Appendixes

Appendix A
Environmental Laws

In addition to the specific requirements of the Federal Coal Leasing Amendments Act (FCLAA) and the Federal Land Policy and Management Act (FLPMA) related to environmental planning and assessment, a number of other environmental laws apply to the Federal coal management program. These include the Surface Mining Control and Reclamation Act, the National Environmental Policy Act, and the Clean Air and Water Acts. This section will briefly describe the provisions of these laws as they relate to surface mining operations, discuss the impacts of mining to which they pertain, and review issues raised by the implementation of these acts in the coal program. A list of other environmental laws that may affect leasing or mining in the West may be found at the end of chapter 3.

Surface Mining Control and Reclamation Act

Congress approved the Surface Mining Control and Reclamation Act (SMCRA) (Public Law 95-87, 30 U.S.C. 1201 et seq.) in August 1977. SMCRA establishes a detailed national program for addressing the environmental effects of coal mining. Of particular importance are the act's requirements that surface coal mining operations be conducted in accordance with environmental protection performance standards (sec. 51 5), and that Federal lands be reviewed to determine their acceptability for all or certain types of surface mining, either as part of land use planning processes at the Federal, State, and local levels, or as a result of an unsuitability petition (sec. 522). SMCRA requires operators to post a bond to insure the mined land is reclaimed.

The performance standards of section 515 are minimum standards applicable to various aspects of the mining and reclamation process. Under SMCRA, the States may, if they choose, impose standards that are more stringent. Among other things, the standards require:

- maximum utilization and conservation of the coal being recovered;
- restoration of disturbed land to original or better conditions;
- restoration to the approximate original contour of the land surface;
- stabilization and protection of all surface areas;
- protection of prime farmlands through specific reclamation techniques;
- Ž minimization of disturbances to the existing hydrologic balance; and
- . limitation of mining on steep slopes.

Section 522 of SMCRA establishes a procedure for designating lands as unsuitable for all or certain types of coal mining operations. The Secretary of the Interior determines unsuitability for Federal lands, while States have authority over non-Federal lands. Section 522(a) provides specific unsuitability criteria which define categories of land that must be protected from, or during, mining (incorporated in the Bureau of Land Management's (BLM) land use planning regulations as criteria #1, #3, and #7). Interested parties also may petition the permitting agency (the Office of Surface Mining or a State regulatory agency in States with approved programs) to have areas designated unsuitable; the petition must be granted if it is determined that reclamation of disturbed lands is not economically or technologically feasible. Unsuitability status also may be granted, if as a result of the petition, it is determined that mining operations will:

- be incompatible with existing land use plans;
- significantly affect important fragile or historic lands;
- result in substantial loss or reduction in the productivity of renewable resource lands which produce food or fiber; or
- substantially endanger life and property in natural hazard lands (i. e., areas subject to frequent flooding and areas of unstable geology).

Federal Agencies

SMCRA also created the Office of Surface Mining Reclamation and Control (OSM) within the Department of the Interior (DOI) to implement the statute's various programs. OSM reviews and approves/disapproves State programs for controlling surface mining operations (and abandoned mine lands). The act originally provided for slightly less than 3 years of Federal enforcement of State-issued operating permits implementing the most stringent of the act's performance standards (known as the "interim regulatory program"). At the end of three years (June 3, 1980), primary regulatory responsibility for the program was to have shifted to those States whose proposed program for assuming regulatory primacy had been approved by DOI. In those States in which primacy was not achieved, a Federal program is to be implemented and administered by OSM. Three and one-half years after

enactment of the statute, all mining operations were to have been in compliance with permits issued in accordance with the full range of regulatory requirements, as administered by either the States or OSM,

Because substantial Western coal reserves are owned by the Federal Government, OSM has had direct responsibility not only for enforcing the act's regulatory requirements, but also for issuing operating permits on specific mines. The responsibility for overseeing mining activities on Federal lands, lies primarily with OSM, as assisted by the Bureau of Land Management, the U.S. Forest Service, and the U.S. Geological Survey, as well as with those Western States with Federal lands within their boundaries that have approved permitting programs and have signed cooperative agreements with DOI.

