Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

[FRL 716-4]

PART 434—COAL MINING POINT SOURCE CATEGORY

Effluent Limitations Guidelines for Existing Sources

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: On May 13, 1976, the Environmental Protection Agency promulgated effluent limitations guidelines and proposed additional effluent limitations guidelines and new source performance standards for the coal mining point source category. The rule promulgated today establishes final effluent limitations guidelines for the coal mining point source category and includes a number of major changes and clarification to the earlier rule making which reflect comments received on the earlier rule making as part of public participation in EPA's rule making procedures. These effluent limitation guidelines will be incorporated in National Pollutant Discharge Elimination System permits issued by the Federal EPA or by States with approved programs.

EFFECTIVE DATE: April 26, 1977, to be fully complied with by July 1, 1977.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

Summary of Procedural Background

The Environmental Protection Agency today promulgates final effluent limitations guidelines for the coal mining point source category. On October 17, 1975, the Agency published interim final and proposed regulations for this point source category. (40 FR 48830.) The interim final regulations announced in that publication controlled only the pH of the effluent. The standards proposed at that time were with respect only to pretreatment for existing sources and presented only general requirements.

On May 13, 1976, the Agency published additional interim final effluent limitations guidelines, and proposed additional new sources performance standards for this point source category. 41 FR 19832 and 41 FR 19841. These interim final regulations expanded the list of pollutants which dischargers must control. The regulations published in interim final form included, for all four subparts of Part 434, limitations based upon the use of best practicable control technology currently available.

The proposed new source performance standards covered Subpart A (coal preparation plant subcategory) and Subpart B (coal storage, refuse storage, and coal preparation plant ancillary subcategory). 41 FR 19841. Effluent limitations guidelines based upon the use of best available technology economically achievable were proposed for all four subparts. Finally, pretreatment standards for new sources were proposed for subparts A and B. As noted above, the regulations promulgated today address only the use of best practicable control technology currently available—that technology and those regulations which must be implemented by July 1, 1977, pursuant to section 301 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1311.

The Agency is not promulgating pretreatment standards for this point source category at this time nor does it intend to promulgate such standards in the future, because there are no known situations in which such standards would be applicable. Should information become available which indicates that there is a need for such standards, they will be issued. The regulations based upon best available technology economically achievable also are not being promulgated today because the Agency has embarked on a major effort to publish these regulations (which must be implemented by 1983) with requirements for control of a large number of priority water pollutants. Since the Agency intends to restudy this industry extensively with respect to priority water pollutants and the 1983 level of technology and since the permits which would incorporate this technology will not be written in the near future, it was deemed more reasonable to promulgate the revised BAT limitations at one time rather than publish effluent limitations guidelines now which must be revised within one or two years. These regulations do not include final new source performance standards; these standards will be announced in the near future in the Federal Register. At that time the Agency will also propose new source performance standards for those subcategories for which new source standards have not been proposed.

Summary of Rule and Outline of Major Changes

The regulations promulgated today incorporate several revisions to the interim final effluent limitations guidelines published on May 13, 1976. For the most part, these changes were brought about by consideration of the substantial number of comments received from industrial and environmental groups. These comments are summarized in detail in the Appendix to this preamble. However, several major points were raised which will be addressed in this preamble. Although the agency did not receive criticism with respect to the organization of the regulations, the Agency's own review indicated that a reorganization of the subparts was necessary to eliminate certain of the ambiguities which existed in the May 13 publication. Also, there appeared to be substantial confusion over some of the definitions and these have been reorganized and to some extent, are revised. These are the major changes brought about by or considered for today's announcement:

1. *Reorganization of the subparts.* The interim final effluent limitations guidelines published on May 13, 1976 contained four subparts. The first subpart addressed preparation plant discharges; the second subpart addressed discharges from coal storage, refuse storage and coal preparation plant ancillary areas. And the third and fourth subparts addressed discharges from active mining operations. Each subpart contained a section setting forth specialized definitions for that subpart. Many of the specialized definitions were the same for several of the subparts and thus it was decided that it would be more readable to convert subpart A into a presentation of definitions which apply throughout Part 434. The previous subpart A covered coal preparation plants, and, as noted below, the Agency has decided to combine Subparts A and B into the Subpart B presented today.

In addition, Subpart B, as presented today, is further subdivided, in order to provide a distinction between acid and alkaline water and to be consistent with regulations pertaining to mine drainage.

2. *General definitions.* The term "active mining area" has been defined to clearly state with respect to surface mines, that these effluent limitations guidelines (and new source performance standards to be promulgated soon) do not apply once grading has been completed to return the earth to the desired contour and once reclamation work has begun. The previous definition was confusing in that it spoke of reclamation work being "commenced" or "completed". There is a new definition, for coal preparation plant associated areas. This term is defined to mean the area around the coal preparation plant which was previously included in the ancillary areas subject to previous Subpart B. Thus, the new Subpart B includes the areas previously subjected to both subparts A and B.

3. *Discharges from coal preparation plants.* Perhaps the strongest criticism of the interim final regulations published on May 13, was with respect to the requirement of no discharge from coal preparation plants. Many coal mining companies submitted comments to the Agency. They strongly suggested that there was a misconception as to the facts of operation of coal preparation plants, and that when the Agency and its contractor concluded that a coal preparation plant had a closed cycle system they were mistaken in most instances. The industry contentions were that even when a coal preparation plant is designed to recycle water, there are points in the system and occasions when discharges are necessary. Close examination of this problem revealed that there was very little disagreement as to the fundamental facts of operation of a coal preparation plant and that by simply combining Subparts A and B and imposing the restrictions that were previously applied to Subpart B, to the new subpart, the problem

could be resolved with no increase in environmental degradation. Simply stated, it was found by the Agency after careful inspection that there are virtually no coal preparation plants which are not surrounded by areas subject to the previous subpart B effluent limitations guidelines, and that with the provision in the previous § 434.12(c), allowing for a discharge of waste water from a coal preparation plant when that waste water is combined for treatment with the discharges from facilities covered under other subparts of Part 434, owners and operators of coal preparations plants would not in practice be subject to a "no discharge" standard, but rather would be subject to the limitations applied to previous Subpart B. This is because the common form of operation of a coal preparation plant and associated areas is to have a common pond or series of ponds and treatment facilities for all the discharges and runoffs from those facilities. It was found that consideration of a coal preparation plant without the surrounding associated or ancillary areas is an unrealistic approach. With the qualifications noted below in the discussion of manganese, the limitations which are applied to coal preparation plants and associated areas under the new § 434.22 are the same effluent limitations that governed discharges from coal storage, refuse storage, and coal preparation plant ancillary areas in the previous regulations and which, as explained above, were in fact the limitations which would have governed discharges from coal preparation plants previously subject to subpart A.

Note should be made that regulations for preparation plants and associated areas have been divided into two groups, one for acidic and one for alkaline wastes. EPA's Office of Enforcement is preparing guidance for dischargers who have questions as to which group they belong.

4. *Exemption for discharges resulting from extraordinary volumes due to precipitation events.* Another area in which there was substantial comment was with respect to the exemption for discharges from coal mining facilities which result from unusual precipitation events. The effluent limitations guidelines provide that any untreated overflow, increase in volume of a point source discharge of discharge from a by-pass system from facilities designed, constructed and maintained to contain or treat the discharges from the facilities and areas covered by the various subparts, which discharges would result from a 10-year, 24-hour precipitation event, shall not be subject to the limitations set forth in those subparts, to the extent of the overflow. See, eg., § 434.22(c). This does not mean that only after a rainfall equalling or exceeding the 10-year, 24-hour precipitation event may untreated effluent be discharged. It means that after a precipitation event or other cause (snowmelt, for example) which forces an overflow, by-pass, or increase in the volume of point source discharge from a facility designed, constructed and maintained to contain or treat the amount of water which will result from the 10-year, 24-hour, precipitation event, the overflow, by-pass or increase in volume of the point source discharge shall be permitted. The 10-year, 24-hour, precipitation event, a figure which for each geographical area of the country, can be found in the text noted in § 434.11(h).

