61. Obviously, if such a plan were presented to the Board in the future, it would have behind it all of the momentum generated by previously completed work on the project.

62. Transcript of January 31, 1977 SWCB meeting, at 23 (statement of George Cornell).

63. *Id.*

beds.⁶⁴ The SWCB members supporting the permit declared that: 1) denying the permit would send a message to American business that Virginia does not want new industry;⁶⁵ 2) oil traffic would continue to occur in the area, even without the refinery, and concern about oil spills was merely speculative;⁶⁶ and 3) benefits from the refinery would far exceed the potential threat posed by its construction.⁶⁷

The Virginia Oyster Packers and Planters Association challenged the permit, in a suit filed in the Circuit Court of the City of Richmond.⁶⁸ The plaintiffs raised a number of arguments in challenging the actions of the SWCB most of which related to the refinery's wastewater effluent.⁶⁹ The plaintiffs also alleged that the board had failed to determine the effect of oil spills on shellfish,⁷⁰ and that the SWCB had therefore violated its fiduciary duty under the Virginia Constitution as trustee for the oyster seed beds.⁷¹ The plaintiffs also cited statements made by the Virginia Institute of Marine Sciences, the Bureau of Shellfish Sanitation, and the National Marine Fisheries Service opposing the refinery on the grounds it would pose a significant risk of destruction to the seed beds.⁷² The court upheld the SWCB's actions, concluding that the board's decision to grant a permit was based on a satisfactory hearing record, and that the board had fulfilled its trusteeship obligations.⁷³

The decisions of the SWCB and the VMRC to approve the

64. *Id.* at 24.

65. *Id.* at 8 (statement of Millard Rice, Jr.).

66. *Id.* at 31.

67. *Id.* at 34 (statement of J. Leo Bourassa).

68. See *Virginia Oyster Packers & Planters Ass'n v. State Water Control Bd. & Hampton Roads Energy Co.*, No. A-609, at 3 (Cir. Ct. for City of Richmond, May 2, 1978). Because the NPDES program is a shared federal-state responsibility, challenges were also filed in federal court. These, too, were unsuccessful. See *Chesapeake Bay Found., Inc. v. United States*, 445 F. Supp. 1349 (E.D. Va. 1978), *vacated in part*, 453 F. Supp. 122, *dismissed sub nom.* *Chesapeake Bay Found., Inc. v. Virginia State Water Control Bd.*, 495 F. Supp. 1229 (E.D. Va. 1980). HREC's NPDES permit expired on February 18, 1982 and HREC applied for its reissuance. The SWCB is not processing the application, pending the outcome of litigation over ownership of the refinery site. See letter from Robert V. Davis, SWCB Executive Director, to Robert Porterfield, HREC Project Director (Mar. 23, 1982).

69. The complaints are enumerated in the *Oyster Packers* opinion, No. A-609, at 20-35, 38-46.

70. *Id.* at 35-38.

71. *Id.* at 49-53.

72. *Id.* at 50-51.

73. *Id.* at 53, 64-72.

facility, but by narrow margins, reflected the degree to which many Virginians are concerned about the health of the Chesapeake Bay shellfishery. The citizen groups' determination demonstrated that deeply held values were threatened by the refinery. The intensity of the disputes at the state level set the stage for continued debate over oysters during the federal permitting process.

2. Federal Water Quality Review

a. Corps of Engineers: Initial Evaluations

As provided by Section 404 of the Federal Water Pollution Control Act, as amended, and Section 10 of the Rivers and Harbors Act of 1899, HREC was required to obtain a permit from the Army Corps of Engineers, since it was proposing to dredge a channel and construct a pier in navigable waters.⁷⁴ The battle over whether this federal permit should be granted began in 1975, when HREC filed its application, and has not yet ended; a federal district court vacated the decision to grant the permit in 1983, declaring that there were procedural deficiencies in the final stages of the federal review process.⁷⁵ The lengthy review process resulted, in part, from the need to satisfy the requirements of the National Environmental Policy Act (NEPA),⁷⁶ the requirements of Corps of Engineers regulations, as well as the intricacies of inter-agency protocols which govern permit disputes.⁷⁷

NEPA is intended to insure that high quality information on the environmental impact of major federal activities is available to public officials and citizens before decisions to begin projects are made. To satisfy NEPA, the Corps had to prepare both draft and final environmental impact statements on the permit application.⁷⁸ These documents are the principal vehicles for compiling key environmental information and subjecting it to review by agency officials, interested citizens, and others, and successfully navigating through NEPA requirements is not always easy.

74. See *supra* text and notes at notes 30-31.

75. See *infra* text at notes 212-15 for a discussion of this litigation.

76. 42 U.S.C. §§ 4321-4361 (1976 & Supp. V 1981).

77. The Corps regulations and inter-agency agreements have changed since 1975. This discussion describes the regulations and inter-agency memoranda of understanding as they existed in 1975. See 40 Fed. Reg. 31,327, 31,338-41 (1975); 42 Fed. Reg. 37,155-58 (1977).

78. See *supra* text and notes at note 32.

For example, because the initial draft and final environmental impact statements did not adequately discuss alternative locations for the refinery, draft and final supplemental environmental impact statements had to be prepared.

In addition, the review process can be further complicated by regulations promulgated by the Army Corps of Engineers. To ensure that significant resource controversies are resolved at the highest, most responsible levels of federal authority, Corps regulations provide that if a state's governor disagrees with a Corps district engineer's decision to deny an application for a permit, then the decision is elevated to the Corps' division engineer.⁷⁹ If federal agencies disagree with a Corps division engineer's decision to issue a permit, or a state's governor disagrees with a division engineer's decision to deny a permit, the final decision shifts to the Chief of the Corps in Washington and, if disagreements continue, to the Secretary of the Army. HREC's application was one of very few that was elevated all the way to the Secretary of the Army for a decision.⁸⁰

The following review of the Corps permit process discusses documents prepared by federal officials as the HREC application worked its way through the review process. These documents reveal not only how much information was available on the risk to the oysters from oil spills, but they also disclose how much weight the decision makers attached to this information. The federal documents are particularly intriguing because they use sophisticated analytical approaches not employed by the Virginia state agencies to calculate risks to the oysters. Federal analysis of spill risk relied, in part, on simulations—computer or scale models of simulated oil spills in the Chesapeake Bay near the refinery which, taking a multitude of factors into account, provide an estimate of the likelihood of oil flowing over the oyster beds. These estimates were independent of such historical data as numbers of ship collisions and amounts of oil spilled. A second type of analysis relied on a base of historical data broader than Hampton Roads' own recent oil spill history; it projected future risks associated with the project by examining accident and spill experience throughout the world with the vessels that would serve the HREC refinery.

79. *Id.*

80. For a diagram of the several steps in the "permit escalation" process, see Feaver, *Army Seeks to Rule Out 'Permit Escalation,'* Washington Post, Nov. 5, 1981, at A27, col. 3.

The Corps' draft EIS,⁸¹ issued in November 1975, contained data on shipping accidents suggesting that Hampton Roads is relatively safe. The statement revealed that ship accidents⁸² had occurred in Hampton Roads harbor between July 1972 and January 1975, but none had caused discharges of oil.⁸³ By contrast, between 1969 and 1972, seventeen percent of the 1,437 worldwide tanker accidents in harbors, bays, and entrances had resulted in oil spills. The draft EIS made only passing reference to the oyster seed beds.⁸⁴

The final EIS,⁸⁵ published in August 1977, relegated discussion of the importance of the seed beds to Virginia's oyster industry to its back pages. Two-thirds of the way through the voluminous document, the Corps reproduced this comment from the Virginia Institute of Marine Sciences (VIMS):

The seed oyster beds of the James River are the basis of the Virginia oyster industry. These seed beds supply 75 percent or more of the seed which is transplanted to growing areas in other sections of the state. Furthermore, they must be considered irreplaceable. The Marine Resources Commission and VIMS acting jointly have attempted to establish seed beds at other sites but have been less than totally successful. Diminution of productivity of the James River seed beds would not be the usual case in which loss to the seafood industry would be approximately proportional to the geographic area involved. Because the seed beds are unique and are the basis of an entire industry, their disruption would spell disaster to a significant Virginia industry.⁸⁶

The Bureau of Shellfish Sanitation in the Virginia Department of Health expressed equally strong views in the EIS about the importance of the oyster beds.⁸⁷ Comments from the United States Fish and Wildlife Service and the National Marine

81. United States Army Engineer District, Norfolk, Virginia, Draft Environmental Impact Statement. Hampton Roads Energy Company's Portsmouth Refinery and Terminal, Portsmouth, Virginia (Permit Action) 4-72 (Nov. 1975) [hereinafter cited as Corps DEIS].

82. *Id.* at 4-72.

83. *Id.*

84. *Id.* at 2-64, 2-65. Thirty-six pages of the draft EIS discussed impacts from potential oil spills on marine organisms, but attention seemed to focus on the Elizabeth River directly around the refinery site, rather than on the oyster seed beds upriver on the James. Evidently referring to the Elizabeth River, the draft EIS stated, "no unique or commercially valuable species will be adversely affected." *Id.* at 4-78.

