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THE FOUR CORNERS POWER COMPLEX:
POLLUTION ON THE RESERVATION

The decision to construct numerous large-scale, coal-fired power plants in the Four Corners area of the Southwest represents a classic conflict between increased economic development and the maintenance of a high level of environmental quality. Rapid population growth in the southwestern United States has been accompanied by a greatly increased demand for electricity. In order to meet that demand, members of the Western Energy Supply and Transmission Associates (WEST), a group of utilities, decided to construct the power plants. This decision, resulting in the degradation of the environmental quality of the Four Corners area, was implemented by a series of incremental steps. At no stage in the process did any regulatory entity attempt to make a comprehensive evaluation of the consequences of development. Seldom did any regulatory agency effectively apply the environmental controls available to it.

The Four Corners area is commonly regarded as a natural resource because of its geologic formations, many of which are national monuments, and its unique climate. While tourism has become a major industry, the region remains economically depressed. Therefore, a question arises as to whether needed economic development justifies environmental degradation.

Foremost among the factors which influenced the decision to build plants in this area were technological advances in both extra high voltage transmission and strip mining equipment. Also, the Southwest has huge untapped coal reserves which can be mined economically. By locating

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1. The "Four Corners" is the point at which the states of New Mexico, Arizona, Utah and Colorado share a common border.
2. For example, from 1960 to 1970 the population of Nevada grew 71.3 per cent and that of Arizona grew 36.0 per cent. BUREAU OF THE CENSUS, DEP’T OF COMMERCE, CENSUS OF POPULATION: 1970, GENERAL POPULATION CHARACTERISTICS.
3. Hearings on the Problems of Electrical Power Production in the Southwest Before the Senate Comm. on Interior & Insular Affairs, 92d Cong., 1st Sess., pt. 1, at 39 (1971) [hereinafter cited as Hearings]. It has been predicted that peak load requirements for the entire Southwest will more than double from 1970 to 1980. Id. at 463.
4. Id., pt. 2, at 800-01. The function of WEST is merely to coordinate long-range planning to meet future predicted needs; it does not construct, own or operate any facilities as an entity.
5. Id., pt. 5, at 1523.
6. See id., pt. 3, at 966. In 1969, per capita income in New Mexico was 850 dollars below the national average, while that of Utah was 707 dollars below the national average. BUREAU OF THE CENSUS, DEP’T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES, 1971, at 314.
the plants as closely as possible to this fuel supply, the utilities realize
tremendous savings on shipping costs. In addition, these plants require
huge amounts of water for cooling purposes. The Colorado River system,
which flows through the Four Corners area, is the only adequate supply
of water in the Southwest. Another significant factor was the presence
of strict pollution control regulations in the metropolitan areas which the
plants are to serve. Thus, the availability of fuel and water, the need for
economic development and the lack of effective pollution control regula-
tions made the Four Corners area ideal. Finally, the economic advan-
tages which could accrue from the plants and related facilities made the
proposition equally desirable to many of the local residents.

The enormous amount of air pollution emitted by the Four Corners
plant has engendered a great deal of controversy. The result has been
a considerable amount of conjecture concerning the possible environmental
effects of continued large-scale power production in the region. Much of
the debate has centered upon the technological limitations of pollution
abatement equipment.

MAJOR POLLUTANTS—EFFECTS AND CONTROL

The burning of coal in an electric generating plant produces three
major pollutants: particulate matter, sulfur dioxide (SO₂) and oxides
of nitrogen (NOₓ). The deleterious effects of these pollutants upon hu-
mans, vegetation and property are numerous. Particulate matter in the
atmosphere can be inhaled into the lungs, increasing the risk of silicosis.
Particulates are also a basic component of visual pollution. In addition,
particulates may absorb SO₂ present in the atmosphere and carry heavy

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8. For example, rule 67 of the Los Angeles City Air Pollution Regulations restricts
emissions of particulate matter from any one source to 240 pounds per day. Each of
the proposed plants will emit particulate matter far in excess of this limit. Id., pt. 1,
at 122.
9. Annual payrolls from the five plants discussed herein and their related coal
mines is expected to total over fourteen million dollars with an additional twelve mil-
lion dollars in local tax revenue. In addition, about 1400 new jobs will be created.
Hearings, supra note 3, pt. 1, at 65.
10. See, e.g., New York Times, May 27, 1971, at 18, Col. 4. The Four Corners
plant is located on the Navajo Indian Reservation, near Farmington, N.M. Four other
plants in the Four Corners area are also in operation, under construction or in the
advanced planning stage. These are the San Juan plant, located approximately fourteen
miles northeast of the Four Corners plant; the Navajo plant, located on the Navajo
Reservation near Lake Powell (in Arizona and Utah); the Kaiparowits plant, located
about twenty miles north of the Navajo plant; and the Mohave plant, located on the
Colorado River, south of Las Vegas, Nev.
11. Silicosis is a chronic disease of the lungs caused by the inhalation of silica
dust, present in coal dust and coal ash, as well as in stone dust from quarry operations.
concentrations of that pollutant into the lungs. Sulfur dioxide may also be slowly converted into sulfur trioxide, which may then combine with moisture in the air to form a sulfuric acid mist which, in turn, has an extremely corrosive effect on a wide range of substances. Nitrogen dioxide, at very low concentrations, can produce a brown tint in the atmosphere. Finally, nitrogen dioxide and sulfur dioxide seem to have a powerful synergistic effect on vegetation.