BLM is the leading agency for Federal minerals including resource conservation, diligence, and royalties under the Mineral Leasing Act. Under a variety of Federal statutes, BLM also is responsible for the management and protection of surface resources on public domain lands. BLM can set post-mining land use performance bond limits to assure protection of these resources. The Forest Service performs a similar role for National Forest lands.

OSM, with the concurrence of BLM and the Forest Service, submits recommendations to the Secretary of the Interior concerning the approval or disapproval of mine plan applications. The Forest Service must consent to the issuance of mine plan approvals for mines within the boundaries of any National Forest. Applicable Federal, State, and local agencies retain similar authority with respect to mines that might adversely affect any public park or site included in the National Register of Historic Sites.

States

Each of the Western States with significant coal reserves had enacted surface mining legislation in the 1970's prior to passage of SMCRA. The stringency of the pre-SMCRA State programs varied significantly, with Wyoming and Montana generally recognized as having had the most stringent programs, and Utah and New Mexico the least stringent. All of the Western States have revised their programs to comply with SMCRA, and have received approval of their permanent regulatory programs and have qualified for assumption of primary regulatory jurisdiction of surface mining and reclamation.

Thus, the States have assumed primary responsibility for mine plan compliance and enforcement of the Act's requirements. Those States with approved permit plans that have entered into a cooperative agreement with DOI also have the authority to regulate mining on Federal lands within their boundaries. The Secretary of the Interior, however, retains the authority to approve or disapprove mining plans on Federal lands and to designate Federal lands unsuitable for mining.

State Permit Programs.–To accomplish the goals established by the Act, State permit programs for surface mines and for surface operations of underground mines were mandated. Each application for a surface coal mining and reclamation permit must include detailed information about the type and method of coal mining operation and the engineering techniques and equipment to be used; the probable hydrologic consequences of the mining and reclamation, both on and off the mine site; any manmade features or significant archaeological sites that may be affected by mining; the geological and physical characteristics of the coal, including a chemical analysis of potentially acid- or toxic-forming strata; a soil survey of potential prime farmland; and the reclamation plan.

The probable hydrologic consequences of mining and reclamation must be determined relative to the hydrologic regime and the quantity and quality of surface and groundwater systems including dissolved and suspended solids under seasonal flow conditions. Sufficient data must be collected to enable the regulatory agency to assess the probable cumulative impacts of all mining in the area on hydrology and water availability.

The reclamation plan must describe the condition of the land prior to mining including its existing and potential land uses and its productivity as well as its average yield of food, fiber, forage, or wood products under optimum management. The plan also must specify the proposed post-mining land use and describe in detail how this use will be achieved including the engineering techniques and equipment to be used, the cost per acre of reclamation, and a detailed timetable for accomplishing reclamation. In addition, the plan must describe the means of compliance with applicable air and water quality and health and safety regulations.

All surface mining permits issued under the Act must require that the coal mining operations meet all applicable environmental protection performance standards. These standards govern the maximum recovery of fuel; restoration of the land to its approximate original contour; use of explosives; waste disposal, including the use of waste piles as dams or embankments; construction of access roads; and revegetation. Additional, more stringent standards apply to environmentally sensitive areas such as prime farmland, steep slopes, alluvial valley floors, and timber lands.

Permits for underground mining also must require the mine operator to prevent subsidence to the ex-

tent possible, seal all openings to the surface, and prevent acid or other toxic drainage.

Water Resource Impacts

OSM and the Environmental Protection Agency (EPA) are the principal Federal agencies responsible for review of water resource impacts of coal mining activities. Water resource data are major components of a mine permit application, and compliance with water resource performance standards must be demonstrated before an application can be approved.

Section 51 S(b) of SMCRA establishes performance standards related to water resource impacts. These include:

- control of discharges from mining and reclamation activities.
- control of erosion and attendant water pollution;
- impoundment of water on mining sites; and
- protection of groundwater recharge capacity.

Control of discharges from mining and reclamation activities is regulated by OSM, the State regulatory authority, and the agency responsible for implementation of the Clean Water Act in each State (see below). The Clean Water Act requires mining operations to obtain discharge permits and to comply with EPA or State effluent limitations. However, the Clean Water Act permit system applies only during the active phase of mining, Under SMCRA all water discharged as a result of coal mining and reclamation activities is regulated. Effluent limitations established by OSM are generally similar to those adopted by EPA.