85. Corps FEIS, *supra* note 2.

86. *Id.* at P-11.

87. *Id.* at P-3.

Fisheries Service referred to the views of these state agencies and also expressed their own opposition to issuance of the Corps permit.⁸⁸

The final EIS also reported the results of computerized simulations of oil spills, performed by a consultant to HREC and the Corps.⁸⁹ The study traced three types of hypothetical releases of 40,000 tons of Mid-East crude oil over a period of four days, and was based on the "worst case" assumption that there would be little or no containment or removal of oil immediately following the spill.⁹⁰ The final EIS commented that a spill in the Hampton Roads harbor "could potentially destroy the shellfish populations in the Hampton Roads itself. It could also have serious adverse impact on the bivalves in the Elizabeth and Nansemond rivers and adjacent areas in the lower James River."⁹¹ If the beds were totally destroyed and no shellfish of any type were taken from the James and other rivers for a period of two years, the EIS stated, damage could amount to \$18 million. The statistical probability of a serious spill was estimated, however, based on historical local data, to be quite low.⁹² The final EIS concluded generally that the impact of oil spills on the aquatic environment is "largely speculative due to lack of adequate, long-term studies and the great variability of circumstances that can occur."⁹³

Notwithstanding the final EIS's conclusion about the speculative character of the risk from oil spills, the Corps' district engineer was prepared to deny HREC a permit in late 1977.⁹⁴ When Virginia Governor Mills Godwin issued a statement supporting the project, however, authority to make a permitting decision

88. The EPA also expressed opposition to the Corps permit because of the project's cumulative environmental impact, even though the EPA had not opposed issuance of the state's NPDES permit, and would ultimately approve air quality permits for the project. The EPA's opposition to the Corps permit is expressed in many places. *See, e.g.*, letter from Jack J. Schranz, EPA Region III Administrator to Colonel Newman A. Howard, Jr., District Engineer (Dec. 2, 1977) (copy in author's files).

89. Corps FEIS, *supra* note 2, at 4-48, Appendix Q.

90. *Id.* For recent discussion of the appropriate use of "worst case analysis" in environmental impact assessment, see Yost, *Don't Gut Worst Case Analysis*, 13 ENVTL. L. REP. (ENVTL. L. INST.) 10,394 (1983).

91. Corps FEIS, *supra* note 2, at 4-57.

92. This conclusion was based on extensive U.S. Coast Guard statistics on maritime accidents in and around U.S. waters. *See id.* at Appendix Q-C, Tables 58-59.

93. *Id.* at 4-49.

94. The district engineer ultimately recommended to his superiors that the permit be denied. The district engineer's intention to do so prompted Virginia Governor Godwin to write a letter supporting the refinery. *See infra* text at note 95.

shifted to the Corps' division engineer.⁹⁵ Had Governor Godwin not acted, the Corps permitting process might have ended at that point, two years after HREC applied for its permit.

The district engineer recommended that the division engineer deny the permit, based on the following observations:

1. Past cleanup of spills in Hampton Roads and Chesapeake Bay indicated that in many cases cleanup attempts are ineffective, or come after a considerable amount of oil has been dispersed. In severe weather, oil cleanup is virtually impossible.⁹⁶
2. The potential adverse effects of the refinery's effluent and oil spills presented a significant adverse risk to the future water quality of the James River Basin and the entire Chesapeake Bay.⁹⁷
3. Oil spills in Hampton Roads or the lower James River could destroy or severely reduce oyster seedbeds, and present a significant risk to the entire oyster industry. There could be a great economic loss to the state which could not be offset by the economic benefits of the new facility.⁹⁸
4. Issuance of the permit was opposed by VIMS, the Bureau of Shellfish Sanitation, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the United States Environmental Protection Agency.

The division engineer disagreed with the conclusions of the district engineer, and believed the permit should be issued.⁹⁹ He characterized the costs and benefits of the project as "delicately balanced," but concluded that the "national need for energy slightly outweighs the potential impacts to the environment." The final decision, however, did not rest with the division engineer.

95. Letter from Governor Mills Godwin, Jr. to Colonel Newman A. Howard, Jr., Norfolk District, Corps of Engineers (Dec. 27, 1977) (copy in author's files). Godwin's letter noted the Governor's conversations with Colonel Howard, in which the Colonel's inclination to deny the permit was indicated.

96. Memorandum from the District Engineer to the Division Engineer, *Application of Hampton Roads Energy Company for Permit to Dredge and Construct a Marine Terminal in the Elizabeth River, Portsmouth, Virginia*, at 22 (Jan. 9, 1978). The District Engineer's report is Exhibit 328 in *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983). The 6000 barrel Chesapeake Bay spill, which resulted in \$700,000 in damages, is the kind of accident the district engineer could point to in support of this observation. See *supra* note 58.

97. Memorandum from the District Engineer to the Division Engineer, *Application of Hampton Roads Energy Company for Permit to Dredge and Construct a Marine Terminal in the Elizabeth River, Portsmouth, Virginia*, at 25.

98. *Id.* at 29.

99. *National Wildlife Federation v. Marsh*, 568 F. Supp. 985, 989 (D.D.C. 1983). The Division Engineer's opinion is Exhibit 454 in this case.

Continuing opposition to the permit from other federal agencies caused formal authority over HREC's application to shift to the Chief of the Corps of Engineers.

The Corps' supplemental EIS, prepared because the Chief of the Corps of Engineers believed he needed more information on alternative sites before he could make a permitting decision, contained additional data on oysters, crabs, and risks of spills. It highlighted, more completely than earlier EISs', the risk to shellfish from refinery related activities. For example, the final supplement reproduced a new study summarizing information on the blue crab.¹⁰⁰ It reported that the Chesapeake's blue crab population depends completely on use of the lower bay during portions of both its larval and adult stages. Because of this dependency, the supplement stated; "a major spill in the lower bay, occurring during critical seasons of the year, could severely reduce the viability of the natural population as well as the commercial industry."¹⁰¹

In November 1978, the Chief of the Corps of Engineers made a preliminary decision indicating that he favored permit issuance.¹⁰² The Chief stated that Hampton Roads is one of the safest port complexes in the United States, as measured by both the number and severity of ship accidents.¹⁰³ The threat of a major spill would not present a new hazard to the Bay because oil was already transported in the region by water;¹⁰⁴ the refinery would simply alter existing transportation patterns.¹⁰⁵ He conceded, however, that a major oil spill could damage important commercial and recreational fishing and oyster operations, noting that "[t]his is a valid concern and an emotional issue."¹⁰⁶ Nevertheless, if a spill did occur, he concluded, "it would not necessarily affect the oyster and shellfish beds because of the distance to the critical areas and the containment, collection, and cleanup plans that would exist."¹⁰⁷ If the oil did reach these beds, he found, the

100. Corps FSEIS, *supra* note 19, at C-2.

101. *Id.* at 2-9.

102. Office of the Chief of Engineers, Department of the Army, Hampton Roads Energy Company Permit Application Decision Paper (Nov. 28, 1978) [hereinafter cited as Chief's Decision Paper]. The Chief's Decision Paper is Exhibit 855 in *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983).

103. Chief's Decision Paper at 10.

104. *Id.* at 9.

105. *Id.* at 9-10.

106. *Id.* at 9.

107. *Id.* at 10.

severity of impact would depend on many factors and, even in the worst case, the effects would not be irreversible.¹⁰⁸ These impacts, he wrote, were “too speculative” to specifically warrant denial of the permit,¹⁰⁹ while beneficial results of the project were “certain.”¹¹⁰

b. National Oceanic and Atmospheric Administration Response

The process of consultation between the Corps of Engineers and the federal agencies opposing the permit continued. The National Oceanic and Atmospheric Administration (NOAA), an agency within the Department of Commerce, funded a sophisticated analysis of oil spill risks conducted by Engineering Computer Opteconometrics, Inc. (ECO), a firm that specializes in maritime accident analysis.¹¹¹

By using local, domestic, and worldwide data, ECO attempted to predict the likelihood of oil spills in Hampton Roads. Information used in the ECO analysis included estimates of ship traffic to and from the refinery, past accident rates (but not spill rates) for tankers and barges in Hampton Roads, past accident and oil spill rates for tankers worldwide, and past accident and oil spill rates for barges in United States coastal ports.¹¹² Applying oil spill data from this broad sample to Hampton Roads, ECO drew the following conclusions:

1. On average, there would be a spill of 1,290 barrels from tank barges once every 12.8 years.¹¹³
2. On average, there would be a spill of 7,710 barrels from tankers once every 9.2 years.¹¹⁴
3. A catastrophic¹¹⁵ marine accident, such as loss of most or

108. *Id.*

109. *Id.* at 13.

110. *Id.* at 14.