The presence of these pollutants in any significant amount could seriously impair the environmental quality of the Four Corners area. Unfortunately, all indications are that these power plants will emit a great deal of these pollutants. The first three units of the Four Corners plant emitted about 260 tons of particulate matter each day. Units four and five added another 52 tons daily. Even though a significant reduction in the level of emissions is expected when new collection devices are installed, a great deal of pollution will still escape into the air.

While advances in technology relative to the production of electricity allow utilities to construct huge power plants, thereby taking advantage of economies of scale, the technology of pollution control has not advanced far enough to develop effective pollution control equipment for plants the size of those being considered.

14. Id. at 847.
15. Sulfuric acid mist has a particularly harmful effect on stone and could damage or destroy many of the natural and archeological treasures of the Four Corners area. An example of this effect can be found in the fate of Cleopatra's Needle in New York's Central Park.

It is a 224 ton granite obelisk . . . carved in 1600 B.C. . . . The obelisk's makers cut hieroglyphic characters into all four of its sides and the ancient writing was still plainly visible when it was brought to the park. Today, however, those characters on the south and west sides which face prevailing winds and concentrations of air pollution have been entirely obliterated.

Observation of a Wall Street Journal reporter, quoted in Heller, Who Owns the Air? 21 (paper distributed by Sierra Club) [hereinafter cited as Heller].

16. Hearings, supra note 3, pt. 2, at 854. Nitrogen dioxide, in the presence of reactive hydrocarbons, is the principal building block of photochemical (Los Angeles type) smog, and when these hydrocarbons are not present, nitrogen dioxide can combine with moisture in the air to form droplets of nitric acid. Id.
17. In combination, the two [NO and SO\(_2\)] destroyed a plant, while the plant was unaffected by three times the concentration of sulfur dioxide and eight times the concentration of nitrogen acting alone.

Id., pt. 1, at 100.
18. Id. at 29.
19. Id. at 320. This compares with a total of 150 tons per day from all stationary sources of air pollution in New York City and 110 tons per day from all sources in Los Angeles. Id. at 94.
20. Id. at 29. The figures for emissions of SO\(_2\) and NO\(_x\) are no more reassuring. It has been estimated that the five plants together, when completed, will emit almost 1800 tons of SO\(_2\) and 1200 tons of NO\(_x\) per day, in the absence of any control devices. Id. at 101.
There are three basic methods of abating this pollution: collecting or absorbing the pollutant, dispersing the effluent and minimizing the production of the pollutant.\(^{21}\) When coal is burned, a residue remains, much like the ashes left after the burning of wood. Most of this residue (particulate matter) escapes through the smokestack. Equipment available under the present state of technology will collect up to 99.5 per cent of particulate emissions.\(^{22}\) While this appears to be an impressive figure, the tremendous size of these power plants causes significant amount of pollutants to escape, even at 99.5 per cent efficiency.\(^{23}\) The pollutants that escape the collection equipment are then subjected to dispersion, the second method of abatement. Dispersion is accomplished by the use of tall smokestacks, which are designed to take advantage of air currents to spread the pollution over a wider area.

Owing to the low sulfur content of the coal used in the Southwest power plants,\(^{24}\) minimization of the production of SO\(_2\) has already been accomplished. While an adequate process for removing SO\(_2\) from flue gases has been known for some time, technological problems have so far prevented its successful application.\(^{25}\) However, very little research has been done on flue gas treatment for NO\(_x\) removal. One reason is that the major source of such pollution is automobile exhaust rather than emission from power plants. A second reason is that the NO\(_x\) problem received little attention while research was concentrated on the more important SO\(_2\) problem.\(^{26}\)

In addition to the problem of air pollution, the development of a huge power complex in the Southwest may have adverse effects upon the Colorado River, the most intensively apportioned water resource in the United States.\(^{27}\) Estimates of the virgin flow of the river vary from a

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21. Id. at 570.
22. Id. at 577.
23. For instance, the five units of the Four Corners plant burn approximately 25,000 tons of coal per day, id. at 471, 473, with an ash content of approximately 22 per cent, id. at 303. Thus, 5500 tons of ash are produced each day, of which eighty per cent, or 4400 tons, escape to become fly ash. With an efficiency of 99.5 per cent, 0.5 per cent of the particulates, or 22 tons will still escape. Compare this with the 240 pound limit in Los Angeles. See note 8 supra.
24. The coal used at the Four Corners plant averages only 0.5 per cent sulfur. Hearings, supra note 3, pt. 1, at 472.
25. A plant in Fulham, England, successfully removed 99 per cent of SO\(_2\) as early as 1936. The process is, however, highly corrosive, resulting in high maintenance and replacement costs. Id. at 578-79. Thus, the National Research Council believes that at present, commercially proven technology for the control of SO\(_2\) from combustion processes does not exist. Id., pt. 3, at 937.
27. See COMM. ON WATER, NATIONAL RESEARCH COUNCIL, NAT'L ACADEMY OF SCIENCES, WATER AND CHOICE IN THE COLORADO BASIN 5, 21 (1968) [hereinafter cited as WATER AND CHOICE].
high of 16.8 to a low of 13.8 million acre feet. If the lower estimate is correct, the resources of the Colorado could well be overextended within the next twenty years.