Several representatives of coal mining companies objected to this exemption provision as implying that, especially with respect to surface mining operations, the operators would be required to maintain an unnecessarily large retention structure. However, none of the coal mining companies submitted information which demonstrated that the construction or maintenance of these structures is unreasonable. To the contrary, the investigation by the Agency into the reasonableness of this requirement revealed that a retention structure sufficient to contain a 10-year, 24-hour storm event is relatively small, that the 10-year, 24-hour storm event is a widely used engineering design criteria which has been adopted for other purposes in this and other industries for many years. The United States Department of Interior, in comments on the interim final effluent limitations guidelines, suggested that certain changes be made in those regulations, but did not criticize the use of the 10-year, 24-hour precipitation event as a design criteria for an overflow exemption.

In light of the many comments with respect to the 10-year, 24-hour rainfall event exclusion, EPA consulted with the Office of Coal Mine Health and Safety, Mining Enforcement and Safety Administration of the Department of Interior. Representatives of that office stated that the 10-year, 24-hour rainfall event in virtually all situations is a lesser rainfall than would occur during the rainfall event utilized by that office as the minimum design criteria for impoundment facilities. The lowest design criteria is a 6-hour maximum precipitation event, the highest is a "maximum precipitation event." For the Pittsburgh area, a 10-year, 24-hour precipitation event is about 4 inches, a 6-hour event is slightly greater than 4 inches, and a maximum precipitation event is about 26 inches.

Under 30 CFR Part 77, which presents the Mandatory Safety Standards, Surface Coal Mines and Surface Work Areas of Underground Coal Mines, plans for the design, construction and maintenance of structures which impound water, sediment or slurry (above a certain size) are required to contain many details of the structure. The actual size will depend on several factors, including area to be served and downstream risk. Among the specific requirements of 30 CFR 77.216–2(a) are the following:

(10) A statement of the runoff attributable to the probable maximum precipitation of 6-hour duration and the calculations used in determining such runoff.

(17) A certification by a registered engineer that the design of the impounding structure is in accordance with current, prudent engineering practices for the maximum volume of water, sediment, or slurry which can be impounded therein and for the passage of runoff which would result from the designated precipitation event; or, in lieu of the certification, a report indicating what additional investigations, analyses, or improvement work are necessary before such a certification can be made, including what provisions have been made to carry out such work in addition to a schedule for completion of such work.

From a review of the relevant regulations and design guidelines and from discussions with representatives of the appropriate Federal regulatory agencies, EPA is confident that the impoundment facilities needed to comply with the regulations promulgated today are reasonable, and that there is no additional danger caused by implementation of these regulations. Should any evidence be submitted to the Agency to indicate that the impoundment facilities needed to meet these regulations would necessitate construction of a structure which would violate safety standards set out by a State or Federal Agency, EPA will consider the granting of a variance on an expedited basis. Under no circumstances will an owner or operator be required to violate applicable safety standards in order to meet these regulations. If difficulty arises in more than isolated instances, consideration will be given to amendment of these regulations. It must be emphasized, however, that the State and Federal authorities with whom EPA has consulted on this matter uniformly concluded that no safety issues are raised by the use of a 10-year, 24-hour storm event as a design criteria.

It must be emphasized that the regulations for the coal mining point source category do not require any specific treatment technique, construction activity, or other process for the reduction of pollution. The effluent limitations guidelines merely state a final limitation on the amount of pollutants which may be discharged from this industry, and allows for an excursion from the normal requirements when there is a discharge from a facility properly designed to contain a large precipitation event.

While there has been criticism of the 10-year, 24-hour formula used by the Agency, the few alternatives suggested by the environmental groups and industry are substantially less satisfactory. For example, the suggestion that discharges from containment facilities be allowed regardless of effluent limitations, when the rainfall in inches is equal to or greater than

$$\frac{\text{the duration of the storm in minutes}}{100} + 0.2$$

is impractical. The duration of a storm has no close relationship to the quantity of water which falls during the storm or to the ability of a containment facility to gradually treat and discharge the water (these facilities are designed to allow relatively clean water to escape). It is also unclear as to what would be considered a storm. Also, it is difficult to conceive of a workable enforcement scheme which relies on measurement of a storm, when the exact time of the initiation of the storm or rainfall event may be unclear. It would require an owner or op-

erator to carefully note the time when any rainfall begins. It is also apparent that under the formula proposed by several of the coal mining companies, discharges without limitation on pollutants would be allowed quite often during the year, and for rainfall events which can hardly be termed unusual. Indeed, the use of the formula above may well continue the problem of periodic environmental degradation to receiving streams which results from the flushing of pollutants in coal mining areas into those streams.

Another formula which was suggested by several coal mining companies would allow for uncontrolled discharges from facilities which are designed to maintain a volume of water equal to or exceeding the volume resulting from the inches of rainfall equivalent to

$$\frac{\text{the time of the rainfall event expressed in hours}}{5}$$

Because this formula also places reliance on the duration of time of the storm rather than on the containment facility and the volume of water which must be contained, it is inappropriate for use in these water pollution regulations. Moreover, this formula, like the alternative formula suggested above, would allow discharges in situations where the rainfall is substantially less than would be considered an unusual precipitation event. The effect of the alternative formula suggested by the coal mining companies would be to convert the 10-year, 24-hour provision presently in the regulations into a fairly routine allowance on discharges without restrictions on the quantities of pollutants, rather than an excursion provision, as presently exists. Also, neither suggestion by the industry would allow for discharges caused by sudden snowmelts, since these would not be considered precipitation events under the suggested formulae.

Use of a provision such as § 434.22(b), which allows for the release of waste water when there is an unusual precipitation event, is not restricted solely to the mining extraction industries; such an allowance, excursion, or exemption has been used in several other industries in which the major source of pollution results from rainfall runoff. For example, when attempting to control the discharges of highly polluting wastes from feedlot operations, the regulatory authority must necessarily consider the feasibility of containing large quantities of rainfall runoff. These considerations were raised during the consideration of the Federal Water Pollution Control Act Amendments of 1972 ("FWPCA") and there is prominent mention of the 10-year, 24-hour storm event as a realistic method of addressing the problem. In debate on the predecessor bill to the FWPCA, Senator Dole noted to Senator Muskie some of the practices which are used in the State of Kansas to contain pollutants from feedlots; the following dialogue ensued:

(Mr. Dole) Retention basins and other devices can be employed to accommodate any normal runoff from feedlots, but as a practical matter it is impossible to construct retention structures to handle the runoff from extreme rainfall conditions which could statistically be expected to occur. For instance, in Kansas the maximum probable precipitation resulting from a storm occurring in a 24-hour period within a 10-square mile area is 24 to 28 inches. Such a torrential downpour has never occurred, but the statistical probability of its happening shows that it is entirely impractical and unfeasible to expect a feedlot operator to contain all the runoff associated with it. But the bill would seem to set such a requirement.

The question which I pose is: To what extent does the zero discharge requirement of the pending bill impose on feedlot operators a requirement for providing for containment of runoff resulting from the maximum probable 24-hour storm?

Mr. Muskie. As we understand the application of the zero discharge requirement as it relates to runoff from feedlots, containment facilities must be provided for feedlots which would provide complete control for the runoff resulting from the 24-hour storm to be experienced once in a 10-year period.

This would involve 3 inches of runoff water over the area concerned.

"A Legislative History of the Water Pollution Control Act Amendments of 1972," Library of Congress Research Service, (93rd Cong., 1st Sess.) at 1298.

5. *Limitations on dissolved iron.* Several coal mining companies objected to the requirements of previous § 434.32 that limited the discharges of both total iron and dissolved iron. Commenters, particularly the Peabody Coal Company and the National Coal Association, pointed out that there is little value in monitoring total iron and dissolved iron in that the former test will incorporate the pollutants measured in the latter analysis. The Agency has carefully considered the benefits to be derived from requiring an analysis of dissolved iron as well as total iron and has concluded that while there may be some small incremental protection provided by monitoring for both, in the vast majority of cases the total iron analyses will adequately demonstrate the potential for environmental degradation which results from the presence of the iron in the effluent. Accordingly, the Agency has deleted the requirement that dissolved iron be monitored in discharges from point sources within the acid or ferruginous mine drainage subcategory.