Also, OSM regulations require sediment control measures using the "best technology currently available" and minimum standards for permanent and temporary impoundments as part of reclamation activities. Permanent impoundments may be constructed only if size and design criteria are adequate to ensure stability, safety, and access. In addition, SMCRA requires that the recharge capability of the mined area be restored to the approximate pre-mining condition. Furthermore, mine operators are required to monitor groundwater and surface water quantity and quality on the permit area and in the surrounding area before, during, and after mining.

Alluvial Valley Floors

Under provisions of SMCRA, alluvial valley floors* (AVFS) in the Western United States are given special protection because of their agricultural and hydrologic importance. The more important AVFs are protected from coal mining and its associated disturbance. The less important AVFs may be mined, but standards for reclamation are higher than for other types of mined areas.

Section 510(b)(5) of the act allows the Secretary of the Interior to exchange unleased Federal coal reserves for existing leases or non-Federal lands that cannot be mined because of AVF designations provided that coal is not yet being produced from the mine and the operator had made a substantial legal or financial commitment to develop a mine before January 1, 1977. The Act also requires the Secretary to exchange non-Federal coal lands in AVFs that cannot be mined for available Federal coal lands of comparable value; these exchanges are not subject to the requirement of substantial legal and financial investments.

The impact of the AVF statutory provisions, adopted regulations, and guidelines have been the subject of continued debate among industry and regulating Government agencies. industry has claimed that the AVF provisions are overly complex, lead to significant delays in processing permits, and may ultimately lead to significant loss of recoverable reserves.

National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 et seq.) restructured Federal agency decisionmaking in favor of a systematic, interdisciplinary approach that would ensure that environmental amenities and values receive appropriate consideration along with the traditional economic and technical factors. NEPA was the first major environmental legislation approved by Congress, and it has remained the most far-reaching in scope.

In general, NEPA has a threefold purpose: 1) to declare a national policy to create and maintain conditions under which man and nature can exist in productive harmony and can fulfill the social, economic, and other requirements of present and future generations; 2) to increase the understanding of ecological systems and natural resources; and 3) to promote efforts that will prevent or eliminate damage to the environment. As one means of achieving these purposes, NEPA requires all Federal agencies to include a detailed statement in every recommendation or report on proposals for legislation and other" . . . major Fed-

* Alluvial valley floors are those stream valleys in the Western United States which: 1) are underlain by unconsolidated gravel, sand, silt, and clay; 2) have a stream flowing through them; 3) have a generally flat valley floor topographic surface; and 4) have an agricultural importance. The relative importance of these valleys is a function of the water supplies available in the specific valley area. The agricultural activities generally include irrigated or subirrigated hay lands, developed pasture lands, critically important grazing areas, or lands that could be developed for any of these purposes.

eral actions significantly affecting the quality of the human environment . . . " that describes:

- possible environmental impacts of the proposed Federal action,
- any adverse environmental effects that cannot be avoided should the proposed action be implemented,
- alternatives to the proposed action and their environmental impacts,
- the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity as it applies to proposed Federal actions, and
- any irreversible and irretrievable commitments of resources that would result from implementation of the proposed action.

All coal-related activities that have a significant impact on the environment and that need Federal authorization require an environmental impact statement (EIS). This includes regional coal lease sales on Federal lands, large coal conversion facilities, and, in some cases, permits to conduct surface mining operations on Federal lands. Although permits issued by the EPA under the Clean Air and Water Acts are exempt from the EIS requirement, those acts require separate analyses of a project's impact on the environment (see below). Regulations to guide the implementation of NEPA have been promulgated by the Council on Environmental Quality (CEQ) (40 C.F.R. 1500-1 508). A large body of Federal case law has further defined NEPA requirements, particularly with regard to the scope and contents of EISs.

In order to determine whether a proposed action is "major" and if it "significantly" affects the environment, Federal agencies are required to prepare environmental assessments (EAs). These provide a brief examination and analysis of proposed actions and of alternatives to those actions, a discussion of the need for the proposed action, an examination of the environmental impacts of the proposed actions and alternatives, and a list of government agencies and people consulted during the preparation of the EA. Environmental assessments are public documents. If an EA indicates that an action is not "major" or that it will not "significantly" affect the environment, the CEQ regulations allow the agency to make a "finding of no significant impact" (FONSI). Such findings must be published with an explanation of the basis for the agency determination. No detailed EISs are required for actions which are found not to have significant impacts.