In addition to the possibility of a water shortage, the Colorado River basin also faces the problem of high salinity. Between its source and the point of last major diversion in the United States, there is a twenty-one-fold increase in salinity. This increase has two basic causes—discharge of mineral pollutants into the river and reduction of the river's diluent power by consumptive use of its water. High salinity has an adverse effect upon the use of the water for irrigation purposes. A sharp rise in salinity, therefore, could result in the loss of many acres of farmland and reduce the quality of water delivered to Mexico.

The construction of the Southwest power plants gives rise to a myriad of environmental problems. One would not expect the utilities to be overly concerned with such pollution control considerations. Therefore, the burden of responsibility for protecting the environment must rest with the legislatures and appropriate regulatory agencies, federal and state.

**Federal Controls Over Plant Siting**

The federal government has pre-empted state control over the siting of hydroelectric facilities under the Federal Power Act. However, there is no similar control over the location of fossil fuel plants, so that under ordinary circumstances no federal license or permit is required before

28. *Id.* at 33. The lower estimate is the more recent. An acre foot is the amount of water required to cover one acre of land to a depth of one foot.

29. The five power plants discussed herein, in addition to the Huntington Canyon plant, located near Price, Utah, will ultimately consume approximately 300,000 acre feet of water per year. *Hearings, supra* note 3, pt. 3, at 1055. The lower basin states (California, Arizona and Nevada) have estimated the capacity of the Colorado at 14.9 million acre feet, which they predict will be just enough water to meet all anticipated needs on the river until 1995. *Water and Choice, supra* note 27, at 27. Thus, if the available water is as little as 13.8 million acre feet, the lower basin could suffer a water shortage long before 1995.

30. *Id.* at 28-29.

31. Highly saline water, if used for irrigation, can destroy the ability of the soil to grow crops or at least severely restrict the type of crop which can be grown and the yield which can be realized. *Hearings, supra* note 3, pt. 2, at 814-15.

32. When asked about plans to install new collection devices with more than 99 per cent efficiency, Hubert Cocklin, New Mexico manager for Arizona Public Service, replied:

Maybe we wouldn't do as good a job if there were no state regulations. The same is true of any industry. You've got to have some reason to tell the stockholders you're spending $6 million or $8 million, and when you say the state has passed a new law, you have no problem.


construction may begin. An exception occurs when the fossil fuel plant is to be located on public lands of the United States or on an Indian reservation. For example, because the Four Corners and Navajo plants are located on the Navajo Reservation, the Secretary of the Interior had to approve the plant site leases entered into by the utilities and the Indians, thus affording at least a minimum of administrative review.

This is not to say that there are no opportunities for review unless the plant is so situated. Even though the siting of the plant is not subject to federal review, the construction of related facilities may come under the auspices of the national government. Where a project involves extension of plant facilities into navigable waters, it is necessary to obtain a permit from the Army Corps of Engineers. The grant of a right-of-way across Indian lands for transmission lines and fuel supply facilities must be obtained from the Secretary of the Interior. Similarly, a transmission line right-of-way through a national park must be approved by the National Park Service. If a national forest is affected, the Secretary of Agriculture must approve the right-of-way.

The permit authority of the Corps of Engineers warrants further consideration. Until recently, the Corps had only considered the effect of a proposed project on the navigability of the body of water. While the Fish and Wildlife Coordination Act contained a requirement that the Corps consult with the Fish and Wildlife Service as to factors affecting the conservation of wildlife resources when making a permit decision, the statute was unclear concerning the Corps' power to deny permits solely on the basis of environmental factors. This issue was resolved after the National Environmental Policy Act (NEPA) took effect on January 1, 1970. NEPA contains the directive that "the . . . public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter," among which is the promotion of

35. For a more complete discussion of the powers and duties of the Department of the Interior in this respect see notes 87-88 infra & text accompanying.
36. Section 10 of the Rivers and Harbors Act of 1899 states, in relevant part: It shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, lake, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army prior to beginning of same.
"efforts which will prevent or eliminate damage to the environment..."43

When read in light of these provisions, the Fish and Wildlife Coordination Act seems to allow the Corps to deny a permit on the basis of environmental factors alone, and it has been so held.44

NEPA broadened the scope of the Corps’ duties under its permit authority in another manner. Section 102(2)(C) of the Act requires all federal agencies to prepare a comprehensive environmental statement on all “major Federal action significantly affecting the quality of the human environment.”45 This requirement could prove to be a valuable tool for environmental protection. If the Corps prepares a statement and issues a permit even though the possibility of serious environmental consequences exists, the statement can be used to attack the Corps’ decision. If the Corps does not prepare a statement when it issues a permit for a project which is environmentally detrimental, the failure to prepare such a statement may be ground for invalidating the permit.46

The same considerations hold true for environmental statements which the Department of the Interior and the National Park Service must prepare when granting easements or rights-of-way. However, these sources of review are applicable only to federally owned land. Thus, they may be a valuable tool in the Southwest where much of the land is still owned by the federal government but are of limited importance in other areas of the country. The Corps of Engineers’ permit authority, therefore, takes on added significance where, owing to the scarcity of