6. *Limitation on discharge of manganese.* Several coal mining companies objected to the effluent limitations contained in the May 13 interim final regulations with respect to manganese. The objections essentially contended the requirement of maintaining a pH of 6–9 was inconsistent with the requirement of obtaining a manganese level as set forth in those limitations because manganese can only be reduced when the pH is at 9 or slightly above 9. To a lesser extent, the companies contended that there is no need for a manganese standard at all. The Agency has reviewed all the data available on the question and has concluded that an operator or owner can indeed obtain the mandated manganese levels while at the same time meeting the 6–9 pH requirements, but the Agency concedes that the manganese is only removed at the high end of the allowed pH range. Accordingly, included in these regulations is a provision which allows the State or Federal NPDES writer to adjust the required pH level when the application of neutralization and sedimentation treatment technology continues to result in inability to comply with the manganese limitations set forth in these effluent limitations guidelines. See e.g., § 434.22(d). Of course, the adjustment of pH can be made only to the extent that it is necessary to allow for compliance with the manganese limitation.

A second objection to the interim final manganese effluent limitations is that according to commenters, manganese is a relatively minor pollutant and therefore the Agency should not be emphasizing the control of this pollutant. While the effluent limitations guidelines do not attempt to control troublesome water pollutants on the basis of toxicity or receiving water quality criteria, it is important to note that manganese has been designated a pollutant of concern by several reputable scientific bodies. According to the National Academy of Sciences and National Academy of Engineering, in "Water Quality Criteria 1972" (Washington, D.C. 1972), "Manganese is objectionable in public water supplies because of its effect on taste . . . staining of plumbing fixtures, spotting of laundered clothes, and accumulation of deposits in distribution systems." As noted in "Quality Criteria for Water", U.S. Enviromental Protection Agency, (Washington, D.C. 1975) the presence of low concentrations of iron in addition to the concentrations of manganese may intensify the adverse effects of manganese. It is well known that manganese is often present with iron concentrations in the effluent from coal mining operations.

7. *Monitoring method for metal analysis.* Additional objections to manganese and iron limitations state that the analytical procedure used to develop the data base for the limitations contained in the interim final limitations guidelines is inconsistent with the methods used for monitoring purposes. In order to get results which correlate with the regulations promulgated, monitoring samples shall be analyzed in accordance with the procedures required by 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants," using a soft digestion. Therefore, the same procedures used in the technical studies on which the regulations are based will be used to monitor the effluent.

8. *Western Coal Mines.* The Effluent Guidelines Division of EPA has received a substantial body of information from EPA Region VIII (located in Denver, Colorado) with respect to the limitations on discharges from coal mines in the Western United States. Representatives of that Region believe more stringent numbers are appropriate in light of actual experiences with those mines. These data appear to support effluent limitations guidelines for a num-

ber of parameters significantly more stringent than the limitations announced today. The reasons for the apparent ability of Western coal mines to discharge pollutants in less concentration than is the case of Eastern coal mines are many, and certainly include the relatively more even topography of Western coal mines, the emphasis on recycle of relatively scarce water supplies, and the relatively lower concentration of pollutants in the geologic formations being exploited. The Agency is undertaking a thorough evaluation of the information being supplied from permit-granting authorities in the Western United States. It is anticipated that consideration will be given to proposal of a separate subcategory with respect to all pollutant parameters for those coal mining operations located in the Western United States which have attributes such that they are able to meet more stringent effluent limitations.

The Agency has determined not to promulgate national TSS limitations for mines in some Western States. Until national limitations guidelines are published which address Western mines and TSS, NPDES permit writers shall calculate TSS restrictions utilizing the same discretion and with the same deference to statutory factors as they have in the past. It is the policy of the Environmental Protection Agency that if any discharger has received a final NPDES permit which calls for compliance with limitations more stringent than those later published in the FEDERAL REGISTER, the discharger is still obligated to meet the terms of the final permit. Thus, whether a discharger has a final State or final Federal NPDES permit calling for more stringent discharge controls that operator will not be permitted to rely on today's promulgation of effluent limitations guidelines to obtain modification of that permit.

9. *Extend the applicability of effluent limitations guidelines to all point sources at surface coal mines until release of the reclamation bond by an appropriate state agency.* By use of the definition "active mining area" effluent limitations guidelines do not apply to discharges from areas affected by surface coal mining after these areas have been graded. Environmental groups have stated that the applicability of effluent limitations guidelines should be extended to cover discharges from areas affected by surface coal mining up to the time these areas are released from their reclamation bond by an appropriate state agency. To support this position these groups have submitted reports which show that the most critical period for water pollution abatement is during the period of reclamation and revegetation of areas affected by surface coal mining.

As noted in Appendix B of this rulemaking, Technical Summary and Basis for Regulations, the Agency recognizes that there is water quality degradation caused by discharges from areas affected by surface coal mining and that discharges from areas that have been graded but have not been reclaimed or revegetated can cause more severe pollution than discharges from areas included under this regulation.

EPA is conducting an intensive analysis of available information with respect to the water pollution which originates in surface mines undergoing revegetation and reclamation. When the Agency has had an adequate opportunity to review this information, it may propose extending coverage of effluent limitations guidelines or new source performance standards to cover the period of revegetation.

10. *General Environmental Benefits to be Obtained by Regulations of Coal Mine Discharges.* The effluent limitations guidelines promulgated today are technology standards and are not designed with precision to obtain designated water quality levels in the streams and other receiving water bodies into which coal mining discharges flow. However, there has been general criticism of the coal mining regulation voiced by representatives of the industry, to the effect that the technology-based standards may not be needed in light of the benefits (or lack of benefits) which will accrue if dischargers are forced to comply with the limitations. It is impossible in this preamble to summarize the many works that have been written on the environmental effects of coal mining and coal mining discharges. However, even by examining a small portion of those works and focusing on only one Regional area, one can appreciate that significant environmental benefits will accrue should reduction in coal mining pollutant loadings be achieved.

One of the most respected studies of the effects of coal mining discharges is presented in "Acid Mine Drainage in Appalachia," a Report by the Appalachian Regional Commission (Washington, D.C. 1969). This report was sent to the President by direction of the Appalachian Regional Development Act, as amended, incorporated the views of many respected experts, and included the advice and assistance of members of the National Research Council of the National Academy of Scientists-National Academy of Engineering. The conclusions of "Acid Mine Drainage" demonstrate the effect of just one of the pollutant parameters controlled by these effluent limitations guidelines upon just one area of the United States, the Appalachian region. That study concluded:

> About 10,500 miles of streams in eight states of the Appalachian Region are affected by mine drainage. These streams are polluted by increased amounts of acids, sediment, sulfate, iron and hardness of which the most significant pollutant is acid.

The study documented many of the direct economic costs resulting from acid mine pollution but noted that "the general environmental and aesthetic degradation of affected areas, the destruction of a aquatic life, and the deterrence to water based recreation caused by acid mine drainage might well exceed these other more readily measured costs." Users of water in the Appalachian Region who are affected by the introduction of acid into the water supplies of that region include operators and owners of industrial plants, utilities, barges and tow boats, and municipal water supplies; and the officials of public agencies with responsibilities for highway culverts and bridges. The direct annual economic impact on navigation on the portions of the Monongahela River open to navigation was estimated in the 1969 report to be $1,370,000. For the municipal water supplies of Pittsburgh, it was estimated that there would be an annual savings of approximately $480,000 were the acid mine problem to be substantially abated.

The effect of acid mine drainage on fishing resources is well known. The recreational use of water is affected significantly by pH levels of 5 or lower; swimming is pre-empted by levels of pH 4 or lower. The pH of streams must reach a level of 6.0 for there to be maintenance and growth of the fishery in warm water. In a cold water stream there will be full production of the fishery at a pH at 6.0 and maintenance and growth at pH 5.5–6.0.

As emphasized above, the analysis of benefits which result from the control of acid mine drainage in the Appalachian Region addresses merely one of the pollutants controlled by these regulations and with respect to only one of the major coal mining areas in the United States. The Agency has collected and studied a large amount of material relating to the general environmental benefits which would result from the implementation of these regulations. EPA has concluded that there will be significant benefits, both indirectly and directly to users of the waterways affected by coal mining pollution, if compliance with these regulations is accomplished.

ECONOMIC ANALYSIS

The report, "Economic Impact of Effluent Guidelines Coal Mining," indicates that the promulgated rules are not expected to affect significantly prices, production or capital availability. Therefore, little effect is expected on industry growth, employment, local economies or the balance of trade. Copies of this document are available through the National Technical Information Service, Springfield, Virginia 22151.