An EIS is prepared by BLM for each regional coal lease sale during activity planning, immediately following the ranking of tracts and selection of alternatives by the Regional Coal Team (RCT). The EIS must analyze site- specific environmental impacts on each tract or combinations of tracts (alternatives) being considered for leasing; the cumulative environmental impacts from each preferred or alternative combination of lease tracts and sale schedules; and the potential effects of a "no action" alternative (usually either no new leasing, or no competitive leasing). Under the current leasing program regulations, the EIS is the only point pre-leasing at which cumulative impacts must be assessed. However, approval of a land use plan (Resource Management Plan–RMP) under FLPMA has been determined to be a major action significantly affecting the environment, and the environmental analysis of alternatives is an integral part of the RMP process. Thus, as RMPs are prepared, the consideration of cumulative impacts from land use planning decisions will be included in the decisionmaking process before the completion of tract ranking and the selection of alternatives.

CEQ regulations implementing NEPA also require the preparation of an EIS when rulemaking is initiated by significant new circumstances or information relevant to environmental concerns, and thus is anticipated to have a significant impact on the environment. The initiation of the new Federal coal management program in 1979 was accompanied by a detailed programmatic EIS prepared in accordance with NEPA. When those regulations were revised in 1982-83, DOI prepared an EA that concluded that a second full EIS to analyze those revisions would not be necessary (FONSI). One basis for this decision was that the revisions to the regulations are sufficiently close to one of the leasing alternatives discussed in the 1979 Programmatic EIS that preparation of a supplemental EIS was considered unnecessary,

Critics of that decision assert that the EA did not take a sufficiently "hard look" at the impact of leasing changes to justify a "finding of no significant impact." They argue that the revised regulations included significant new circumstances or information compared to the coal program studied in the 1979 Programmatic EIS, and therefore merited a revised EIS. To support this argument, the critics cite the substantive changes in the methodology for setting regional leasing levels in the 1982 regulations which resulted in significant increases in those levels. Furthermore, the critics note that, since the 1979 EIS, a number of in-depth analy-

ses of Federal coal development issues have been conducted (including the 1981 OTA report An Assessment *of the Development and Production Potential of Federal Coal Leases),* that introduced new data that were unavailable in 1979.

The Clean Air Act

The Clean Air Act establishes a national system of air quality regulation. Before 1970, air pollution control essentially was left to the States, with the Federal Government providing technical and financial assistance for planning and research and development. Under the Act, EPA is responsible for implementing Federal regulations and standards; States are mandated to devise State implementation plans (SIPS) and, in the absence of State action, Federal intervention is required.

The central feature of the 1970 Clean Air Act Amendments was the requirement that EPA promulgate National Ambient Air Quality Standards (NAAQS). The NAAQS define air quality in terms of ambient concentration of pollutants. While these standards do not regulate emissions from individual sources, they do represent target levels for air quality. Under the Clean Air Act, two types of ambient air quality standards are designated: primary standards, which are designed to protect human health; and secondary standards, which are intended to safeguard public welfare.

Pursuant to the 1970 Clean Air Act Amendments, EPA identified six pollutants as having potentially adverse effects on public health and welfare, and established primary and secondary NAAQS for each. These pollutants are sulfur oxides (SO_x), particulate matter, nitrogen dioxide (NO_2), hydrocarbons, photochemical oxidants, carbon monoxide, ozone, and lead.

So that pollution control programs can be managed locally, 247 air quality control regions (AQCR) were designated. Each AQCR is classified as to whether it meets national standards. The classification of an area with respect to ambient air quality has important consequences. Regions that are found by EPA to be in nonattainment status are subject to a particular set of restrictions ("offset" requirements) under the Act. Nondegradation regions (where air is cleaner than the standards), are subject to a different set of regulations, which are intended for "prevention of significant deterioration" (PSD). Regardless of an area's classification, almost every new major source of emissions is required to undergo a preconstruction review.

State Implementation Plans

The State role centers on the preparation and implementation of a plan, consistent with EPA guidelines, that sets out control strategies for meeting and maintaining NAAQS in various parts of the State. States have considerable discretion in deciding what emission limitations and other controls on individual sources to use in cleaning up their air, as long as their SIPS are shown to be capable of achieving the national standards. State plans must include an enforceable permit program for regulating construction or operation of any new major stationary source in nonattainment areas or significant modification to an existing facility.