44. Zabel v. Tabb, 430 F.2d 199 (5th Cir. 1970), rev’g 296 F. Supp. 764 (M.D. Fla. 1969). In this case, the Corps had denied a permit for a dredge and fill operation in Boca Ciega Bay, Fla., on the basis of environmental concerns, even though the project would have posed no threat to navigation. The district court decision, issued prior to the enactment of NEPA, held that the Corps did not possess such power. The court of appeals, in reversing, took notice of the policies of NEPA and the expression of congressional intent in CONSERVATION AND NATURAL RESOURCES SUBCOMM. OF THE HOUSE COMM. ON GOVERNMENT OPERATIONS, OUR WATERS AND WETLANDS: HOW THE CORPS OF ENGINEERS CAN HELP PREVENT THEIR DESTRUCTION AND POLLUTION, H.R. REP. NO. 91-917, 91st Cong., 2d Sess. (1970). The court then held that:
When the House Report and the National Environmental Policy Act of 1969 are considered together with the Fish and Wildlife Coordination Act and its interpretations, there is no doubt that the Secretary can refuse on conservation grounds to grant a permit under the Rivers and Harbors Act.
430 F.2d at 214.
45. 42 U.S.C. § 4332(2)(C) (1970). When the statute was enacted, there was some question whether the Corps’ permit authority constituted a “major Federal action.” The issue was resolved affirmatively by the Council on Environmental Quality in its Guidelines for Federal Agencies under the National Environmental Policy Act. 36 Fed. Reg. 7724 (1971).
46. See Casto, The Use of the Corps of Engineers Permit Authority as a Tool for Defending the Environment, 11 NATURAL RESOURCES J. 1 (1971).
federally owned land, it is often the only federal review required for fossil fuel power plants. Even this control is not applicable where the fossil fuel plant does not draw its water supply from a navigable body of water.

Thus, no comprehensive plan for federal siting review currently exists. The proposed Power Plant Siting Act of 1971 would require general siting review by federal authorities in any state which had not adopted its own review procedures. Under this proposal, utilities would have to identify needed facilities ten years prior to construction. Identification of sites and routes under consideration would have to be accomplished within five years of construction. Public hearings on specific sites, routes and facilities would then be held within 24 months of the beginning of construction. This proposal represents a significant step forward since it will foster long-range planning and will replace the utilities' unilateral siting decisions with public participation.

STATE AND LOCAL CONTROLS OVER PLANT SITING

State review of power plant siting is a recent development. In 1968 Maryland established the first siting review procedure, and several states have followed suit. The Arizona statute, for example, instructs the Corporation Commission (the state utility regulator) to establish a Power Plant and Transmission Line Siting Committee. Utilities contemplating construction of a plant with a capacity in excess of 100 megawatts must file a ten-year plan with the commission. Failure to submit such a plan constitutes grounds for refusing to consider an application. When a utility is ready to begin construction, it must apply to the commission for a certificate of environmental compatibility. The application is then sent to the siting committee for review. The statute lists a number of economic, technological and environmental factors which must be considered by the committee, including the cost of the project as estimated by both the applicant and the committee. If the committee fails to act within

48. Nevertheless, the Act, if passed, may cause certain problems. The identification of specific alternate sites five years before construction could have adverse effects upon a property owner's ability to develop or dispose of his property. The procedure could also cause land speculation, resulting in an increase in the cost of a project.
49. MD. ANN. CODE art. 78, § 54A.
52. The Committee's eighteen members include both state officials and public members. ARIZ. REV. STAT. ANN., § 40-360.01 (Supp. 1971).
53. The plan must contain any construction contemplated within the next ten years. ARIZ. REV. STAT. ANN., § 40-360.02(A) (Supp. 1971).
180 days, the applicant may proceed with construction at the proposed site, or, if alternate sites had been proposed, at the site which the applicant decides is most suitable, considering the statutory factors. The committee’s decision may be reviewed by the commission and, only thereafter, by the courts. These provisions are aimed at preventing costly delays in the consideration of a project, since “any significant increase in cost represents a potential increase in the cost of electric energy to the customer.”

Another provision of the statute is aimed at communities which attempt to exclude power plants by the imposition of impossibly strict air quality standards. The statute states that although the applicant must comply with all applicable local ordinances, the committee may override those which are unreasonably restrictive and not feasible in view of available technology.

Presently, Arizona is the only state affected by the Four Corners area power plant complex which has a siting review statute. In Utah, New Mexico and Nevada, siting review is still limited to local control. In these states the only effective authority over power plant siting continues to be local ordinances pertaining to zoning, construction standards, air and water quality control and fire prevention. These ordinances may be promulgated by cities, towns, counties, special districts or Indian tribes.

While they are effective control devices, these ordinances often defeat the purpose of rational decision making. A community can exclude power plants by various methods even though it may have the site most suitable for necessary regional planning. While the Arizona siting statute allows the state siting committee to override unreasonable local ordinances, the situation in the other Four Corner states remains unchanged.

FEDERAL CONTROLS OVER THE CONSTRUCTION AND OPERATION OF POWER PLANTS

The degree of federal control over the construction and operation of fossil fuel power plants has grown immensely during the past two decades. The greatest growth of federal control in this area has centered on the problems of air pollution.