111. Engineering Computer Opteconometrics, Inc. (ECO), Proposed Hampton Roads Refinery. An Assessment of Oil Spills Associated with the Marine Operations, (Dec. 1978) [hereinafter cited as ECO Report]. NOAA's involvement in the permit review process, like that of the U.S. Fish and Wildlife Service in the Department of the Interior, was authorized by the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-668 (1982) and by other federal statutes. It was a continuation of the “permit escalation” process. *See supra* note 79.

112. The oil spill rates for Hampton Roads were omitted on the grounds that they constituted too small a sample for statistical purposes. *See* letter from Terry L. Leitzell, Assistant Administrator for Fisheries, NOAA, to Michael Blumenfeld, Deputy Under Secretary of the Army 8 (May 9, 1979).

113. ECO Report, *supra* note 111, at I-5.

114. *Id.*

115. As used in this context, “catastrophic” does *not* characterize the effects of a spill.

all of an entire cargo from either tank barges or tankers, could be expected approximately once in fifty years, although the projected size of such spills could not be determined.¹¹⁶

4. Hampton Roads' accident rate for tankers with a draft of thirty feet or greater, like some of those which would be serving the HREC refinery, is over twice the worldwide rate for oil tankers of similar size.¹¹⁷

These statistics painted a picture quite different from the statistics advanced previously by those stressing the safety of Hampton Roads harbor; they provided considerable ammunition to the critics of the HREC project. Based on the ECO report and other information, NOAA contended that the Chief of Engineers had understated oil spill risks in critical resource areas and urged denial of the permit.¹¹⁸

c. HREC Response

HREC angrily complained that the ECO report failed to account for existing oil transportation in Hampton Roads, and therefore attributed to the refinery some risks that were already present.¹¹⁹ Indeed, oil was already being shipped up the James River directly over the seed beds.¹²⁰ Moreover, HREC contended, the refinery might actually reduce the risk of spills, by reducing the need for inter-ship cargo transfers in the harbor.¹²¹

HREC also distinguished Hampton Roads from other harbors where oil spill accidents had occurred, concluding that it was inappropriate to project onto Hampton Roads, where few oil spill accidents had occurred, oil spill accident rates from other harbors.¹²² In sum, said HREC, "evaluation of the potential for dam-

Rather, it refers to the loss of most or all of an entire cargo, without regard to the effects of such a loss. For statistical purposes, catastrophic losses are distinguished from non-catastrophic losses, because a few catastrophic losses (such as the 220,000 metric tons of fuel and crude oil spilled from the supercarrier Amoco Cadiz off the coast of France in 1978) can skew the figures for average losses from all accidents.

116. ECO Report, *supra* note 111, at I-6.

117. *Id.* at I-4.

118. Letter from Richard Frank to Lt. General John W. Morris (Dec. 28, 1978). *See also* National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Position Statement on the Siting of an Oil Refinery by the Hampton Roads Energy Company at Portsmouth, Virginia (Dec. 1978).

119. Letter from Robert Porterfield, HREC Vice-President, to Lt. General John W. Morris (Jan. 16, 1979), at 2.

120. *Id.* at 11.

121. *Id.* at 2.

122. *Id.* at 3.

age from oil spills . . . requires informed judgment rather than an exercise in statistics and probabilities of questionable application."¹²³

d. Corps' Oil Spill Simulation

In February 1979, a few months after publication of the ECO report and in the wake of continuing objections to the permit by NOAA, the Department of the Interior, and the EPA, the Corps generated additional information about the spill risks by simulating spills in its hydrologic model of the Chesapeake Bay.¹²⁴ The simulation showed oil moving farther up the James River than had been projected in the earlier computer simulation; tide conditions would be favorable to the transport of oil across the oyster seed beds at least once each month, and favorable to the transport of oil across a substantial portion of the seed beds at least once each year.¹²⁵ The Corps modelers, however, did not provide any estimate of how much oil would settle on the oysters, claiming that their information was inadequate to permit such a forecast.

The Corps staff noted that Hampton Roads historical data alone indicated a zero probability for a major oil spill; they added, however, that this limited analysis was unrealistic. On the other hand, they thought that ECO's predictions were too high, although they were not sure by how much. The Corps report concluded there would always be a possibility that severe adverse effects could occur. There would be some increase in the probability of such effects because of the refinery's operation, but the increased probability was believed to be small.¹²⁶

Armed with this new information, the Chief of Engineers recommended that the Secretary of the Army, to whom decision-making authority had passed because of federal agencies' objections to the Chief's preliminary decision, issue the permit. He emphasized that the oil spill analysis confirmed his analysis of the

123. *Id.* at 9.

124. In considering whether hydrologic oil spill simulations might have been performed earlier, it should be noted that it was not until 1978 that the Corps' Chesapeake Bay model was available for use. See Phillips, *Giant Chesapeake Model is Closing Down*, *Washington Post*, Mar. 11, 1983, at B1, col. 2.

125. Department of the Army, Office of the Chief of Engineers, Hampton Roads Energy Company Permit Application. Oil Spill Analysis (Feb. 1979). The executive summary of the report did not mention that the tides would be favorable to transport of oil across the oyster seed beds at least once each month.

126. *Id.* at f-3.

relative safety of the Hampton Roads area.¹²⁷ The Chief concluded that issuance of the permit was in the public interest, because the refinery's tangible benefits outweighed the speculative risks posed by the construction of the facility.

e. Secretary of the Army's Decision

The Secretary of the Army decided to issue the permit.¹²⁸ The basis for this decision was a paper prepared by the staff of the Assistant Secretary of the Army late in 1979.¹²⁹ In their paper, the staff confirmed the higher accident rate at Hampton Roads for large tankers, but they also observed that most of the accidents were at piers and anchorages or when vessels were moving at very low speeds.¹³⁰ The paper implied that the risk of spills from such accidents was therefore low.

The staff reviewed oil spill data for the East Coast, Hampton Roads, and Chesapeake Bay, and concluded that, if the refinery were constructed, a catastrophic spill from a tanker in the Hampton Roads area, bay channel, and entrance would occur once every fifty-one years.¹³¹ Without the refinery, such a spill would happen once every seventy-one years.¹³² The Army staff recognized the special significance of the oyster seed beds in the lower James River and the blue crab overwintering and spawning grounds in the mouth and lower southern portion of the Chesapeake Bay. After reviewing scientific evidence on the impact of oil spills on shellfish, however, the staff stated that, "it is not believed possible that a catastrophic spill would eliminate the oyster or blue crab industry."¹³³

Before making his final decision, the Secretary of the Army notified the Secretary of the Interior that he intended to approve the permit for HREC.¹³⁴ The Interior Secretary expressed his

127. Office of the Chief of Engineers, Department of the Army, Memorandum for the Deputy Under Secretary of the Army, Subject: Application for a Department of the Army Permit By the Hampton Roads Energy Company (HREC) for Work Associated with an Oil Refinery in Portsmouth, Virginia—Decision Memorandum 3 (Mar. 19, 1979).

128. See Army Secretary Approves Permit for Oil Refinery in Portsmouth, Va. 9 ENV'T REP. (BNA) 1642 (Dec. 14, 1979).

129. Army Staff Paper, *supra* note 5.

130. *Id.* at 33.

131. *Id.* at 72.

132. *Id.*

133. *Id.* at 50, 35-36.

134. Complaint of Plaintiff at 22, National Wildlife Federation v. Marsh, 568 F. Supp. 985 (D.D.C. 1983).

belief that sites on the East Coast other than Portsmouth were environmentally preferable, and that the refinery was neither environmentally nor economically in the public interest.¹³⁵ The Administrator of NOAA also responded to the Secretary's decision, contending that the risks to the oyster beds had been substantially underestimated in the Army staff paper.¹³⁶ Nevertheless, in December 1979, the Secretary of the Army ordered issuance of the permit.¹³⁷

3. Concluding Observations: Oil Spill Risk Analysis

The citizen groups, fishery interests, and federal and state regulators involved in the Hampton Roads controversy had strikingly different perceptions of the risk posed by oil spills to the oyster seed beds. Both before and after simulations were done, some believed the risk too great to justify construction of the facility and others believed it to be slight. Local history suggested to many that the chance of a transportation-related oil spill in the harbor was minimal. Experience elsewhere, however, suggested that people make errors, cleanup efforts are delayed, and the resulting spills can produce severe damage. Those who believed that the risks to the oysters were slight tended to emphasize local history, and argued that the combination of factors necessary for a catastrophic spill was too remote to justify stopping the project. Those believing the risks to be too great emphasized the major problems caused by spills elsewhere.

The debate over the risk of oil spills is reminiscent of disputes over nuclear power plants. Many oppose nuclear power plants because the consequences of an accident could be horrendous and long-term, even though the chance of a catastrophic accident is statistically small. In Portsmouth, although spill prevention and cleanup plans would be prepared, and many meteorological, ecological, and man-made factors would have to coincide to cause a catastrophic accident, there remained real concern that if an accident did occur, the seed beds supporting Virginia's oyster industry and the blue crab fishery could be substantially destroyed.