Prevention of Significant Deterioration

The 1970 Clean Air Act Amendments did not address the question of air quality in areas already cleaner than NAAQS require. In 1972, environmental groups brought suit against the EPA to prohibit the administration's approval of SIPS that failed to prevent significant deterioration of air quality. The outcome of the legal action was a court order that EPA develop a program to prevent the degradation of air quality in clean areas. In 1974, PSD regulations were promulgated and incorporated into all SIPS and in 1977 were incorporated in the act with some changes.

In general, the PSD program divides clean air areas into three classes. Certain National Parks, wilderness areas, and monuments that existed when the Act was passed were immediately designated as class I areas. Class I areas are subject to the lowest PSD increments and are primarily valued for their scenic beauty. All other clean air areas were designated class II. In class II areas, some additional air pollution and moderate industrial growth were allowed. Individual States or Indian Tribal governing bodies can redesignate some class II areas as class III areas where major industrial development is foreseen. In class III areas, air pollution up to one-half the level of the secondary standards would be permitted. The States or Indian Tribes also can redesignate class II areas as class I. Either type of redesignation is subject to hearings and consultations with the managers of affected Federal lands, or States in the case of Indian action, and approval by EPA.

All SIPS must specify emission limitations and other standards for each class area. Maximum allowable concentrations for a specified period of exposure must not exceed the applicable primary or secondary NAAQS, whichever is stricter.

To obtain a permit for a facility in a nondegradation area, a special preconstruction review must demonstrate that it will not cause air pollution in excess of NAAQS or PSD standards more than once per year in any AQCR. Best available control technology (BACT) must be used for all pollutants regulated by the Act, and the effects of the emissions from the facility on the ambient air quality in the areas of interest must be predicted. Impacts on air quality that could result from any growth associated with the facility must also be analyzed. The PSD impact projections are cumulative for the region of the source. Additional assessments of the effects on visibility in class 1 areas and on air quality-related values also must be included in the PSD review.

Fugitive dust emissions currently are excluded from the PSD regulations, and coal mines are not subject to PSD review. State air permits are required for most coal mines, but State PSD permits would only be required if projected emissions were very high (250 million tons per year or greater).

Mining Activities

Air quality concerns regarding coal mining activities focus on fugitive dust and its effect on total suspended particulate (TSP). Thus far, air quality concerns have had only a minor effect on Western coal development. For example, in some areas of the Powder River Coal Region, fugitive dust emissions have exceeded the National Ambient Air Quality Standards, and mining operations have had to adopt better dust control measures. However, the level of production in this region has not been constrained by air quality standards. Currently, emissions (88 million tons annually) are far below the permitted air quality capacity of 250 million to 290 million tons annually.

Roads are the major source of fugitive dust from surface coal mining operators. Other sources of fugitive dust are trains, coal storage and processing facilities, spoil piles, and reclamation areas. Methods for controlling fugitive dust emissions include: 1) periodic watering and chemical stabilization of unpaved roads; 2) paving roads; 3) enclosing, watering, or treading haul trucks and railroad cars; 4) substituting conveyor systems for haul trucks; 5) minimizing the area of disturbed land; 6) prompt revegetation of regraded lands; and 7) covering coal storage areas. Each surface mine in the West employs at least one of these methods. For example, many mines now enclose their coal storage areas and all mines water haul roads and revegetate topsoil stockpiles.

The Clean Water Act

The Clean Water Act establishes national water quality goals that call for the protection and propagation of fish and wildlife, and the elimination of all pollutant discharges. The States have the primary responsibility for achieving these goals and for planning the development and use of land and water resources consistent with them. Each State is required to develop and implement, subject to EPA approval, a comprehensive water quality management plan that includes water quality standards, These standards consist of the designated uses of the waters involved, including their use and value for public water supplies; propagation of fish and wildlife; recreational, agricultural, industrial, and other purposes; and navigation. In addition, the standards include water quality criteria for the waters based on these uses.