The economic impact report satisfies the requirements for an Economic Impact Analysis even though the Environmental Protection Agency has determined that this regulation does not contain a major proposal requiring preparation of an Economic Impact Analysis under Executive Orders 11821 and 11949 and OMB Circular A–107.

The report entitled "Development Document for Effluent Limitations Guidelines and New Source Performance standards for the Coal Mining Point Source Category," May 1976, details the analysis undertaken in support of these regulations and is available for inspection in the EPA Public Information Reference Unit, Room 2922 (EPA Library), Waterside Mall, 401 M St. SW., Washington, D.C. 20460, at all EPA regional

offices, and at State water pollution control offices. A supplementary analysis prepared for EPA of the possible economic effects of the regulation is also available for inspection at these locations. An additional limited number of copies of both reports are available. Persons wishing to obtain a copy may write the EPA Effluent Guidelines Division, Washington, D.C. 20460, Attention: Distribution Officer, WH-552.

In addition, Section 8 of the FWPCA authorizes the Small Business Administration, through its economic disaster loan program, to make loans to assist any small business concerns in effecting additions to or alterations in their equipment, facilities, or methods of operation so as to meet water pollution control requirements under the FWPCA, if the concern is likely to suffer a substantial economic injury without such assistance.

For further details on this Federal loan program, write to EPA, Office of Analysis and Evaluation, WH-586, 401 M St. SW., Washington, D.C. 20460.

Dated: April 28, 1977.

DOUGLAS M. COSTLE,
Administrator.

Subpart A—General Definitions

Sec.
434.10 Applicability.
434.11 General definitions.

Subpart B—Coal Preparation Plants and Associated Areas

434.20 Applicability.
434.21 (Reserved).
434.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart C—Acid or Ferruginous Mine Drainage Subcategory

434.30 Applicability; description of the acid or ferruginous mine drainage subcategory.
434.31 (Reserved).
434.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart D—Alkaline Mine Drainage Subcategory

434.40 Applicability; description of the alkaline mine drainage subcategory.
434.41 (Reserved).
434.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

AUTHORITY: Secs. 301, 304(b), Federal Water Pollution Control Act, as amended, (33 U.S.C. 1311, 1314(b)).

Subpart A—General Definitions

§ 434.10 Applicability.

Except as provided specifically in this subpart A and in other subparts of this Part 434, the general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter shall apply to this Part 434. The general definitions set forth in this subpart A apply to all subparts of the Part 434.

§ 434.11 General definitions.

(a) The term "acid or ferruginous mine drainage" means mine drainage which before any treatment either has a pH of less than 6.0 or a total iron concentration of more than 10 mg/l.

(b) The term "active mining area" means a place where work or other activity related to the extraction, removal, or recovery of coal is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

(c) The term "alkaline mine drainage" means mine drainage which before any treatment has a pH of more than 6.0 and a total iron concentration of less than 10 mg/l.

(d) The term "coal mine" means an active mining area, including all land and property placed upon, under or above the surface of such land, used in or resulting from the work of extracting coal from its natural deposits by any means or method, including secondary recovery of coal from refuse or other storage piles derived from the mining, cleaning, or preparation of coal.

(e) The term "coal preparation plant" means a facility where coal is crushed, screened, sized, cleaned, dried, or otherwise prepared and loaded for transit to a consuming facility.

(f) The term "coal preparation plant associated areas" means the coal preparation plant yards, immediate access roads, slurry ponds, drainage ponds, coal refuse piles, and coal storage piles and facilities.

(g) The term "mine drainage" means any water drained, pumped or siphoned from a coal mine.

(h) The term "ten-year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable re-occurrence interval of once in 10 years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, and subsequent amendments, or equivalent regional or rainfall probability information developed therefrom.

Subpart B—Coal Preparation Plants and Associated Areas

§ 434.20 Applicability.

The provisions of this subpart are applicable to discharges from coal preparation plants and associated areas, including discharges which are pumped, siphoned or drained from coal storage, refuse storage and coal preparation plant ancillary areas related to the cleaning or beneficiation of coal of any rank including but not limited to bituminous, lignite and anthracite.

§ 434.21 [Reserved].

§ 434.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available if discharges from that point source normally are acidic prior to treatment.

[In milligrams per liter]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Iron, total	7.0	3.5
Manganese, total	4.0	2.0
TSS	70	35
pH	Within the range 6.0 to 9.0.	

(b) The following limitations establish the concentration of pollutants, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available if discharges from that point source normally are alkaline prior to treatment.

[In milligrams per liter]

Effluent characteristic	Effluent limitations: Maximum for any 1 day	Effluent limitations: Average of daily values for 30 consecutive days shall not exceed—
Iron, total	7.0	3.5
TSS	70.0	35.0
pH	Within the range 6.0 to 9.0.	

(c) Any untreated overflow, increase in volume of a point source discharge, or discharge from a by-pass system from facilities designed, constructed, and maintained to contain or treat the discharges from the facilities and areas covered by this subpart which would result from a 10-year 24-hour precipitation event, shall not be subject to the limitations set forth in paragraph (a) of this section.

(d) Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitations set forth in paragraph (a) of this section, the permit issuer may allow the pH level in the final effluent to be exceeded to a small extent in order that the manganese limitations in paragraph (a) of this section will be achieved.

(e) Where discharges from coal preparation plants and associated areas are combined for treatment or discharge with wastewater from sources within other subcategories in this point source category, the concentration of pollutants allowed to be discharged in the combined discharge shall not exceed the concentration of pollutants which would be allowed under the respective limitations applicable to that subcategory (or subcategories). Where a parameter (manganese or total iron as examples) is subject to different limitations under different subparts, the more stringent limitation applies.

Subpart C—Acid or Ferruginous Mine Drainage Subcategory

§ 434.30 Applicability; description of the acid or ferruginous mine drainage subcategory.

The provisions of this subpart are applicable to acid or ferruginous mine drainage resulting from the mining of coal of any rank including but not limited to bituminous, lignite, and anthracite.

§ 434.31 [Reserved]

§ 434.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are sound to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

[In milligrams per liter]

Effluent characteristic	Effluent limitations: Maximum for any 1 day	Effluent limitations: Average of daily values for 30 consecutive days shall not exceed—
Iron, total	7.0	3.5
Manganese, total	4.0	2.0
TSS	70.0 [1]	[1] 35.0
pH	Within the range 6.0 to 9.0.	

[1] These TSS effluent limitations shall not apply to discharges from coal mines located in the following States: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. In these States, TSS limitations shall be determined on a case-by-case basis.

(b) Any untreated overflow, increase in volume of a point source discharge, or discharge from a by-pass system from facilities designed, constructed, and maintained to contain or treat the discharges from the facilities and areas covered by this subpart which would result from a 10-year 24-hour precipitation event, shall not be subject to the limitations set forth in paragraph (a) of this section.

(c) Drainage which is not from an active mining area shall not be required to meet the limitations set forth in paragraph (a) of this section as long as such drainage is not commingled with untreated mine drainage which is subject to the limitations in paragraph (a) of this section.

(d) Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitations set forth in paragraph (a) of this section, the permit issuer may allow the pH level in the final effluent to be exceeded to a small extent in order that the manganese limitations in paragraph (a) of this section, will be achieved.

Subpart D—Alkaline Mine Drainage Subcategory

§ 434.40 Applicability; description of the alkaline mine drainage subcategory.

The provisions of this subpart are applicable to alkaline mine drainage resulting from the mining of coal of any rank including but not limited to bituminous, lignite, and anthracite.

§ 434.41 [Reserved]

§ 434.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

[In milligrams per liter]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Iron, total	7.0	3.5
TSS	70.0 [1]	[1] 35.0
pH	Within the range 6.0 to 9.0.	

[1] These TSS effluent limitations shall not apply to discharges from coal mines located in the following States: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. In these States, TSS limitations shall be determined on a case-by-case basis.

(b) Any untreated overflow, increase in volume of a point source discharge, or discharge from a by-pass system from facilities designed, constructed, and maintained to contain or treat the discharges from the facilities and areas covered by this subpart which would result from a 10-year 24-hour precipitation event, shall not be subject to the limitations set forth in paragraph (a) of this section.