The dispute among federal agencies prolonged the final decision on the Corps' permit by two years. It is clear that during the

135. *Id.*

136. *Id.*

137. *See supra* note 128.

later stages of review, information available to the federal agencies for such a decision improved. The information was substantially better than that available to the State Water Control Board and Virginia Marine Resources Commission when state permits were issued.

Arguably, so much additional time should not have been spent generating new data. There is, however, an inherent value in developing a deliberative process where the development, exchange, and critical evaluation of information provides some assurance that the decision reached is well-reasoned, and is based on a thorough analysis of appropriate data and alternative sets of policy assumptions. After all, the fundamental purpose of the decision-making process is not simply issuance of a permit for a project that the applicant believes is worthwhile. Rather, the purpose of the review process is to ensure that the project is sited appropriately, that adequate environmental safeguards are incorporated, that vital environmental resources are not exposed to undue risk, and that other public concerns are accommodated. The information to make these judgments was inadequate when the original permit application was filed, and much time was spent remedying this deficiency.

B. The Need for the Refinery

1. Federal and State Review

Several of the federal and state regulators, when issuing permits for the HREC facility, referred to the benefits that would flow from the refinery's construction and operation. Portsmouth certainly was expecting benefits from the refinery, but whether the refinery is needed may be an open question. Many assumptions were made by officials in evaluating the need for the refinery, as they considered whether the benefits from its construction outweighed potential risks to the oyster industry. HREC's supporters tended to justify the project by pointing to a shortage of refinery capacity on the East Coast, and also suggested that the project would contribute to national security. The validity of these claims is not easily evaluated, and the national policy arguments were given different weight in each forum which reviewed the facility.

The Virginia Marine Resources Commission specifically ruled out the consideration of "need" and the availability of surplus

refinery capacity elsewhere when it awarded its subaqueous permit. The State Water Control Board, when it awarded its NPDES permit, thought there would be local benefits from the refinery, and did not want to discourage major businesses from siting in Virginia, but otherwise did not consider the larger question of national need. The Corps of Engineers' final supplemental EIS implied that the refinery was necessary. It noted that: domestic refineries were operating near capacity in 1977; over 2.1 million barrels per day of refined products were being imported; domestic refining capacity would be inadequate to meet domestic demand in the event of an Arab oil embargo; and domestic demand was estimated to be 22 million barrels per day by 1985.¹³⁸

The staff of the Assistant Secretary of the Army did not seem especially impressed in 1979 by the national security arguments made on the refinery's behalf. In their discussion paper, they noted that the Department of Energy had provided a "fairly persuasive, qualitative case" for additional East Coast refinery capacity, but observed that the Department had "by no means established that the United States economy or national security would be crippled in any fundamental sense without additional East Coast refineries."¹³⁹ The staff concluded that the HREC project probably would reduce imports of refined products, and would provide needed storage capacity, but that its impact on national security would be small.¹⁴⁰

The Army staff also examined the alternative of increased production at Caribbean refineries, which were operating at only sixty-six percent of capacity.¹⁴¹ During the 1960's and early 1970's, federal energy policies had provided an incentive for construction of refineries in the Caribbean to serve East Coast markets, but these facilities had become underused because of subsequent changes in these policies. The Army staff concluded these refineries could contribute only a fraction of HREC's production.¹⁴²

138. Corps FSEIS, *supra* note 19, at 1-2, 1-6.

139. Army Staff Paper, *supra* note 5, at 24.

140. *Id.* at 21.

141. *Id.* at 90-91.

142. The army staff reached this conclusion by noting that if the Caribbean refineries' production was raised to 90% of capacity, and the additional output was all sent to the United States, 912,000 additional barrels per day would be shipped. Since Hampton Roads would receive only 10% of this, however, consonant with existing trends, it would receive 91,200 barrels, only 4,600 barrels of which would come from U.S.-owned refineries. See Army Staff Paper, *supra* note 5, at 91.

Another dimension of the Army staff's analysis of need was an assessment of the "national benefits" which would flow from construction of the facility. For this assessment, "national benefit" was narrowly defined as reductions in the cost of transporting petroleum products to markets on the East Coast. The staff concluded that these benefits, even when calculated conservatively, outweighed the costs from oil spills, although the net benefits would be lost if a large, catastrophic oil spill were to occur in the lower Chesapeake Bay area.¹⁴³

The Army staff labeled the risk from oil spills "the gut issue." They asked, "is the probability of risk which could potentially seriously impact a high quality resource worth taking given the otherwise certain and substantial national benefit which would accrue from the refinery?"¹⁴⁴ The staff clearly had come to regard the benefits from the refinery as certain and substantial, although to some of the refinery's opponents the project's benefits were no less speculative than the risk from oil spills. To the project's critics, possible savings to consumers from the Portsmouth refinery simply were not worth the risk to the oysters, the outcome of the Army's benefit-cost analysis notwithstanding.

2. Concluding Observations About Need

World and domestic oil markets were in turmoil during much of the time permits for the HREC refinery were being considered by federal and state officials.¹⁴⁵ Assumptions about need that seemed reasonable and solid one year might seem archaic and useless the next.¹⁴⁶ Just as HREC was deciding upon Portsmouth as the site for its refinery, the Arab oil embargo of 1973 and 1974 dramat-

143. Army Staff Paper, *supra* note 5, at 69.

144. *Id.* at 99-100.

145. For background on changing markets and, in particular, the impact of changing federal policies on them, see COMPTROLLER GENERAL OF THE UNITED STATES, THE UNITED STATES REFINING POLICY IN A CHANGING WORLD OIL ENVIRONMENT (June 29, 1979) General Accounting Office, Report No. EMD-79-59; HOUSE COMM. ON INTERSTATE AND FOREIGN COMMERCE, SUBCOMM. ON ENERGY AND POWER U.S. REFINERIES: A BACKGROUND STUDY, 96th Cong., 2d Sess. 54 (1980) (Comm. Print 54); UNITED STATES DEPARTMENT OF ENERGY, TRENDS IN REFINERY CAPACITY AND UTILIZATION (Report No. DOE/RA-0010); HOUSE COMM. ON INTERSTATE AND FOREIGN COMMERCE, SUBCOMM. ON ENERGY AND POWER, THE ENERGY FACT BOOK, 96th Cong. 2d. Sess. 60 (Comm. Print 1980).

146. See Marshall, *Energy Forecasts: Sinking to New Lows*, SCIENCE 1354 (June 20, 1980).

ically drove up the world price of crude oil and demonstrated the vulnerability of the United States to supply interruptions. Shortly thereafter, changes in federal policies governing imports of crude oil and petroleum products, and adoption of federal oil allocation rules providing for subsidies for small refineries prompted a dramatic rise in domestic refinery capacity.¹⁴⁷

Disruption of oil supplies from Iran in 1979 further drove up the price of oil. Then, in the early 1980's, a deep national recession combined with energy conservation measures caused national petroleum consumption to nosedive; domestic oil consumption dropped from its peak of 18.8 million barrels per day in 1978 to 15.3 million barrels per day in 1982.¹⁴⁸ Domestic refinery usage dropped by twenty to thirty-five percent during a two-year period. The elimination of federal subsidies for small refineries caused many to close, while major oil companies closed some of their large but very old refineries. In a two-year period in the early 1980's, over two million barrels of production capacity was shut down.¹⁴⁹

HREC had first proposed its refinery when energy consumption had been growing strongly for twenty years and had been closely linked to economic growth. That historic linkage was broken in the 1970's in the face of massive national energy conservation efforts. Even if HREC had succeeded in having its refinery operational by the late 1970's, perhaps it would have lost substantial amounts of money. With the recent drop in domestic petroleum consumption, and with future growth rates expected to be far below historic levels, the need for HREC's refinery in Portsmouth is now quite questionable.

C. Consideration of Alternative Sites

1. Site Comparisons Conducted

The Hampton Roads area had considerable appeal to HREC. Hampton Roads harbor has a deep channel, and the region's military facilities require large amounts of fuel. Portsmouth wel-

147. See *supra* note 145. See also Corigan, *Without Federally Guaranteed Supplies, Small Refiners are Scrambling for Oil*, NATIONAL JOURNAL 636-640 (Apr. 18, 1981); Nulty, *Teakettle Refiners Scramble to Survive*, FORTUNE 47-48 (July 13, 1981).

148. See McCarley & Richman, *Trends in U.S. Energy Since 1973*, in U.S. ENERGY INFORMATION ADMINISTRATION, MONTHLY ENERGY REVIEW, i-vii (May 1983). See also *The Oil Glut Isn't Going Away* BUSINESS WEEK 38-39 (Nov. 8, 1982).

149. See Mack, *The Other Glut*, 43-44 FORBES (Mar. 18, 1983); *Cost Squeeze on Oil Refineries*, N.Y. Times, Mar. 18, 1982.

comed the refinery, and the proposed waterfront site, already zoned for industry, stood waiting for use. In view of the perceived risks to valuable aquatic resources, however, opponents argued that Portsmouth was not a suitable location for a refinery. Alternative sites, in fact, had been considered by HREC and permitting agencies.