The first evidence of federal concern was the Air Pollution Control Act of 1955. Federal authority under the Act was limited to research, grants for research and technical assistance to cities and states. The 1955

Act was followed by the Air Pollution Control Act of 1963.\textsuperscript{58} While expanding the earlier program, it created the first federal enforcement procedures for the abatement of air pollution. As might be expected, the procedures were both weak and time consuming. An interstate air pollution problem might exist for over a year before effective action (in the form of a federal abatement suit) could be taken.\textsuperscript{59} In the case of intrastate pollution, no effective federal remedy existed absent a specific request by the state involved. Although the 1963 Act was deficient in many respects, the fact that federal abatement procedures were enacted at all was significant in light of the congressional belief that “the prevention and control of air pollution at its source is the primary responsibility of States and local governments.”\textsuperscript{60}

Federal control over air pollution was greatly expanded by the Air Quality Act of 1967,\textsuperscript{61} which provided \textit{inter alia} for the establishment of air quality control regions and created a program for the establishment of air quality standards. While retaining the abatement procedures of the 1963 Act, the Air Quality Act provided for additional and earlier federal abatement action. The Act instructed the Secretary of Health, Education and Welfare to designate air quality control regions based upon atmospheric areas, jurisdictional boundaries and urban-industrial concentrations. The Secretary was further authorized to develop and issue air quality criteria and to recommend control techniques to the states. Section 108 of the Act provided for a procedure by which states, upon receipt of these criteria and recommendations, were to establish air quality standards. The Secretary, however, retained residual authority to establish standards if a state failed to do so. In addition, § 108(c)(4) authorized the Secretary to request the Attorney General to bring an abatement suit upon the Secretary's finding that a discharge was affecting persons in neighboring states and

that the ambient air quality of any air quality control region or portion thereof is below the air quality standards . . . and . . . that such lowered air quality results from a failure of a State to take reasonable action to enforce such standards.\textsuperscript{62}


\textsuperscript{59} If the violator displayed recalcitrance about abating the pollution, the procedures for federal action involved a number of conferences and recommendations which could consume over a year before the Secretary of Health, Education and Welfare might request the Attorney General “to bring a suit on behalf of the United States to secure abatement of pollution.” Pub. L. No. 88-206, § 5(f)(1), 77 Stat. 397-98, 42 U.S.C. § 1857d(g)(1) (1970).


\textsuperscript{62} Pub. L. No. 90-148, § 108(c)(4), 81 Stat. 493. The Secretary was required to
While the Air Quality Act of 1967 expanded federal control over air pollution, it had several shortcomings. First, while leaving the establishment of air quality control standards to the states, the Act gave the Secretary only residual authority and failed to provide for national air quality standards. Second, the provisions for federal abatement procedures following state inaction were still too complex and time consuming. What proved to be the major problem, however, was the slow and ineffective implementation of the statute. Only a few air quality control regions were actually created, and those were not contiguous. This resulted in extreme delay, since the abatement procedures of the 1963 Act, rather than those of the 1967 Act, continued to control in those areas not included in air quality control regions.

The Clean Air Amendments of 1970 remedied these problems. The Administrator of the Environmental Protection Agency was directed to establish national ambient air quality standards for various pollutants. Unless a state wished to adopt stricter regulations, the national standards automatically applied. In addition, § 3 of the 1970 Act established air quality control regions in all areas not covered under the 1967 Act. Section four shortened time lags in the enforcement proceedings and provided penalties for violations. The 1970 Act also required the states to adopt plans for the implementation, maintenance and enforcement of the national standards.

The enactment of the Clean Air Amendments of 1970 made federal control over air pollution comprehensive. While the primary emphasis is still on state enforcement, the federal government's enforcement procedure has been considerably expedited. In addition, the adoption of federal ambient air quality standards affords indirect control over the

wait 180 days after notifying the affected states and the violators before making the request to the Attorney General. Since this section specifically refers to conditions which violate air quality standards, the retention of procedures for abatement by conference under § 5 of the 1963 Act [Pub. L. No. 88-206, § 5, 77 Stat. 396, as amended, 42 U.S.C. § 1857d (1970)], which take at least six months longer, must have been intended to apply to areas which had not been included in air quality control regions, or had not yet adopted air quality standards.

67. 42 U.S.C. § 1857c-8(a) (1) (1970) allows the Administrator to commence a civil action if a violator fails to comply with applicable requirements within thirty days after notification of the violation.
quality of air pollution abatement equipment installed in power plants. By setting standards high enough, the regulations can "force" installment of the best equipment. Nevertheless, control is still indirect.

STATE AND LOCAL CONTROLS OVER THE CONSTRUCTION AND OPERATION OF POWER PLANTS

Until recently, control over the operation of power plants was limited to public nuisance actions brought either by local governmental units or by public health agencies. However, in response to the Air Quality Act of 1967, many states enacted new pollution control legislation. The discussion here will be limited to legislation enacted by the four states directly affected by the Four Corners area power complex: Arizona, New Mexico, Nevada, and Utah. Each of the state statutes designates an agency to be responsible for the administration of air pollution control and contains provisions for the adoption and implementation of air quality standards and control regulations. Public hearings on the proposed standards and regulations are required. All four states also have provisions for varying degrees of local governmental control over air pollution. In addition, Arizona and New Mexico require that agencies adopting standards and regulations consider, inter alia, the technical practicability and economic reasonableness of the proposed regulations, the social and economic value of the sources of air pollution and effects on health, wel-

68. See, e.g., Nev. Rev. Stat. §§ 244.361, 268.410 (1968) (local governing bodies may regulate, control and prohibit by ordinance, as a public nuisance, excessive emission of dense smoke and air pollution).
fare, recreation and visibility.\textsuperscript{74}