(c) Drainage which is not from an active mining area shall not be required to meet the limitations set forth in paragraph (a) of this section as long as such drainage is not commingled with untreated mine drainage which is subject to the limitations in paragraph (a) of this section.

Appendix A—Legal Authority

(1) Existing point sources

Section 301(b) of the Act requires the achievement by not later than July 1, 1977, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of the best practicable control technology currently available as defined by the Administrator pursuant to section 304(b) of the Act. Section 301(b) also requires the achievement by not later than July 1, 1983, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of best available technology economically achievable which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Administrator pursuant to section 304(b) of the Act.

Section 304(b) of the Act requires the Administrator to publish regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of the best practicable control technology currently available and the degree of effluent reduction attainable through the application of the best control measures and practices achievable including treatment techniques, process and procedural innovations, operating methods and other alternatives. The regulation herein sets forth effluent limitations guidelines, pursuant to sections 301 and 304(b) of the Act, for the coal preparation plant and associated areas subcategory (Subpart B), the acid or ferruginous mine drainage subcategory (Subpart C) and the alkaline mine drainage subcategory (Subpart D) of the coal mining point source category.

Section 304(c) of the Act requires the Administrator to issue to the States and appropriate water pollution control agencies information on the processes, procedures or operating methods which result in the elimination or reduction of the discharge of pollutants to implement standards of performance under section 306 of the Act. The report entitled "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Coal Mining Point Source Category," May 1976, provides, pursuant to section 304(c) of the Act, information on such processes, procedures or operating methods.

Appendix B—Technical Summary and Basis for Regulations

This Appendix summarizes the basis of final effluent limitations guidelines for existing sources to be achieved by the application of best practicable control technology currently available.

(1) General methodology

The effluent limitations guidelines set forth herein were developed in the following manner. The point source category was first studied for the purpose of determining whether separate limitations are appropriate for different segments within the category. This analysis included a determination of whether differences in raw material used, product produced, manufacturing process employed, age, size, waste water constituents and other factors require development of separate limitations for different segments of the point source category. The raw waste characteristics for each such segment were then identified. This included an analysis of the source, flow and volume of water used in the process employed, the sources of waste and waste waters in the operation and the constituents of all waste water. The constituents of the waste waters which should be subject to effluent limitations were identified.

The control and treatment technologies existing within each segment were identified. This included an identification of each distinct control and treatment technology, including both in-plant and end-of-process technologies, which is existent or capable of being designed for each segment. It also included an identification of, in terms of the amount of constituents and the chemical, physical, and biological characteristics of pollutants, the effluent level resulting from the application of each of the technologies. The problems, limitations and reliability of each treatment and control technology were also identified. In addition, the nonwater quality environmental impact, such as the effects of the application of such technologies upon other pollution problems, including air, solid waste, noise and radiation were identified. The energy requirements of each control and treatment technology were determined as well as the cost of the application of such technologies.

The information, as outlined above, was then evaluated in order to determine what levels of technology constitute the "best practicable control technology currently available." In identifying such technologies, various factors were considered. These included the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, nonwater quality environmental impact (including energy requirements) and other factors.

The data upon which the above analysis was performed included EPA permit applications, EPA sampling and inspections, consultant reports, and industry submissions.

(2) Summary of conclusions with respect to the coal preparation plants and associated areas (Subpart B), and the acid or ferruginous mine drainage subcategory (Subpart C) and the alkaline mine drainage subcategory, (Subpart D) of the coal mining point source category.

(i) *Categorization.* For the purpose of studying waste treatment and effluent limitations the coal mine point source category was initially subcategorized by the established Standard Industrial Classification (SIC) groups applicable to the coal mining industry. These SIC groups were then further subdivided by: geographic location of the mine, type of mine (surface or deep), and size of mine (annual tonnage); all based on anticipated variations in raw waste water. After statistical analysis of the data obtained during the study it was determined that based on waste treatment the coal mining point source category should be divided into three discrete subcategories based on the origin of the waste water, i.e., waste water from the mining activities and waste water from the coal preparation activities, or mining services activities. Waste water was further subdivided by the characteristics of the effluent (acid or alkaline).

(1) *Subpart B—Coal Preparation Plants and Associated Areas.* The provisions of this subpart are applicable to discharges from coal preparation plants and associated areas, including discharges which are pumped, siphoned or drained from coal storage, refuse storage and coal preparation plant ancillary areas related to the cleaning or beneficiation of coal of any rank including but not limited to bituminous, lignite and anthracite.

(2) *Subpart C—Acid or Ferruginous Mine Drainage.* The provisions of this subpart are applicable to acid or ferruginous mine drainage resulting from the mining of coal of any rank, including but not limited to bituminous, lignite, and anthracite.

(3) *Subpart D—Alkaline Mine Drainage.* The provisions of this subpart are applicable to alkaline mine drainage resulting from the mining of coal of any rank including but not limited to bituminous, lignite, and anthracite.

(ii) *Waste characteristics.* The raw waste characteristics of coal preparation plant process water (Subpart B) are highly dependent upon the particular process or recovery technique utilized in the operation. Process techniques generally require an alkaline media for efficient and economic operation; therefore process water does not dissolve significant quantities of the constituents present in the raw coal. The principal pollutant present in coal preparation plant process water is suspended solids. In preparation plants cleaning coal fines, process water contains less suspended solids than process water at coal preparation plants which do not clean or recover coal fines.

The raw waste characteristics of the waste water discharged from the actual coal mining activities themselves vary significantly. The chemical characteristics of raw mine drainage are determined by local and regional geology of the coal, associated overburden, and mine bottom. Raw mine drainage ranges from grossly polluted to drinking water quality. Major differences were observed between the two classes of raw mine drainage (1) acid or ferruginous, and (2) alkaline,

which are generally representative of geographic areas.

Acid or ferruginous mine drainage (Subpart C) can be characterized as raw mine drainage, requiring neutralization and sedimentation, which is acid with high iron concentrations and varying concentrations of other metal ions including aluminum, manganese, nickel, and zinc, plus varying concentrations of total suspended solids. Alkaline mine drainage (Subpart D) can be characterized as raw mine drainage of generally acceptable quality, not requiring neutralization, but possibly requiring sedimentation to reduce concentration of suspended solids.

Effluent limitations guidelines and standards of performance are established to control pollutant parameters which are chosen primarily on the following criteria: (1) Pollutants are frequently present in coal mine point source discharges in concentrations deleterious to aquatic organisms; (2) technology exists for the reduction or removal of the pollutants in question; and (3) research data indicate that certain concentrations of pollutants are capable of disrupting an aquatic ecosystem. The following were identified as the pollutants in coal mine drainage, and preparation plants and associated areas wastewater discharges; acidity, iron, manganese, aluminum, nickel, zinc, and suspended solids.

Several other waste water constituents were considered including: total dissolved solids, sulfates, fluorides, strontium, and ammonia. Effluent limitations have not been proposed for ammonia sulfates, fluoride, and strontium because best practicable control technology is not currently available for their removal. Total dissolved solids concentrations in coal mine discharges approach levels capable of disrupting an aquatic ecosystem, but economically feasible technology for achieving substantial reductions in dissolved solids levels does not exist at this time.

(iii) *Origin of waste water pollutants.* Coal preparation plants fall into three general stages, based on degree of cleaning and unit operations. Stage 1 consists of crushing and sizing which are basically dry processes and do not produce a waste water discharge. Stage 2 consists of primary crushing, sizing, gravity separation of coarse coal, dewatering of clean coal and refuse, and removal of coal and refuse fines from process waters. Stage 3 consists of crushing, sizing, gravity separation of all sizes, of coal, secondary separation of coal fines or froth flotation, dewatering of clean coal and refuse, heavy media recovery when required, thermal drying of clean coal, and removal of coal and refuse fines from process water. Stages 2 and 3 coal preparation plants use water in the beneficiation processes. Fine coal and mineral particles are suspended in the coal preparation plant process waters, and some minerals associated with the coal and its impurities are dissolved in the coal preparation plant's process water. Additional waste water of a non-contact nature may result from boiler blowdowns and non-contact cooling waters such as bearing cooling water.