HREC creator John Evans' initial search for a suitable site had as its primary concerns engineering and economic factors.¹⁵⁰ The search predated enactment of NEPA in 1969. Some of these engineering and economic factors included location in a good marketing area, availability of economical transportation facilities, and availability of adequate industrially zoned land both for initial construction and future expansion. Three sites outside of Virginia—Machiasport, Maine; Newport, Rhode Island; and Savannah, Georgia—were considered, as were four additional sites in the Hampton Roads area. The search narrowed and, in 1974 HREC thoroughly studied a refinery site on the Nansemond River, farther upstream on the James River from Hampton Roads. A preliminary environmental impact assessment report was prepared, and several alternative pipeline configurations and marine terminal sites to serve the refinery were considered. In the fall of 1974, however, because of its economic, engineering, and environmental advantages, HREC opted to build its refinery and marine terminal on Portsmouth's waterfront. No more alternative sites were considered until June, 1978, when the Chief of the Corps of Engineers decided that he could not determine whether Portsmouth was an environmentally acceptable site on the basis of existing information.¹⁵¹ He wanted information on alternative sites, to ensure that a reasonable balance was being struck at the Portsmouth site among environmental, economic, and engineering factors.

At the Chief's request, an inter-agency task force met to examine alternatives. Agencies represented included the Department of Energy (DOE), the Environmental Protection Agency (EPA), the Fish and Wildlife Service of the Department of the Interior, the National Marine Fisheries Service within NOAA, the Coast Guard, and the Materials Transportation Bureau from the Department of Transportation.¹⁵² The task force worked quickly. All

150. This discussion of alternative sites is based on the Corps DEIS, *supra* note 83, at 6-1.

151. Corps FSEIS, *supra* note 19, at 1-1.

152. *Id.*

Corps district and division offices along the East Coast, as well as all the agencies represented on the task force, were invited to nominate potential sites. Sixty-seven sites were suggested for examination.¹⁵³

The sixty-seven sites were evaluated by the task force members according to selected criteria. Most of the sixty-seven were eliminated for environmental reasons; nineteen were chosen for further review.¹⁵⁴ The task force developed a matrix summarizing the characteristics of the alternative sites.¹⁵⁵ The matrix was used to rate the nineteen sites according to seventeen "key descriptors," such as water supply, presence of wetlands, and proximity to a crucial habitat. A rating of "A" was the best possible score, indicating no perceived problems or impacts, and "E" was the worst, representing severe adverse problems or impacts. The task force proceeded on the assumption that the environmental acceptability of a site was "critically dependent" upon the absence of very low—"D" or "E"—scores.¹⁵⁶ By this criterion, the Portsmouth site was ranked very low, because it was assigned twelve "D"s and "E"s. The Department of Energy representative contended, however, that no sites proposed were as good as Portsmouth and Eastport, Maine, when economic and engineering considerations also were taken into account.¹⁵⁷

The matrix caused a furor. HREC condemned it, suggesting that the ratings were internally inconsistent and bore "only occasional accidental correspondence to the data presented in or referenced by the text of the document."¹⁵⁸ Environmentalists and NOAA used it to support their contention that the Portsmouth site was the worst of all those surveyed.¹⁵⁹

153. Alternatives at these sites included expansion of existing refineries, reactivation of closed refineries, and, in most cases, use of offshore mooring facilities with a refinery on the mainland. Where expansion was possible, the expected increase in production did not reach 175,000 barrels per day. One closed refinery could be reactivated, but at an increased capacity of only 70,000 barrels per day. Some of the alternative sites had been previously discussed in detail in a 1973 interim report on Atlantic Coast Deep Water Port facilities by the Corps. See U.S. Army Corps of Engineers, Philadelphia District, Interim Report. Atlantic Coast Deep Water Port Facilities Study. Eastport, Maine to Hampton Roads, Virginia (June 1973).

154. Corps FSEIS, *supra* note 19, at 1-21.

155. *Id.* at 1-91 through 96.

156. *Id.* at 1-97.

157. *Id.* at 1-99.

158. Letter from Robert E. Porterfield, Vice-President, HREC, to Lt. General John W. Morris, Chief of Engineers (Oct. 20, 1978) (accompanying comments on FSEIS). The quoted phrase is found on page 9 of the comments.

159. See, e.g., Baker, *Refinery on the Bay: An Unwarranted Risk*, The Baltimore Sun, Mar. 21, 1979, at A19.

The Chief of the Corps of Engineers and the staff of the Secretary of the Army agreed with HREC that the matrix was problematic;¹⁶⁰ they demonstrated that the task force analysis was flawed by severe internal inconsistencies. After constructing their own matrix, the Army staff concluded that four of the alternative sites were comparable to the Portsmouth site and that no site was clearly preferable to the Portsmouth site when environmental, economic, and engineering factors were considered.¹⁶¹ The Army staff concluded that Portsmouth was a clearly acceptable location and was not the most environmentally damaging site.¹⁶² The staff contended that although other sites might be environmentally superior to the Hampton Roads site, this did not preclude the Secretary of the Army from granting a permit to HREC.¹⁶³ A permit could be issued if the Secretary considered environmental factors and if he concluded that "in toto, Portsmouth is an acceptable location for a refinery."¹⁶⁴

2. Concluding Observations on Alternative Sites

The competing analyses of alternative sites demonstrate how different conclusions can be reached about the desirability of industrial development at a particular location, depending on which analytical criteria are employed, and how much weight they carry. The Hampton Roads example demonstrates the subjectivity of the process of analyzing competing sites for development. Parties will reach vastly different conclusions about the merits of a particular site, even when seemingly objective analyses are undertaken, such as the task force "matrix" evaluation, and the later Army staff evaluation.

The Portsmouth example highlights another problem in the site comparison process. The evaluation of alternative sites is required by NEPA.¹⁶⁵ Yet, the exercises in 1978 and 1979 were far

160. Chief's Decision Paper, *supra* note 102, at 7; Army Staff Paper, *supra* note 5, at 80.

161. Army Staff Paper, *id.* at 91.

162. *Id.*

163. *Id.*

164. *Id.*; NEPA requires that the Secretary of the Army consider environmental impacts, but does not require that the Secretary's decision be in favor of the environmentally preferable alternative, as long as all alternatives are identified and considered. See 40 C.F.R. § 1505.2 (1983).

165. See generally, RICHARD A. LIROFF, A NATIONAL POLICY FOR THE ENVIRONMENT: NEPA AND ITS AFTERMATH (1976).

different from the idealized analysis of alternatives contemplated by the statute.¹⁶⁶ The analysis should occur before, not after, resources are committed to a particular alternative. That was not the case here, and it illustrates the problems inherent in applying NEPA to private projects where the bulk of the planning has been done before the projects are presented to federal agencies for review.

D. Air Quality Issues

The Portsmouth refinery confronted some of the same air quality regulatory issues that confounded many other industrial projects in the mid-1970's. HREC was obliged to comply with the requirements of the Clean Air Act of 1970, one of the most complex federal environmental statutes.¹⁶⁷ The Act established a federal program for cleaning up the nation's air; substantial program responsibilities, including issuance of most permits, were assigned to state air pollution control agencies.¹⁶⁸ State agencies would develop "state implementation plans" (SIPs) subject to EPA approval, designed to achieve federal ambient standards for air quality by mid-1975.¹⁶⁹ These state plans would include programs to abate pollution from existing sources and to review proposed new pollution sources. The plans would regulate the discharge of such common pollutants as carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide, and oxidants contributing to smog.

When HREC applied in early 1975 for an air quality permit from the State Air Pollution Control Board (SAPCB), the EPA was just realizing it would have to fashion a program for states to use to allow major new pollution sources in areas still dirtier than federal ambient standards—so called nonattainment areas—without compromising existing standards. Since the Hampton Roads region was a nonattainment area for oxidants and emissions from HREC's project would contribute to this oxidant problem, HREC became subject to evolving EPA policies.

166. Liroff, *NEPA—Where Have We Been and Where Are We Going?* 46 JOURN. AM. PLANNING ASSOC. 154-61 (1980).

167. The Clean Air Act is codified at 42 U.S.C. §§ 7401-7642 (1976 & Supp. V 1981). For information on the act prior to its amendment in 1977, see W. RODGERS, JR., *ENVIRONMENTAL LAW*, chapter III (1977).

168. See 42 U.S.C. § 7401(a)(4) (1976 & Supp. V 1981).

169. The deadline was later extended to December 31, 1982. See 42 U.S.C. § 7502(a)(1) (1976 & Supp. V 1981).

EPA also was only just beginning to develop its prevention of significant deterioration (PSD) program for areas with air cleaner than the national ambient standards for sulfur dioxide and particulates. The Hampton Roads region was such an area. The PSD program set tight limits on emissions from major new sources and sharply limited the permissible increase in sulfur dioxide and particulates above existing ambient levels. Such tight limits, in theory, would keep such areas from becoming havens for polluters who might degrade their air to the levels of the national ambient standards. As the PSD program evolved, HREC found itself subject to these new and shifting policies as well.