A significant aspect of these state statutes is the degree of preconstruction control authorized. The Arizona statute requires any person planning to install, replace or alter any device which may contribute to air pollution, or which may reduce such emissions, to obtain an installation permit and later an operating permit. The statute allows both a public hearing before the Pollution Control Hearing Board on any denial of a permit and subsequent judicial review of the Board’s determination. The Utah statute contains similar provisions, although review of planned activity is discretionary on the part of the air conservation committee.\textsuperscript{75} New Mexico requires only that the environmental improvement board consult with persons proposing to install “an air contaminant . . . device or system for the control thereof.”\textsuperscript{76} There is no provision expressly empowering the New Mexico Board to forbid or delay construction, but such power could be implied from the Board’s general duty to prevent air pollution and its duty to consult. The Nevada statute allows the state Commission of Environmental Protection, at its discretion, to adopt regulations requiring review of construction, installation and alteration plans and to issue orders prohibiting contemplated action which will result in violations of the regulations. The Commission may also adopt an operating permit procedure.

The procedures for abatement of violations are basically the same in all the states discussed except New Mexico.\textsuperscript{77} The responsible agency must issue a written notice of violation to the operator of the offending source, who may then request a hearing before the appropriate board. The Utah and Arizona statutes provide for judicial review of the board’s decision.\textsuperscript{78} In addition, all of the state statutes allow the air pollution control agency to issue variances. New Mexico, Nevada and Utah have provisions allowing abatement orders of the air pollution control agency to become immediately effective when an emergency situation exists.\textsuperscript{79}


\textsuperscript{75} While no permit is required, the Committee may review all plans for the installation or modifications of devices and forbid construction if it finds that the device will violate the regulations. Utah Code Ann. § 26-24-9(1)(a) (Supp. 1971).


\textsuperscript{77} The procedure in New Mexico differs in that the Improvement Board attempts to obtain voluntary compliance from the violator. If this fails, the Board files suit for injunction. N.M. Stat. Ann. § 12-14-11 (Supp. 1971).


The states discussed have considerable control over the activities of fossil fuel power plants. However, the effectiveness of this legislation, both federal and state, depends upon how energetically the responsible officials and agencies carry out the mandates of the statutes. To a great extent, the courts also may play a significant role in assuring proper enforcement of pollution control legislation.

**The Role of the Courts**

The role of the federal courts in pollution control can take many forms. As noted previously, a federally initiated suit for injunction is the last resort within the statutory scheme. However, private suits may be brought against federal agencies on the ground that a particular agency action was illegal, arbitrary or an abuse of discretion.\(^8\) Such suits have been filed in relation to the Four Corners area power complex. For example, in *Jicarilla Apache Tribe v. Morton*,\(^81\) the plaintiffs sought an order requiring from the defendant Secretary of the Interior a comprehensive environmental statement under § 102(2)(C) of NEPA on all aspects of the Four Corners power complex.\(^82\) The plaintiffs also sought to nullify leases, contracts, rights-of-way and easements approved or executed subsequent to the effective date of NEPA and without accompanying impact statements. Other such suits are still pending.\(^88\) State statutes provide for judicial review of most proceedings of the responsible state pollution control agency. In addition, nuisance actions may still be brought in the state courts. Such an action was recently filed in New Mexico to enforce abatement of the pollution from the Four Corners Plant.\(^84\) The defend-
ants moved for dismissal claiming, *inter alia*, that the enactment of the New Mexico Air Quality Control Act implicitly superseded the civil nuisance abatement action law. The court rejected this contention and the case is now pending. Therefore, it may still be possible for private citizens to use this method if the state agencies responsible for pollution control fail to act.

**Federal and State Controls as Applied to the Development of the Four Corners and Navajo Plants**

In 1958 Arizona Public Service began negotiations with the Navajo tribe for a plant site.\(^85\) Three years later an agreement was signed involving a lease of 1254 acres.\(^86\) The lease was subject to the approval of the Secretary of the Interior.\(^87\) In deciding whether to approve the lease, one factor considered was the Navajo-Hopi Rehabilitation Act.\(^88\) This legislation called for the economic rehabilitation of the reservations by the utilization of natural resources and the development of industrial enterprises. The Secretary, in approving the lease, evidently did not consider other appropriate factors including health hazards posed by air pollution. Arizona Public Service was able to install particulate collecting equipment with a design efficiency of only 87 per cent.\(^89\) In addition, the lease contained the following provision:

\[*T*]he Tribe covenants that, other than as expressly set out in this agreement, it will not directly or indirectly regulate or attempt to regulate the company or the construction maintenance or operation of the power plant.\(^90\)

Because the agreement contained no express controls over air pollution, the tribe purported to contract away its police power to enact local ordinances controlling pollution. This was all done with the Secretary's approval.

By 1964 the first three units of the plant were in operation.\(^91\) Due to the highly corrosive nature of the fly ash, the collection devices did not

85. *Hearings, supra* note 3, pt. 1, at 301.
86. *Id.* at 302.
89. *Hearings, supra* note 3, pt. 1, at 304.
90. *Id.*, pt. 2, at 822.
91. *Id.*, pt. 1, at 85.
work to capacity, and efficiency dropped as low as 78 per cent. Attempts to correct the situation were futile, and emissions of particulate matter reached 260 tons per day.  

One wonders why this plant was not subjected to abatement proceedings under the Air Pollution Control Act of 1963 since the plant was creating interstate pollution. Failure to proceed under the Act could be justified only upon a finding either that the emission posed no danger to health or that Arizona Public Service was doing everything possible to abate. 