The waste water situation evident in the mining segment of the coal industry is unlike that encountered in most other industries. Water enters mines via precipitation, ground water infiltration, and runoff where it may become polluted by contact with materials in the coal, overburden material, or mine bottom. Except for dust control and fire protection, water is not used in the actual mining of coal in the U.S. at the present time. Waste water handling and management is required, and is a part of most coal mining methods or systems to insure the continuance of the mining operation and to improve the efficiency of the mining operation. This waste water is discharged from the mine as mine drainage. Mine drainage may be polluted and require treatment before it can be discharged to navigable waters. In addition to handling and treating often massive volumes of waste water during actual mining operations or coal loading, coal mine operators are faced with the same burden during idle periods. Mine drainage may continue indefinitely after all mining operations have ceased if proper mining methods and control technology are not employed, or even increase in intensity after mine closure if proper mine drainage control technology is not employed. Control of mine drainage after mine closure or abandonment is not included in this final regulation although techniques are described in the Development Document, referenced below, which can control or ameliorate mine drainage after mine closure and all activities associated with the mine have ceased.

Water enters preparation plant associated areas such as coal storage and refuse storage, via precipitation, wash down, and runoff, where it comes into contact with coal or coal refuse. The wastewater discharges from coal preparation plants and associated areas contain pollutants similar to the pollutants discharged by the mine served by the preparation plant. As with the coal mining segment of the industry, waste water handling from coal preparation plants associated areas continues during idle periods; and may continue indefinitely from refuse storage after preparation plant closure if proper control technology is not employed, although these control technologies are not required as part of these final regulations.

The wastewaters from the actual mining and the coal preparation plants and associated areas of the coal mining industry are essentially unrelated to production quantities. Therefore, raw waste loadings are expressed in terms of concentration rather than units of production.

(iv) *Treatment and control technology.* Waste water treatment and control technologies have been studied for each subcategory of the industry to determine what is the best practicable control technology currently available. Although it is legally permissible to base effluent limitations on in-process changes, the technology used as the basis for this regulation is end-of-pipe treatment only.

Waste water control technology includes techniques employed before, during and after the actual mining operation to reduce or eliminate adverse environmental effects resulting from waste water discharges from coal mine point sources. Control technology as discussed in the Development Document, referenced below, has been categorized as to control technology related to surface mining, underground mining, and coal preparation.

Surface mine pollution control technology is divided into two major categories—mining technology (specific mining techniques) and final waste water pollution control technology (reclamation of land areas disturbed by mining). Although these surface mine pollution control technologies are addressed in the development document, referenced below, they are not included as part of this final regulation, but may be used to reduce the volume and expense of waste water treatment required during operations and reduce or eliminate adverse environmental effects after activities associated with the mine have ceased.

Underground mine pollution control technology is divided into methods of reducing water influx into mine workings, and preplanned flooding on mine closure. The reduction of water influx into underground mines can reduce the volume and expense of waste water treatment during operations, though it is not required by this final regulation. While it has been demonstrated that preplanned flooding on deep mine closure can reduce or control water pollution after mine closure it is not included as part of this final regulation.

Coal preparation pollution control technology is divided into surface water control and final waste water pollution control technology at preparation plant refuse disposal areas (reclamation). While reclamation of preparation plant refuse disposal areas has been demonstrated as control technology which ameliorates this aspect of pollution from mining, it is not required as part of this final regulation.

That water quality degradation may be caused by discharges from areas affected by mining during a time period which is not included under this regulation is recognized by the Agency. In many cases the pollution from these areas is more severe than that from the active area included in this regulation. The Agency is considering possible application of section 208 of the Act (Best Management Practices) which will address in detail control technologies to be used toward the amelioration of these aspects of coal mining related pollution and will be providing guidance to control this facet of the pollution problem. As noted in the preamble to the regulations promulgated today, EPA also is conducting an intensive analysis of data which may lead to extension of coverage of these regulations, or of new source performance standards.

Waste water treatment technology is categorized in the Development Document, referenced below, as to treatment technology for coal preparation plant process waste water and associated areas point source discharges and treatment technology for the two classes of mine drainage. Coal preparation plant process waste water treatment consists primarily of clarification techniques for suspended solids removal including thickeners, flocculation, settling basins, vacuum filtration, and pressure filtration.

Treatment technology for acid or ferruginous mine drainage includes flow equalization, acidity neutralization and precipitation of insoluble metal hydroxides, ferrous iron oxidation, and suspended solids removal. Surface holding ponds or underground sumps are employed to equalize the flow of mine drainage before treatment. Mineral acidity in the raw mine drainage is neutralized with an alkali, usually hydrated lime, which removes iron, manganese, and other soluble metals through the formation of their insoluble hydroxides. When iron is present in raw mine drainage in the ferrous form, usual practice is to provide aeration facilities for oxidation to the ferric state. Suspended solids are formed as a result of the chemical treatment. Both earthen settling basins and mechanical clarifiers are used for removal of suspended solids. It was observed that total iron is one of the most commonly analyzed constituents of acid or ferruginous mine drainage, and iron reduction is generally representative of the overall effectiveness of the neutralization process. It has been demonstrated that, with total iron removed to within 3.5 mg/l, total aluminum, total nickel, and total zinc are removed to within the limits suggested in the preamble to 40 CFR Part 434 (40 FR 48830). Therefore, total aluminum, total nickel, and total zinc are not included in the limitations guidelines of this regulation for acid or ferruginous mine drainage.

Treatment technology for alkaline mine drainage generally consists of solids removal in settling ponds. Some alkaline mine drainages may require no treatment to meet this regulation. It has been demonstrated that natural aeration in settling ponds can reduce total iron concentrations in alkaline mine

drainages from over 3 mg/l to less than 3 mg/l. Alkaline mine drainage was observed to have low concentrations of other metal ions. Therefore, the pollutant parameters included in the alkaline mine drainage subcategory of 40 CFR Part 434 (40 FR 48830) have been revised to include only total iron, total suspended solids and pH.

Solid waste control must be considered. Best practicable control technology as known today, requires disposal of the pollutants removed from waste waters in this industry in the form of solid wastes and liquid concentrates. In most cases these are nonhazardous substances requiring only minimal custodial care. However, some constituents may be hazardous and may require special consideration. In order to insure long-term protection of the environment from these hazardous or harmful constituents, special consideration of disposal sites must be made. All landfill sites where such hazardous wastes are disposed should be selected so as to prevent horizontal and vertical migration of these contaminants to ground or surface waters. In cases where geologic conditions may not reasonably ensure this, adequate legal and mechanical precautions (e.g. impervious liners) should be taken to ensure long term protection to the environment from hazardous materials. Where appropriate, the location of solid hazardous materials disposal sites should be permanently recorded in the appropriate office of legal jurisdiction.

(v) *Cost estimates for control of waste water pollutants.* The estimated capital investment required for coal mining facilities to meet effluent guidelines should be no more than 132 million dollars and on a per ton basis may cost up to 42 cents per ton of designed annual capacity for BPT depending on size, location and type of mine. Annual operating costs of effluent treatment facilities inclusive of capital charges are estimated to be less than 90 million dollars and may range up to 28 cents per ton for BPT. The estimated investment cost to meet BPT for coal preparation plants is 52.5 million dollars or approximately 41 cents per ton of annual design capacity. Annual costs of treatment inclusive of capital charges for the preparation plants and associated areas are estimated to be less than 7 cents per ton of prepared coal. The above estimates are based on the assumption that no treatment facilities are presently in place.

(vi) *Energy requirements and nonwater quality environmental impacts.* Energy requirements for compliance with these final and proposed effluent limitations guidelines are low. The main use of energy is for pumps, mixers, and control instruments. Wherever feasible, gravity flow is used in coal preparation plants and mine drainage treatment facilities. Mine dewatering is considered an inherent part of the mining method or system.

Inherent to coal preparation is the major problem of solid waste disposal which also can be a source of air pollution. The amount of additional waste and resultant air pollution produced as a result of these regulations is insignificant relative to that already present; consequently, a minimal impact is expected.

(vii) *Economic impact analysis.* These guidelines will require a total investment of no more than 132 million dollars for BPT. Annual costs are estimated to be less than 90 million dollars for BPT. Prices of raw coal are expected to rise between 0 and 28 cents per ton as a result of BPT. Prepared coal prices will increase no more than 7 cents in 1977. Prices will not rise immediately to cover compliance costs. In the interim net revenues are expected to be reduced by no more than 2.9 percent for coal mines and 5.7 percent for coal preparation plants and associated areas. These profitability decreases are not expected to result in closures of mines or preparation plants. Some closures of marginal establishments existing under unique circumstances may result from the guidelines.