In 1977, Congress amended the Clean Air Act. In addition to extending the deadlines for compliance with federal air quality standards, Congress incorporated modified versions of EPA's nonattainment and PSD programs.¹⁷⁰ HREC had to comply with these statutory changes and the new EPA regulations implementing them.

1. EPA Review

a. Nonattainment

As one of the early tests of the emerging system for allowing growth in nonattainment areas, HREC's refinery posed several regulatory problems for which there were no easy answers. In late 1975, the SAPCB granted a permit to HREC because the refinery would use Best Available Control Technology (BACT),¹⁷¹ and because regional oxidant levels were expected to decline by the time the refinery was operational. In April 1976, however, the EPA declared that the refinery was "environmentally unacceptable."¹⁷²

HREC representatives met with EPA and state officials shortly

170. HREC was subject to both programs because the Hampton Roads area was not attaining the oxidant ambient standard while it had air cleaner than the national ambient standards for SO₂ and particulates.

171. BACT is an especially strict level of air pollution control which prohibits the emission of any pollutant in excess of the applicable standard under 40 C.F.R. Parts 60 and 61 (1983). For a current definition of BACT, see 42 U.S.C. § 7479(3) (1976 & Supp. V 1981).

172. For a description of these early efforts to obtain a permit from the SAPCB, see H. Gabel & B. Seng, *supra* note 50. The SAPCB permit was challenged in court. See *Citizens Against the Refinery's Effects v. EPA*, 643 F.2d 183 (4th Cir. 1981). In their briefs, HREC, EPA, and SAPCB provide contrasting perspectives on the nature of their contact during the permit process. See *supra* text and note at note 179.

thereafter to discuss the EPA's concerns.¹⁷³ The Agency suggested that the refinery's emissions would be allowed if offsetting reductions were achieved at existing state or federal facilities.¹⁷⁴ This suggestion was consistent with the EPA's emerging offset policy, a draft of which was then being circulated.¹⁷⁵ The policy, which would apply nation-wide, would allow industries siting in nonattainment areas to compensate for the new pollution they would add by obtaining emission reductions from existing polluters. The new pollution added would be "offset" by even greater reductions from existing polluters, thereby allowing new industrial development while permitting continued progress toward achievement of national ambient standards.

EPA published its national offset policy in December 1976, and as noted, the policy was incorporated in modified form in the Clean Air Act Amendments of 1977. In early 1977, the EPA proposed an emission trade between the refinery and the Virginia highway department.¹⁷⁶ By agreeing to change the materials it used in paving roads, the state highway department would reduce hydrocarbon emissions in an amount greater than the hydrocarbon emissions from the new refinery. The reductions would be made in several state highway districts surrounding the Hampton Roads region, up to 140 miles away.

Working out the details of the offset and then gaining formal approval took approximately three years, and the process was far from a model of administrative efficiency and regularity.¹⁷⁷ Pursuant to EPA regulations, Virginia submitted to the EPA a revision of its SIP that included a proposed emission offset to the refinery. There were disagreements, however, over monitoring and enforcement arrangements, and over compensating for emis-

173. Under the Clean Air Act's system of divided federal-state authority for permitting, the EPA had authority to disapprove the state's permit for HREC. This led to the federal-state-HREC negotiations over permit terms.

174. The rationale behind suggesting offsets at federal and state facilities was that offsets from government facilities might be easier to obtain than offsets from private facilities.

175. Development of the EPA's offset policy is described in detail in R. LIROFF, *AIR POLLUTION OFFSETS: TRADING, SELLING, AND BANKING* (1980).

176. The trade would be similar to one that EPA had just developed to permit siting a new automobile plant in Pennsylvania. *Id.* at 13-17.

177. HREC had to renew its permit at various times, and the permit in its many forms had to be reviewed by the EPA. The details of these administrative requirements can be found in H. Gabel & B. Seng, *supra* note 50, and in the Fourth Circuit's decision upholding the permit, *Citizens Against the Refinery's Effects v. EPA*, 643 F.2d 183 (4th Cir. 1981).

sions during loading and unloading of cargoes at the marine terminal. Much time passed while the state awaited the results of the EPA's review of its submissions. Time also had to be allowed for public notice and comment. In January 1980, the EPA finally approved the SIP revision for the refinery.¹⁷⁸

Citizens Against the Refinery's Effects, which had participated in many of the earlier administrative proceedings, filed suit in federal court. They challenged the EPA's approval of the offset. In a brief opinion, the Fourth Circuit Court of Appeals upheld the EPA's actions.¹⁷⁹

b. Prevention of Significant Deterioration

Under the Clean Air Act, HREC had to apply directly to the EPA, not to the SAPCB, for its PSD permit. It did so in June 1976.¹⁸⁰ The EPA issued the permit on July 25, 1977, shortly before Congress's enactment of amendments to the Clean Air Act.¹⁸¹

HREC submitted a second PSD application in June 1978, pursuant to the new statutory requirements.¹⁸² The application was deemed complete by the EPA in August 1978, after HREC submitted additional information.¹⁸³ Over one year later, in October 1979, the EPA made a preliminary determination that the refinery satisfied PSD requirements.¹⁸⁴ A hearing on EPA's determination was held in November 1979, and the EPA issued the PSD permit in January 1980.¹⁸⁵

Citizens Against the Refinery's Effects filed suit challenging issuance of the permit. They maintained that insufficient meteorological data had been used for modeling air quality impacts, that some existing and prospective emissions from other sources were underestimated or omitted, and that other errors

178. 45 Fed. Reg. 6940 (Jan. 31, 1980).

179. *Citizens Against the Refinery's Effects v. EPA*, 643 F.2d 183 (4th Cir. 1981).

180. For details on the EPA's pre-1977 PSD program, see generally W. RODGERS, *supra* note 112. Briefly, the EPA was trying to fashion a PSD program in response to litigation, since the Clean Air Act of 1970 had provided virtually no guidance for design of such a policy. The EPA issued final regulations in 1974, which were upheld by the D.C. Circuit Court of Appeals in 1976. See *Sierra Club v. Environmental Protection Agency* 540 F.2d 114 (D.C. Cir. 1976).

181. See *Corps FSEIS*, *supra* note 19, at 2-6.

182. See *Citizens Against the Refinery's Effects v. EPA*, 643 F.2d 178, 180 (4th Cir. 1981).

183. *Id.*

184. *Id.*

185. *Id.*

had been made. Again in a brief opinion, the Fourth Circuit Court of Appeals concluded that the EPA had not acted arbitrarily or capriciously, and upheld issuance of the permit.¹⁸⁶

2. Concluding Observations: Air Quality Issues

The EPA's inexperience with the nonattainment and PSD programs contributed to the considerable time required for final federal approval of the permits for the refinery. HREC could rightfully complain about extra burdens being placed on it by changing rules and by the amount of time taken by the EPA to process its permit applications. Since the air quality permitting process paralleled the prolonged consultations that preceded issuance of the Corps' dredging permit, however, Clean Air Act requirements did not actually delay the project. Even had no further air-related regulatory action been required after the initial state air pollution permit was issued in October 1975, work on the refinery would still have awaited resolution of the difficult water-related issues raised during the Corps' permitting process. Thus, while changing Clean Air Act requirements undoubtedly added to HREC's expenses in seeking approval of the project, the Clean Air Act was not actually responsible for the delayed federal approval of the Hampton Roads refinery.

IV. THE HAMPTON ROADS REFINERY PERMITTING PROCESS: CONCLUDING OBSERVATIONS

A number of problems, both analytical and institutional, accounted for the conflict and delay which plagued the Hampton Roads siting. The major analytical problems in the permitting process for the refinery were differences in perceptions of risk and continuing uncertainties about the real long-term need for the refinery. The major institutional problems were failure to develop useful information in a timely manner, and protracted and somewhat duplicative administrative reviews.¹⁸⁷

Might different administrative procedures have been used which could have reduced conflict, or at least accelerated the review process? With regard to the fragmentation of review at the

186. *Id.*

187. For similar conclusions reached by another analyst, see SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS, ENERGY DEVELOPMENT PROJECT DELAYS: SIX CASE STUDIES 96th Congress, 1st Sess. 7 (Comm. Print 1979).

state level, it should be noted that in 1976, Virginia adopted a "Multiple Permit Coordination Process," administered by the Virginia Council on the Environment.¹⁸⁸ The process has not worked as originally contemplated, but it illustrates both the kinds of measures that can ease permit reviews, and the legal problems these measures can encounter. The process was established to consolidate and expedite reviews of projects requiring permits from several state agencies.¹⁸⁹ An applicant could elect to submit a single, unified application to the Council's administrator.¹⁹⁰ The Council administrator could consolidate formal hearings, eliminate redundant procedures, and take other actions to expedite the review process.¹⁹¹ Within sixty days of the administrator deeming an application complete, a state agency would have to hold a hearing on it, and within ninety to one hundred and twenty days thereafter, the state agency would have to render a decision.¹⁹²

In March 1977, however, Virginia's Attorney General advised the Council that permits issued pursuant to the process might not be valid for several reasons: each agency, not the Council administrator, is responsible under state statutes for determining when an application is complete; the time constraints imposed by corresponding federal laws and regulations could not be overridden by the new procedures, and decisions must be based on a hearing record limited to the scope of each permit and not on a single overall record.¹⁹³ As a result of this ruling, the Council does not advise permit applicants to request formal permit coordination, but instead urges pre-permit coordination designed to promote contact among project applicants and state agencies.¹⁹⁴

Even if some consolidated hearing had been held on the initial HREC project proposal, the proceeding would have had to be reopened, with attendant delay, when the project's wastewater treatment plans changed.¹⁹⁵ Furthermore, without some impact

188. VA. CODE § 10-184.2 (1950).

189. See letter from Virginia Deputy Attorney General James E. Ryan, Jr. to Gerald McCarthy, Administrator, Governor's Council on the Environment (Mar. 25, 1977) (copy in author's file).