Arizona Public Service had engaged an air pollution expert to study the possibility of health hazards from stack emissions. However, his study was incomplete, for it failed to consider the effects of sulfur dioxide emissions, either alone or in combination with fly ash emissions. Thus, a decision based upon the report that stack emissions from the plant posed no health hazard would have been based upon insufficient investigation. A finding that Arizona Public Service was doing everything possible to abate would have been similarly invalid. Although Arizona Public Service, in cooperation with the particulate collector manufacturer, was attempting to remedy the situation, there is no indication that either of them consulted with the Secretary of HEW, who had been supporting research in the field since the 1955 Act. In any case, under the 1963 Act abatement adequacy was to be decided at a conference, and none was called. At the same time, participants in units four and five were negotiating with the Navajo tribe and the Department of the Interior concerning the expansion of the plant. On April 7, 1966, Secretary of the Interior Stewart L. Udall sent a letter to the president of Southern California Edison. In this letter, which was to become known as the 1966 Agreement, the Secretary indicated that his approval of any agreements made

92. Id. at 29.
93. Direct, aerial, continuous tracings of the Four Corners plant smoke plume have revealed the plume reaching into Arizona, Colorado and Utah at distances up to 230 miles from the plant. Id. at 121.
95. Hearings, supra note 3, pt. 1, at 305.
96. The study, contained in a report to the New Mexico State Department of Health and Social Services, Oct. 12, 1964, concluded only that "fly ash from the power plant would not offer any silicosis health hazard to the residents of the City of Farmington." Id. at 331 (reprint of report).
97. Id. at 304.
with the Navajo tribe would depend upon several conditions. The participants accepted all of these,99 including the requirements that they install and operate collection equipment “offering the most effective commercially proven electrostatic concept available under the technology known at the time of design,” and that such equipment be installed so as to remove “not less than 97 per cent of the particulate matter in each month.”100 The designs for all pollution abatement equipment were made subject to the approval of the Secretary prior to construction.101

While on the surface these provisions indicate a significant Interior Department concern for the Navajos and the environment, two enormous deficiencies remained. First, the Agreement required the best equipment available at the time of plant design. With lead times of three to four years on power plant design, this would allow the owner to install outdated equipment so long as it was the best available when the plant was designed. Second, and more importantly, the Secretary never enforced the Agreement. Indeed, he even failed to consult with the Department of HEW concerning the available control technology prior to approving the design specifications for the collectors.102 These incidents in the development of the Four Corners plant indicate an attitude of complacency on the part of the Interior Department.

The Four Corners plant has also been subject to control by the State of New Mexico.103 On January 23, 1970, that state implemented air quality standards as authorized under the New Mexico Air Quality Act.104 These standards required that abatement efficiency be increased to 99.2 per cent, and the plants decided to comply by installing new equipment.105 While this appears to offer relief, construction of additional units may,
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through sheer volume of emissions, negate its effectiveness.106

While attention was focused on the Four Corners plant, plans were proceeding rapidly for construction of the Navajo plant. Negotiations for a water service contract began in 1957 between the Salt River Project and the Bureau of Reclamation, Region Four.107 The acquisition of rights to cooling water presented the most difficult problem for the participants. The focal point of the problem involved the Upper Colorado River Basin Compact of 1949108 and Navajo water rights.

The Compact apportioned 50,000 acre feet of water a year to Arizona. The Navajo plant would require 34,100 acre feet per year,109 which would come from Arizona’s allotment. However, the Winters110 doctrine entitles the Navajo tribe to extract whatever water it needs for irrigation purposes. It was feared that the Navajos’ needs, combined with the plant’s needs, might exceed Arizona’s Upper Basin allotment, in which case the Navajos would be entitled to draw from the allotment of the other Upper Basin states. The situation was remedied when the Navajos waived their right to water in excess of Arizona’s allotment.111

Meanwhile, discussions continued regarding the potential water service contract between the Salt River Project and the Bureau of Reclamation. The Bureau stated as a prenegotiation condition that the owners of the plant must agree to coordinate their generating resources with the

106. By Dec. 31, 1973, when the new equipment is supposed to be installed on units four and five, the first unit of the San Juan plant, located approximately fourteen miles northeast of the Four Corners plant, will be in operation. Id. at 477. In addition, three new units are being planned for the Four Corners plant with a total capacity in excess of the five existing units, Id., pt. 5, at 1560, 1753. This will at least double emissions in the area.

107. Id., pt. 5, at 1741-42. The water for the Navajo plant will come from Lake Powell, which was created when Glen Canyon Dam was built under the Colorado River Storage Project Act. 43 U.S.C. § 620 et seq. (1970). The Storage Project is a reclamation project governed by the Reclamation Act of 1902, 43 U.S.C. § 371 et seq. (1970). The Secretary of the Interior is authorized, under 43 U.S.C. § 485h(c) (1970), to furnish water from reclamation projects “for municipal water supply or miscellaneous purposes.” In the case of the water service contract for the Navajo plant, the Bureau of Reclamation merely conducted the negotiations for the Secretary.


110. In Winters v. United States, 207 U.S. 564 (1908), the Supreme Court held that when the federal government created the Indian reservations it reserved not only the land, but also the use of enough water to irrigate the reserved lands. This concept, known as the Winters doctrine, was affirmed in Arizona v. California, 373 U.S. 546 (1963), which also held that water used by the Indians is charged against the state in which the use is made.