The impact of these regulations on employment, local economies, industry growth and the balance of trade is not expected to be significant.

Executive Orders 11821 (November 27, 1974) and 11949 (December 31, 1976) require that major proposals for legislation and promulgation of regulations and rules by agencies of the executive branch be accompanied by a statement certifying that the economic impact of the proposal has been evaluated.

OMB Circular A-107 (January 28, 1975) prescribes guidelines for the identification and evaluation of major proposals requiring preparation of inflationary impact certifications. The Administrator has directed that all regulatory actions which are likely to result in annualized costs in excess of $100 million will require certification.

The economic impact of these regulations has been considered in accordance with Executive Orders 11821 and 11949. Projected effects of the regulations on prices and economics of the industry as summarized above have been reviewed by the Agency.

APPENDIX C—SUMMARY OF PUBLIC PARTICIPATION

Prior to this publication, factual conclusions which support promulgation of this regulation were set forth in substantial detail in the notice of interim final rule making for the coal mining point source category published October 17, 1975 (40 FR 48830) and interim final rulemaking published on May 13, 1976 (41 FR 19832), and in the notice of public review procedures published October 6, 1973 (38 FR 21202). In addition, each regulation as promulgated in interim final form was supported by two other documents; (1) the document entitled "Development Document for Interim Final Effluent Limitation Guidelines and New Source Performance Standards for the Coal Mining Point Source Category" and (2) the document entitled "Economic Impact of Interim Final Effluent Guidelines on the U.S. Coal Mining Industry." These documents were made available to the public and circulated to interested persons at approximately the time of publication of the notice of interim final rulemaking.

Prior to the publication of the notice of interim final rulemaking (40 FR 48830) a development document was distributed to federal agencies, all state and territorial pollution control agencies, industry trade associations and conservation organizations. Comments on that report were solicited. The major comments received and the Agency's response were described in the notice of interim final rulemaking (40 FR 48830).

Interested persons were again invited to participate in the rulemaking by submitting written comments following the publication of the promulgated interim final regulation (41 FR 19832).

SUMMARY OF COMMENTS

The following responded to the request for written comments contained in the notice of interim final rulemaking: Reclamation & Engineering Services, Inc.; Old Ben Coal Company; Island Creek Coal Company; West Virginia—Citizen Action Group; Peabody Coal Company; The Pittston Coal Company; Bethlehem Steel Corporation; Kentucky Coal Association, Inc.; Consolidation Coal Company; Save Our Cumberland Mountains; National Coal Association; The Valley Camp Coal Company; American Electric Power Service Corporation; U.S. Environmental Protection Agency, Region VIII; U.S. Department of Interior.

Commenters suggested that the effluent limitations guidelines remain applicable to point sources in this category until (in the case of surface mines) release of the reclamation or revegetation bonds. Also, there was suggestion that, with respect to both surface and deep mines, regardless of the nature of activity on the mining property and whether or not performance bonds are involved, the effluent limitations guidelines be applicable as long as there is a point source pollution problem.

There is no question that pollution often continues to result from coal mines which have ceased active operation. Indeed, in some cases, when a mining area is no longer subject to regular supervision, the pollutants in the discharges may increase. However, EPA does not today extend coverage of these effluent limitations guidelines to include inactive areas or those areas undergoing revegetation or reclamation. This is not to say that point sources discharging pollutants may not be covered by NPDES permits; it means only that national effluent limitations guidelines do not apply. The Agency is conducting an intensive analysis of data with respect to water pollution created during the revegetation stages, and may in the future propose extension of coverage. With respect to closed mines and abandoned mining areas the Agency does not intend to issue effluent limitations guidelines because regulation of such point sources is not amenable to production oriented effluent limitations guidelines.

Several commenters request the basis and rationale for the following statement from the FEDERAL REGISTER, page 19837, first paragraph: "Effluent limitations have not been proposed for ammonia, sulfates, fluoride and strontium because the levels observed in coal mine wastewater discharges generally do not warrant concern."

The above statement, quoted from 40 FR 19837, may be misleading. Pollutant parameters such as ammonia, sulfates, fluoride and strontium do warrant concern but best practicable control technology is not currently available for the removal of these pollutants. Therefore, there is no way to require treatment for removal of these parameters with today's BPT regulations. These parameters shall be reconsidered during the BAT technical study.

A commenter states that the character of discharge waters and treatment technologies are affected by geologic, hydrologic and climatic factors so that mines operating in different geological areas will have different discharge water characteristics. The commenter suggests the establishment of limitations on a geographical basis.

The Agency considered the subcategorization of the coal mining category as described in the Development Document. In that study, it was determined that two distinct classes of raw mine drainage existed (Acid or Ferruginous and Alkaline). These two classes of wastewater are based on wastewater treatment technology required, but reflect regional and local geologic conditions. This industry categorization consists of two large regions. Region I, states or areas characterized by acid or ferruginous raw mine drainage, is comprised of Maryland, Pennsylvania, Ohio and northern West Virginia. Isolated mines or areas in Western Kentucky and along the Illinois-Indiana border also exhibit acid or ferruginous raw mine drainage. Region II includes all the remaining coal producing areas which exhibit predominantly alkaline raw mine drainage.

Statistical analysis of all raw mine drainage obtained during the field program substantiated the categorization based on the chemical characteristics of the raw mine drainage. Based on this information, it was

determined that there was no need for further industry categorization of the coal mining industry other than by raw mine drainage characteristics. However, as noted in the preamble, EPA is reviewing data with respect to Western coal mines to determine if a separate subcategory should be established for coal mines in that area.

Design criteria for treatment facilities (e.g., liners for settling basins) was requested by a commenter in order to avoid contamination of surface and ground water.

The function of these effluent limitations guidelines is not to present design criteria for equipment needed to comply with the regulation; however, background documents to these regulations and the substantial technical resources of EPA's Regional Offices may be consulted to obtain information on the proper construction of settling basins.

Commenters recommended promulgation of effluent limitations for known toxic substances under the authority of section 307(a) of the Federal Water Pollution Control Act (FWPCA).

The Agency has embarked on a major effort to identify toxic water pollutants in effluents resulting from coal mining operations, and to examine available pollution control technology which can substantially remove those pollutants. At the conclusion of those studies EPA may propose section 307(a) toxic water pollutant standards or may address the problems in the context of revised effluent limitations guidelines. Until it has data available to support section 307(a) standards, the Agency does not intend to act under that section.

A commenter suggests the exemption of BPT requirements for plants which do not have the required technology in place in time to meet the July 1, 1977 statutory compliance date.

This comment necessarily is limited to coal mining category point sources which do not have the final NPDES permits, because final NPDES permits are not affected by the promulgation of these effluent limitations guidelines. The ability of the Administrator to consider the physical difficulties of installing the equipment by July 1, 1977, necessary to meet these effluent limitations and guidelines, is limited. The factors set forth in section 304(b)(1)(B) of the Act do not include consideration of the time necessary for installation, and the legislative history of the relevant sections of the Act is likewise devoid of consideration of this factor. The reasonableness of the technology underlying BPT levels is inherently based on the possibility of installing the technology regardless of the proximity to the July 1, 1977 date. The contention that the statutory deadline should be dispositive in deriving these effluent limitations guidelines is particularly inappropriate in the coal mining industry because (1) the technology needed to meet the BPT levels is not sophisticated and is widely practiced; (2) the BPT levels and underlying technology were presented to the industry well over two years prior to the date of this publication; and (3) even if a facility must initiate implementation of BPT technology, the time needed to bring about full compliance is relatively short. The Agency has announced an enforcement policy which applies to dischargers who do not have final NPDES permits. This policy allows the use of a compliance schedule which requires the attainment of BPT levels at some point beyond July 1, 1977, when there hs been good faith efforts to meet the July 1, 1977, date and when there have been delays in the issuance or resolution of NPDES permits. A more thorough explication of this policy appears in "Environment Reporter," Number 6, June 11, 1976, "Current Developments" at 241–246.

Commenters request the inclusion of railroads and the area surrounding the mine portal as part of the definition of an active mine area.