190. VA. CODE § 10-184.2(A) (1950).

191. *Id.* at § 10-184.2(B).

192. *Id.* at § 10-184.2(D).

193. See *supra* note 189.

194. Information on the consequences of the Attorney-General's opinion was provided to the author by the Chesapeake Bay Foundation.

195. See *supra* text and note at note 51.

statement-type disclosure document, which would have accurately highlighted the significant environmental issues, it is far from clear that such an early, comprehensive hearing would have effectively considered accurate information on oil spills, or that interested citizens would have had a reasonable base of information on which to comment.

Elementary steps can be, and have been taken at the federal level to address some of the problems evident in the HREC proceeding. For example, in 1978, the federal Council on Environmental Quality (CEQ) adopted new regulations for implementing the National Environmental Policy Act.¹⁹⁶ CEQ's regulations established a new "scoping" mechanism.¹⁹⁷ Scoping is a process by which decisions are made early as to what the central issues to be treated by an environmental impact statement will be. It is intended to ensure that critical issues raised by a proposal can be identified prior to preparation of an EIS. This early identification reduces the possibility of important issues being overlooked during the NEPA review, and encourages agencies to direct resources to the analysis of the most significant environmental issues. The CEQ regulations also attempt to expedite project reviews by encouraging the setting of schedules for the steps to be taken in the NEPA process, and by promoting "piggybacking" of federal requirements onto state environmental impact assessment requirements.¹⁹⁸

Had there been a scoping requirement at the time, perhaps more information would have been available earlier during the review of the HREC project. Even with scoping, inter-agency agreements would have required the multiple reviews of HREC's application for a "dredge and fill" permit. Perhaps these reviews might have been accomplished more quickly, however, if the necessary information had been available earlier. Conceivably, the state and federal agencies, in consultation with HREC, could have agreed in advance that effects on the shellfishery were a significant issue, and that simulations would be used to develop data for review by all agencies. Perhaps there also could have been early agreement as to how the risk of oil spills from barges and tankers serving the refinery would be quantified. Such agreements might have speeded the process of inter-agency con-

196. 40 C.F.R. §§ 1500-1517 (1983).

197. *Id.* at § 1501.7.

198. *Id.* at § 1506.2.

sultation at the federal level and provided a sounder administrative record for the state permitting agencies. A scoping process probably would not have speeded the air quality permitting process, however, because adjustments would have had to have been made to accommodate the new offset policy and changes in the Clean Air Act.

Since the HREC controversy, steps have been taken to simplify the process for resolving disputes over Corps Section 404 permits.¹⁹⁹ New inter-agency agreements have been signed reducing the number of stages through which a permit is elevated for review.²⁰⁰ New inter-agency agreements and regulations had been developed in 1980, but these provided for four layers of Washington review taking a minimum of thirteen months. Under new memoranda signed in 1982, a single Washington review is provided for which may not exceed 120 days in duration.²⁰¹ The review must be requested by a senior Washington official of one of three agencies signing the memoranda (Department of the Interior, Department of Commerce, and Environmental Protection Agency), and must be approved by the Assistant Secretary of the Army for Civil Works.²⁰² Appeal of the Corps decision is only permitted for cases in which a project raises environmental issues of national importance requiring senior level review, significant new information has been developed which was not previously available, and there has been insufficient inter-agency coordination.²⁰³ These streamlined procedures might help future projects like the Hampton Roads refinery. It is worth noting, however, that very few projects are subject at all to higher level review, so few evaluations will actually be expedited by these changes. For example, in fiscal year 1981, the Corps reported that it issued approximately 16,000 permits, and only twenty-five cases were reviewed in Washington because of failures to resolve disagreements at lower levels.²⁰⁴

The problems which HREC encountered in obtaining permits for its proposed project, and the administrative solutions that have been developed to address some of the problems, are some-

199. *Corps Signs Memos on 404 Permits with EPA, Commerce, Interior*, in AIR/WATER POLLUTION REPORT, 295 (July 26, 1982).

200. *Id.*

201. *Id.*

202. *Id.*

203. *Id.*

204. *Id.*

what representative of the problems and responses The Conservation Foundation found across the country in its study of the process of siting new facilities.²⁰⁵ When the industrial siting process in the United States is examined closely with an eye toward identifying ways to remedy problems while maintaining environmental protection goals, four main weaknesses can be pinpointed:

1. The regulatory system's confusing structure needlessly lengthens the permitting process;
2. The system creates uncertainty, which plagues industry;
3. The system does not always produce environmentally sound decisions;
4. Decisions often lack finality, since administrative decisions can be reversed or challenged in court.

Concern over these problems has prompted proposals for such "cure-all" reforms as one-stop permitting agencies and energy mobilization boards.²⁰⁶ Some measures would remove governments, agencies, and laws from the process, while others would consolidate permitting agencies into a single body with responsibilities for all air, water, land-use, and other environmental programs and laws.²⁰⁷ Additional proposals would restrict citizen participation.

Effective, long-lasting reform, however, may lie in an entirely different direction; "quiet," less radical reforms that focus on incremental changes in procedures and institutions might, in the long run, more effectively ease the siting process without needlessly sacrificing environmental goals. Federal, state, and local agencies are already experimenting with a host of techniques designed to improve management with methods used every day in business to make organizations run more smoothly. Most operate without specific authority and do not create new bureaucracies, add new regulations, or preempt existing laws. Some examples of promising approaches already in use include: use of voluntary decision schedules to help keep reviews on track while fostering cooperation among regulators and project proponents;²⁰⁸ use of joint or consolidated hearings to reduce redundant meet-

205. See generally C.J. DUERKSEN, *supra* note 1.

206. One-stop permitting can be found in Florida, under the Electrical Power Plant Siting Act, and in Washington, which has a state siting council. *Id.* at 118-20.

207. *Id.* at 120-23.

208. *Id.* at 130-40.

ings;²⁰⁹ scoping of impact assessments; establishment of "escort services" within state governments to help identify needed permits, set up meetings with regulatory agencies, and monitor the permit process;²¹⁰ and listing of sites that, for environmental reasons, are either off-limits or potentially acceptable for industries beginning a site-selection process.²¹¹

Unless the proper foundation for change is laid, however, these and other reforms may never be implemented, or, if they are implemented, simply might not work. A few basic precautions can help keep them from failing. For example, maintaining the integrity of the systems now in place should be a primary goal in all efforts to ease the review process. Two ways to do this are to make sure that necessary checks and balances are not eliminated, and to involve all interested parties in designing the reforms. In addition, regulators should not be burdened with new duties that cannot be met because funds or personnel are lacking.

Many problems in the regulatory system arise because the needs of corporate project planning do not always mesh well with regulators' needs; poor communication between industry and regulators is rife. However, to the extent that industries are able and willing to develop environmental assessments early in their planning processes, the permitting process can be eased by affording early participation by government officials and the public, and by adopting other reforms suggested here.

In some cases, however, even if a complete information record could be developed early, and commitments were made by project proponents to minimize predictable and mitigable environmental impacts, the threats to environmental resources might be so feared that a project's opponents would use all available legal means to stop it. The demise of such projects, particularly ones for which there is an undeniable public need, might lead to proposals to get bothersome citizen groups, as well as some agencies, out of the approval process altogether. This might eliminate the creeping paralysis that seems to be afflicting government decision making. Cutting back on participation, however, is likely to create more problems than it solves. Siting dubious projects by shuffling them through truncated approval processes can diminish the

209. Maryland, Florida, Oregon and other states provide for consolidated hearings. For the pros and cons of such hearings, see *id.* at 154-56.