In general, the water quality standards are to be achieved through effluent limitations on discharges from point sources. However, for those waters for which the effluent limitations are not stringent enough to implement the applicable water quality standard, the State must establish a total maximum daily load for the relevant pollutants. This load must be set at the level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

No comprehensive Federal policy for water resource management has been established. The availability of water and restrictions on its usage are the responsibility of States and Interstate Water Commissions. In all Western States, water supplies diminished or degraded by mining activities are required to be replaced by the operator.

Effluent Limitations

Effluent limitations are restrictions established by a State or EPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents that are discharged from point sources. Effluent limitations may be categorized by: 1) the sources for which they have been established, 2) whether those sources discharge directly into receiving waters or into a publicly owned treatment works, and 3) the degrees of control required for each category of sources or pollutants and the dates those controls become mandatory. Effluent limitations for coal mines regulate discharges of iron, manganese, and total suspended solids, as well as the pH.

In general, the 1977 Amendments require all categories of point sources to apply the best practicable control technology currently available in order to meet the effluent limitations. Slightly more or less stringent technological controls may be imposed, depending on the source category and the type of effluent. In determining the control measures and practices to be applicable to point sources, EPA must take into account: the age of equipment and facilities involved; the process employed; the engineering aspects of the various types of control technologies; process changes; nonwater quality environmental impacts (including energy requirements); and the total cost of achieving the limitation in relation to the effluent reduction benefits to be achieved.

Permit Systems

Effluent limitations and water quality standards are implemented through State certification programs and through the National Pollutant Discharge Elimination System (NPDES). An applicant for a Federal license or permit to conduct any activity that may result in a discharge into navigable waters must obtain State certification that the discharge will not violate any effluent limitations, water quality standards, or New Source Performance Standards (NSPS). Where the discharge will affect more than one State, the Federal licensing or permitting agency must condition the permit to ensure that all water quality requirements will be met. In addition, when Federal regulations require only a construction permit, the certifying State must be given an opportunity to review the manner in which the facility will be operated in order to ensure that water quality requirements will not be violated. If the State finds that the operation of the facility will result in violations, the Federal agency may suspend the license or permit.

NPDES is designed to ensure the orderly and timely achievement of water quality goals without sacrificing economic or energy growth. Under NPDES, a facility may be issued a permit for a discharge on the condition that the discharge will meet all applicable water quality requirements, NPDES permits are issued under EPA-approved State programs, or, where a State program has not been approved, by EPA. The permits are for fixed terms not to exceed 5 years and can be terminated or modified for violations. Compliance with the conditions under which an NPDES permit is issued is deemed compliance with the effluent limitations and water quality standards promulgated under the Clean Water Act.

Water Availability and Quality Impacts from Mining

Coal mining activities disrupt groundwater flow and quality. Opening a pit for surface mining affects the level and flow of groundwaters. The mine pit will intercept all groundwater found above the pit floor. Groundwater may change direction or even reverse as water surrounding the pit flows toward the pit. As water flows into the pit, water levels in surrounding areas will fall. Ultimately, an equilibrium condition will be established. When this condition is reached, however, depends on the characteristics of the aquifers (water-transmitting rocks) and the length of time the pits are open.

Water quality also can be affected by coal mining activities. Groundwater moving through backfilled surface mines is known to have substantially increased concentrations of total dissolved solids and other constituents. In addition, erosion of mine and reclamation areas can increase sediment loads in streams. Also, surface waters can be affected by slippage of polluted groundwaters into receiving streams.

Because of these impacts, effluent limitations have been established for mining operations, broken down into those applicable to acid drainage and alkaline discharge. Under the Clean Water Act, mining operations must obtain discharge permits and comply with EPA or State effluent limitations for point source discharges of pollutants to surface waters. However, the Clean Water Act permit system applies only during the active phase of mining including secondary recovery facilities and preparation plants; it does not extend to reclamation, nor does it cover nonpoint pollution sources or consider discharges to groundwater. These impacts must be addressed through the mining and reclamation permit under SMCRA.

The EPA may modify any of the limitations for a point source if the owner of the source demonstrates that the modified requirement will represent the maximum use of technology within his economic capability and will result in reasonable further progress toward the discharge elimination goal. The 1977 amendments provide that such a modification is mandatory if the owner also demonstrates that it will not interfere with attainment of a water quality standard, and it will not result in additional requirements on any other point source.