The terms "active mining area", "coal mine" and "coal preparation plant associated areas" are defined in § 434.11 clearly to include point source discharges resulting from the area near the mine portal.

A commenter recommended changing the term quantity to concentration. This would be a more accurate representation and avoid confusion, as limitations are expressed as milligrams per liter.

The appropriate changes are reflected in today's publication.

Commenters state that data from the Draft Development Document indicates some alkaline mine drainage may contain manganese and dissolved iron in quantities above those limitations established for acid drainage. Limitations for these two parameters are requested.

Manganese is not found to be a significant problem in alkaline mine drainage. Manganese removal is obtained at the higher pH levels found in alkaline drainage, by the manganese being precipitated out of solution. Thus, it was concluded that separate limitations for manganese are unnecessary. Limitations for dissolved iron are being deleted from these regulations for reasons explained in the preamble.

Commenters believed that the cost of compliance estimations are incorrect due to their being based on analytical techniques, used to develop base line regulatory data, which are improper. A commenter adds that samples analyzed for the EPA regulations, were not digested by the procedure required by law.

The analytical methods used by the contractor in analyzing waste water samples obtained during the study were those as specified in the FEDERAL REGISTER, Part 136, dated October 16, 1973. This regulation provides a number of equivalent methods to be used in the analysis of waste water and under the parameters for iron and manganese, there is the availability of both colorimetric as well as instrumental methods for measurement. The contractor's choice of method was the use of atomic absorption spectral chromatography. Under the prescribed procedure the analyst has a number of choices which he may make according to the sample characteristic and type choices as to the need for either hard or soft digestion as well as the option for the direct aspiration of samples for determination. Therefore, the analyst has the option based on the individual sample type and character to make these determinations during his analytical work up. All measurements made during this contract were as those specified in the FEDERAL REGISTER and are in compliance with the Agency's accepted analytical procedures.

Commenters state that they may be unable to meet effluent limitations guidelines for total suspended solids (TSS). The claim made is that lime neutralization for acid mine drainage produces a calcium sulfate precipitate, which will increase the TSS during monitoring. Commenters recommend postponing a TSS standard until further EPA and ERDA studies are completed. Another position on the issue of TSS limits is that in certain areas the suggested limit is unattainable since high suspended solid loads already exist in streams.

However, one commenter asserts that the TSS limitations are too lenient, since permit data from the Regions indicates present compliance for several companies under more stringent TSS limits.

Lime neutralization may increase the amount of total suspended solids in acid mine drainage. It is for this purpose that clarifiers are used as part of the treatment technology. Technical studies have demonstrated that the limitations for TSS can be met on a routine basis as substantiated by the data base for this regulation. In such cases where it can be shown that high suspended solid loads already exist in the intake stream of a plant, then the permit writer may adjust the limitations, for a discharge to the same stream.

Several commenters stated that Subpart B, Coal Storage Refuse Storage and Coal Preparation Plant Ancillary Area, is a non-point source discharge and should not be subject to effluent limitations guidelines.

These regulations apply only to point source discharges. If a pollution source is truly a non-point discharge, then it is not subject to these effluent limitations guidelines. But EPA's study of this industry indicates that most water pollution from coal storage, refuse storage and other areas around coal preparation plants is released through definite point sources.

A commenter asked for the addition of zinc limitation to the regulations, because zinc may not precipitate until pH 7.0 is reached and the regulations only require acid drainage to be neutralized to pH 6.0, so that zinc will not necessarily be removed. Another commenter suggests monitoring for nickel, zinc and aluminum, since these are not always reduced to tolerable levels when total iron is reduced to 3.5 mg/l.

Effective removals of aluminum, nickel and zinc were observed at all plants in the technical study. There were no observed values which exceeded the proposed daily maximum concentrations for nickel and zinc at any of the plants and at only one plant did aluminum values exceed the daily maximum limit. Consequently, it is concluded that well operated treatment plants have little problem in removal of these parameters. For the acid or ferruginous mine drainage subcategory, total aluminum, total zinc and total nickel are not listed as pollutant parameters because it has been demonstrated that with total iron removed to within 3.5 mg/l, total aluminum, total zinc and total nickel are removed to within the limits suggested in the preamble to the October 17, 1975 publication (40 FR 48830). The technical study being conducted for the BAT review will consider additional parameters for regulation.

A commenter recommends that a comprehensive study to determine stream conditions prior to mining be conducted before final standards are published.

Effluent limitations guidelines are based on treatment technology. Prior conditions have little effect on technology evaluation.

One commenter questioned whether EPA had fulfilled the requirements of Executive Order 11821 for inflationary impact statements.

An economic impact report entitled "Economic Impact of Interim Final and Proposed Effluent Guidelines, Coal Mining" was prepared in support of the regulations. The impact analysis performed examined costs of compliance, both capital and annual cost, the incidence of these costs, price effects, production effects, effects upon industry profitability, regional impacts, balance of payment effects, and employment effects.

The economic impacts were summarized in the preface to the regulations and in Appendix E—Technical Summary and Basis for Regulations under part (VII) Economic Impact Analysis. The impact analysis performed was in accordance with circular A-107 and the inflationary impact of these regulations was considered in accordance with Executive Order 11821.

One commenter questioned whether treatment costs per mine and total treatment

costs may have been understated. Using BPT capital costs per mine and preparation plant for the model large deep mine in the northern Appalachian region the commenter computed a compliance cost for this area of between $111 million and $375 million, with the majority of the broad range reflecting costs for closing the circuit for preparation plant water networks.

EPA attempted to prepare a worst case analysis for assessing the cost and economic impact of its regulations. EPA's estimates of the costs were developed by assuming that no treatment facilities were already in place even though it is known that most of the industry does treat effluents in order to comply with State and local requirements. Thus it is likely that individual mines will sustain a lower cost than predicted in the analysis.

EPA's estimates for mining compliance costs for a region are based upon a model plant approach. This approach can be illustrated by using the example of large deep mines in the Northern Appalachian region. The model plant produces approximately 1 million tons per year. The compliance cost for this mine (rounded to $400,000) is divided by the output to obtain the cost ($.40) per ton. Multiplying this figure by the tonnage produced by large deep mines in this region (147.9 million in 1973) gives a compliance cost for the region of less than $60 million.

EPA's estimates of coal preparation plant costs were similarly computed. Costs per ton were multiplied by the production of plants requiring closure of the water circuit to obtain compliance costs for the nation ($52.5 million). NOTE.—Northern Appalachia accounts for approximately 54 percent of the Nation's production of cleaned coal so preparation plant costs for this region could be expected to be much less than $52.5 million.

The commenter's approach to computing total cost for a region (multiplying the number of model plants in a region by the cost per model plant) can produce biased results. If, for example, one attempts to estimate the production for large deep mines in the Northern Appalachian region using the commenter's method, one would multiply 225 by the output of the model plant (1 million tons per year). This yields an estimated production of 225 million tons, an estimate over 50% higher than the actual production of 147.9 million tons in 1973.

Total compliance cost estimate using the commenter's methodology would show biases similar to those shown in production and plant statistics. It is because of this possibility of introducing biases into its analysis that the Agency did not use the commenter's approach in computing compliance costs but instead used its methodology.

One commenter questioned whether EPA's costs for treating surface drainage had underestimated the number of ponds and the area drained by these ponds. The commenter cited terrain and natural drainage as factors which can influence the number of ponds.

In computing compliance costs for surface mining operations, EPA used a model plant approach and assumed that no treatment is already in place. Treatment facilities were sized to accommodate drainage from the active mining area. It is assumed that mine operators will quickly return the land to final contour for reclamation at which time the area is no longer part of the active mining area. This prompt return to final grade represents both good mining practice and a way for the operator to minimize his costs of complying with the regulation.

EPA assumed that a new treatment pond for the active mining area would be built every six months, i.e. that the active mining area would be returned to final contour within this period. The active mining area was computed as the land area needed to extract the tonnage for the model plant, and based upon a given seam thickness (e.g. 60 inches) and recovery factor (e.g. 90 percent). The size of active mining area to be drained determines the size of the treatment facilities for the model plant.

Mine operators frequently make use of the fact that terrain can affect treatment costs. For example natural depressions in the ground may be used for treatment facilities. However, in estimating its costs for the treatment facilities EPA assumed the construction of a four-sided pond so that actual pond costs may be less than those estimated.

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