210. For examples from Georgia and California, see *id.* at 156-57.

211. For examples from Maryland, San Francisco, and Europe, see *id.* at 123-25.

legitimacy of government and lead to undesirable and avoidable environmental impacts. Democratic processes can be awkward and uncomfortable, but openness promotes examination of all sides of an issue, and helps insure that all pertinent information is available to decision makers. Balancing the need for speed and certainty against the need for the full airing of issues will never be easy; but incremental reforms such as scoping can address the biggest sources of delay, while promoting the protection of environmental and democratic values.

V. CONCLUSION

An examination of the ten-year attempt by the Hampton Roads Energy Company to win regulatory approval of its proposal to site an oil refinery in Portsmouth, Virginia, illustrates the difficulties faced by those wishing to site new industrial facilities in areas which are sensitive to the potential environmental threat posed by such facilities. Multiple permit requirements, regulatory delays, fragmented jurisdiction, inter-agency conflicts, the difficulties of environmental risk assessment, and other problems can make the permitting process long and frustrating for project promoters. Federal and state agency efforts to balance the potential benefits of the refinery against the potential resulting harm to Virginia's valuable oyster population from an oil spill highlight some of the problems inherent in measuring the merits and drawbacks of a proposed siting. Perceptions of the actual risk which the facility posed to the oyster seed beds varied considerably among and within agencies and depended upon the type of analysis used. Opinions as to the potential local and national benefits of the refinery were similarly diverse. The variety of opinions led to agency disputes which prolonged considerably the permitting process.

From a policy perspective, however, the delay was not without its benefits. By the later stages of the review, information available to federal agencies evaluating spill risk had been considerably improved. In addition, a slow, conflict-ridden deliberative process provides greater assurance that decisions are made based on a thorough analysis of available information and competing policy considerations.

It is possible to streamline the permitting process while still ensuring that siting proposals receive thorough and adequate consideration. Some beneficial reforms have already been im-

plemented since the Hampton Roads facility was first proposed. The Virginia "Multiple Permit Coordination Process," the new NEPA scoping mechanism, and the Corps' efforts to simplify the section 404 permit process, are examples of ways in which state and federal agencies can expedite permit application review. Such reforms, adopted incrementally, are preferable to sweeping proposals which threaten to sacrifice deliberate and thorough consideration of environmental risks for expediency. The Hampton Roads example indicates that some reforms may be necessary. It also demonstrates, however, that the systems now in place, though clumsy, serve to ensure that conflicting ideas, policies, and information are given an opportunity to compete in forums which provide for participation by policy-makers, as well as individuals and citizen groups, with a broad range of interests. Industrial siting proposals are thus subjected to more rigorous scrutiny than would be provided by some of the truncated procedures proposed. Presumably, a broader range of interests are thereby served.

VI. POSTSCRIPT

In only one lawsuit have environmentalists successfully challenged a permit for the refinery. In July 1983, the United States District Court for the District of Columbia held that the Secretary of the Army had violated NEPA, the Administrative Procedure Act, and other laws, by failing to give environmental groups and others an opportunity to review and comment on the Army staff paper, the basis for the Secretary's decision to issue a dredge and fill permit to HREC.²¹² This failure was an important procedural oversight, because the staff paper contained considerable information and analysis absent from the environmental impact statements. The judge ordered the permit vacated; both HREC and the federal government have appealed the decision, although it appears that the oversight could be readily remedied and the permit reissued.²¹³ The National Wildlife Federation, which brought the suit, has also appealed, because the judge rejected its claim that the Secretary of the Army's decision to issue the permit was substantively arbitrary and capricious.²¹⁴

212. *National Wildlife Federation v. Marsh*, 568 F. Supp. 985 (D.D.C. 1983).

213. The army could simply prepare another supplemental environmental impact statement, provide for public comment, and reissue the permit.

214. Notice of Cross Appeal filed on November 5, 1983 in the U.S. District Court for the District of Columbia.

The refinery's fate, however, may not depend on the outcome of this lawsuit, but on another suit only indirectly related to the environmental impacts of the refinery. When Cox Enterprises purchased the project site from a subsidiary of the Norfolk and Western Railway in 1974, it did so on the condition that construction begin within six years; otherwise, the railroad could repurchase the land. In 1980, the railroad filed suit to reclaim the site from Cox Enterprises, for possible use as a coal export facility. The Circuit Court for the City of Norfolk held in favor of Norfolk and Western.²¹⁵ HREC appealed to the Virginia Supreme Court, which is expected to hear arguments and issue a ruling in 1984. The appeals in the National Wildlife Federation's lawsuit will not move forward until the ownership issue is resolved.

APPENDIX—PERMIT CHRONOLOGY

04/74—Cox Enterprises subsidiary acquires refinery site from subsidiary of Norfolk and Western Railway.

03/75—HREC submits permit application to Corps of Engineers for federal dredging permit, and permit application to Virginia Marine Resources Commission (VMRC) for state subaqueous permit.

05/75—HREC submits permit application to State Air Pollution Control Board (SAPCB) and application for "401 Certificate" to State Water Control Board (SWCB).

07/75—HREC submits environmental impact assessment to Corps.

08/75—SAPCB holds public hearing on HREC air permit.

09/75—VMRC holds public hearing on HREC permit application.

10/75—VMRC, by 4-3 vote, approves HREC application for subaqueous permit. SAPCB, by unanimous vote, issues state air permit.

11/75—Corps publishes draft EIS.

01/76—Citizens Against the Refinery's Effects organized.

01/76—SWCB, by unanimous vote, issues "401 Certificate."

04/76—Corps public hearing on dredging permit. EPA states refinery is environmentally unacceptable. EPA, SAPCB, and HREC begin discussions of "offset" required for new emissions from refinery.

06/76—VMRC permit upheld by Virginia Circuit Court, in challenge by Tidewater Refineries Opposition Fund. HREC files for first PSD permit from EPA, under then-existing rules.

215. *Virginia Holding Corp. v. Trailsend Land Company*, No. C-80-659 (Cir. Ct. for the City of Norfolk, August 10, 1981).

- 09/76—Corps seeks additional information from HREC, including oil spill risk assessment.
- 10/76—HREC submits application for NPDES permit to State Water Control Board.
- 12/76—SWCB holds public hearing on HREC NPDES permit application.
- 01/77—SWCB deadlocks, 3-3, on motion to deny NPDES permit to HREC, when one member abstains.
- 02/77—SWCB approves NPDES permit, by 4-2 vote.
- 04/77—Corps receives answers to September 1976 inquiries to HREC.
- 07/77—EPA issues PSD permit to HREC, just prior to congressional enactment of amendments to Clean Air Act.
- 08/77—Corps issues final EIS.
- 10/77—SAPCB reissues air permit to HREC, including offset.
- 11/77—SAPCB submits SIP revision request to EPA, seeking formal approval of offset.
- 12/77—Virginia Governor Godwin expresses support for HREC proposal, in anticipation of permit denial by Corps District Engineer.
- 01/78—Corps District Engineer recommends to higher Corps authorities that Corps dredging permit be denied.
- 02/78—U.S. District Court, in first of series of opinions, rejects efforts by the Chesapeake Bay Foundation and Citizens Against the Refinery's Effects to overturn award of NPDES permit.
- 05/78—NPDES permit upheld by Virginia Circuit Court, in challenge by Virginia Oyster Packers and Planters Association.
- 06/78—HREC applies to EPA for new PSD permit, under revised rules.
- 08/78—HREC PSD application completed.
- 09/78—Corps issues final supplemental EIS.
- 10/78—Proposed SIP revision published for comment in *Federal Register*, following additional exchanges between SAPCB and EPA. Offset for vessel emissions at marine terminal not included.
- 11/78—Chief of Corps of Engineers issues preliminary opinion supporting issuance of Corps permit.
- 12/78—NOAA releases ECO report on oil spill risks, restates opposition to award of Corps permit.
- 02/79—Corps reports results of oil spill simulation in Chesapeake Bay model.
- 05/79—EPA publishes revised offset proposal, including terminal emissions, in *Federal Register*.
- 10/79—Preliminary EPA determination to issue PSD permit. Preliminary decision to issue Corps permit announced by Secretary of the Army.
- 12/79—Secretary of the Army orders issuance of Corps permit.
- 01/80—EPA gives final approval to offset and to PSD permit.

07/80—U.S. District Court rejects continuing efforts by Chesapeake Bay Foundation to overturn NPDES permit.

09/80—National Wildlife Federation and other environmental groups file suit in federal court, challenging Corps permit.

10/80—Norfolk and Western Railway subsidiary files suit in state court seeking to reclaim refinery site.

03/81—U.S. Fourth Circuit Court of Appeals upholds EPA's offset and PSD approvals, in challenge filed by Citizens Against the Refinery's Effects.

08/81—Virginia Court rules that Norfolk and Western Railway subsidiary is entitled to repurchase refinery site. HREC appeals decision.

07/83—U.S. District Court for District of Columbia enjoins Corps from issuing dredge and fill permit to HREC, citing violations of procedural requirements of federal laws and Corps regulations.