111. Hearings, supra note 3, pt. 5, at 1810. Pressure was applied to the Navajos to obtain this waiver by suggesting that a failure to grant the waiver would result in loss of the plant. Id. at 1757-58.
Bureau's hydroelectric resources. Further, the Bureau demanded that any agreement would have to include provisions for the Government's participation in the project. Once the Navajos' waiver of claims had been secured, there were no longer any obstacles to the completion of the water service contract, and it was executed by the Secretary of the Interior on January 17, 1969.

The Navajo plant became a reality under a veil of secrecy. There were no announcements of contract negotiations, no public or congressional hearings and no independent studies of environmental impact. The conflict of interest surrounding the involvement of the Department of the Interior in this project, especially in light of the proprietary role of the Bureau of Reclamation, deserves close scrutiny.

Ostensibly the Secretary of the Interior was acting as the trustee for the Navajo tribe. His duty qua trustee was to protect the tribe's economic and social interests in the plant negotiations. But because the Bureau of Reclamation became the most prominent participant in the plant, the Secretary was, in effect, negotiating for the Navajo tribe with a bureau in his own department. The Secretary leased the Navajo tribe's land, encouraged and allowed the tribe to sign away its claims to large quantities of water, sold its coal and granted rights-of-way across its property. The major beneficiary of these actions was the Interior Department's own subsidiary—the Bureau of Reclamation.

The lease, approved by the Secretary of the Interior on December 10, 1969, contained a provision identical to that in the Four Corners Plant

112. Id. at 1742.
113. Id. at 1746. 43 U.S.C. § 1523 (1970) authorizes the Secretary of the Interior to enter into agreements with nonfederal interests which propose to construct thermal electric power plants, whereby the United States can acquire sufficient portions of the capacity to power the Central Arizona Project. The Bureau of Reclamation subsequently became the majority participant in the Navajo plant and will receive 24.3 per cent of the power generated. Id. at 1685.
114. Id. at 1770.
115. On Oct. 20, 1969, a regional director of the National Park Service wrote a letter from Arizona to the Director of the Park Service in Washington, stating in part: All preliminary planning and continued negotiations for the [Navajo] plant have obviously been conducted in the greatest possible secrecy. Other interested agencies were not invited to participate until we literally forced our way in. . . Now that the plant is virtually an accomplished fact the Salt River Project officials . . . and U.S. Bureau of Reclamation officials agreed to meet . . . with the National Park Service to discuss environmental effects of the . . . plant.
Quoted in Heller, supra note 15, at 4.
116. The Navajo and Mohave plants obtain their coal from a strip mine on top of Black Mesa on the Navajo and Hopi reservations. Hearings, supra note 3, pt. 5, at 1626. This lease for the mine site required the approval of the Secretary of the Interior. 25 U.S.C. § 635 (1970).
Agreement—the best available control equipment would be installed.\textsuperscript{117} Hopefully, in the case of the Navajo plant, however, the Secretary will rigorously enforce this provision.

\textbf{CONCLUSION}

With the enactment of the Clean Air Amendments of 1970, the operation of the Southwest power plants became subject to either federal or state air quality standards and to air pollution control regulations. In addition, future plants which require federal licensing or approval will be subject to NEPA. As mentioned earlier, the issue of whether certain of the facilities of the Navajo project should have been subjected to the Act is currently being litigated. The slow progress of that case points out one drawback in using the NEPA § 102(2)(C) statement as a weapon for environmental defense. Unless suits in defense of the environment are given judicial precedence over other actions\textsuperscript{118} or unless the plaintiff can obtain a temporary injunction pending final determination, the issues may become moot before trial. While suit is pending, planning and construction can proceed to the point at which the court feels tremendous pressure not to declare the action invalid. Although the temporary injunction is a device readily available to the courts, giving precedence to environmental suits over all but criminal cases would be a better solution. While delay may increase the chances of environmental damage, a temporary injunction may force the delay of a project which would serve a vital need. Speedy determination of the issue would either allow the project to proceed as planned, or, if it were determined to be harmful, allow the owners to secure a new site or alter their design.

The drawback to use of the § 102(2)(C) statement, that it is an after-the-fact device, could be cured by enactment of a bill similar to the Federal Siting Control bill, which would insure prior review of the possible effects of a proposed power plant. The designation of air quality control regions provides at least one basis upon which to build a rational decision-making process, as would a national land use policy like that proposed in a bill introduced in the House in 1971.\textsuperscript{119} The most signifi-

\textsuperscript{117} \textit{Hearings, supra} note 3, pt. 5, at 1735-36. This Agreement differed from the 1966 Agreement in that it required that the collection equipment operate at 99.5 per cent efficiency.


\textsuperscript{119} H.R. 6579, 92d Cong., 1st Sess. (1971). It would establish a national land use policy and authorize the Secretary of Interior to make grants to encourage and assist the States to prepare and implement land use programs for the protection of areas of critical environmental concern and the control and direction of growth and development of more than local significance.

\textsuperscript{117} \textit{Congressional Record H1929} (daily ed. Mar. 23, 1971).
cant aspect of the bill is its provision for the control and direction of any
development having effects beyond local areas.

Economic and industrial growth have dominated this nation's his-
tory. A critical point has been reached at which such growth must be
weighed against the environmental problems it creates. The establish-
ment of an effective decision-making forum to balance our needs against
our wants, and our plans against our potential, is no longer a matter of
choice. It is essential.

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