Title 40—Protection of the Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

[FRL 629-2]

PART 435—ONSHORE SEGMENT OF THE OIL AND GAS EXTRACTION POINT SOURCE CATEGORY

Interim Final Rule Making

Notice is hereby given that effluent limitations and guidelines for existing sources to be achieved by the application of best practicable control technology currently available as set forth in interim final form below are promulgated by the Environmental Protection Agency (EPA). The regulation set forth below amends Part 435—oil and gas extraction point source category and will be applicable to existing sources for the onshore subcategory (Subpart C), the coastal subcategory (Subpart D), the beneficial use subcategory (Subpart E) and the stripper subcategory (Subpart F) of the oil and gas extraction point source category pursuant to sections 301, and 304 (b) and (c), 306(b) and 307(c) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, 1311 and 1314 (b) and (c), 86 Stat. 816 et seq.; Pub. L. 92-500) (the Act). Simultaneously, the Agency is publishing in proposed form effluent limitations and guidelines for existing sources to be achieved by the application of best available technology economically achievable, standards of performance for new point sources and pretreatment for new sources. Economic analysis indicates unacceptable economic impacts would result from the application of the technologies which have now been evaluated for the stripper subcategory. Moreover, this subcategory constitutes only .1-.3% of the industry based on production and thus pollutant loads are very small in relation to those contributed by the other subcategories in this category. Accordingly, limitations for the stripper subcategory are being reserved pending study of other, less capital-intensive, control technologies. A description and discussion of this legal authority is contained in Appendix A to this preamble.

The oil and gas extraction point source category was first studied to determine whether separate limitations are appropriate for different segments within the category. This analysis included a determination of whether differences in raw material source, product produced, 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. The control and treatment technologies existing within each segment were identified 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 techologies. This information was then evaluated in order to determine what levels of technology constitute the "best practicable control technology currently available." The data upon which the above analysis was performed included EPA permit applications, EPA sampling and inspections, consultant reports, and industry submissions. A substantial summary of the method of study, the several factors considered in subcategorization and the conclusions reached are set forth as Appendix B to this preamble.

The report entitled "Development Document for Interim Final Effluent Limitations Guidelines and New Source Performance Standards for the Oil and Gas Extraction Point Source Category" details the analysis undertaken in support of the interim final regulation set forth herein and will be available for inspection at the EPA Public Information Reference Unit, Room 2922 (EPA Library), Waterside Mall, 401 M St., S.W., Washington, D.C., at all EPA regional offices, and at State water pollution control offices in the very near future. A notice of its availability will be published in the FEDERAL REGISTER. A supplementary analysis prepared for EPA of the possible economic effects of the regulation will also be available for inspection at these locations. Copies of both of these documents are being sent to persons or institutions affected by the proposed regulation or who have placed themselves on a mailing list for this purpose (see EPA's Advance Notice of Public Review Procedures, 38 FR 21202, August 6, 1973). An additional limited number of copies of both reports are available. Persons wishing to obtain a copy may write the Environmental Protection Agency, Effluent Guidelines Division, Washington, D.C. 20460, Attention: Distribution Officer, WH-552.

When this regulation is promulgated in final rather than interim form, revised copies of the Development Document will be available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Copies of the economic analysis document will be available through the National Technical Information Service, Springfield, VA 22151.

Prior to this publication, many agencies and groups were consulted and given the opportunity to participate in the development of these limitations, guidelines and standards. All participating agencies have been informed of project developments. An initial draft of the Development Document was sent to all participants and comments were solicited on that report. A summary of these comments and the Agency's response and consideration of these is contained in Appendix C to this preamble.

The Agency has made a study of the costs and economic and inflationary impacts of this regulation. It is estimated that the capital cost of complying with the limitations based on the best practicable control technology currently available will be $44.38-$57.78 million, the additional capital cost of complying with regulations based on the best available control technology economically achievable will be $45.38 million. The total annual operating costs for these requirements based on best practicable control technology currently available is estimated to be $8.05-$10.76 million and the additional annual operating costs for the requirements based on best available technology economically achievable is estimated to be $3.7 million. The investment and operating costs for a new source are expected to be similar to the costs for an existing source though investment requirements may be somewhat lower since prior planning would alleviate the costs of acquiring additional space that some existing sources must cope with. These costs and the resultant economic and inflationary impact are briefly discussed in Appendix B to this preamble and are substantially detailed in the economic analysis document. It is hereby certified that the economic and inflationary effects of this proposal have been carefully evaluated in accordance with Executive Order No. 11821.

The Agency is subject to an order of the United States District Court for the District of Columbia entered in *Natural Resources Defense Council* v. *Train et* al. (Cv. No. 1609-73) which requires the promulgation of regulations for this industry category no later than September 1, 1976. This order also requires that such regulations become effective immediately upon publication. In addition, it is necessary to promulgate regulations establishing limitations on the discharge of pollutants from point sources in this category so that the process of issuing permits to individual dischargers under section 402 of the Act is not delayed.

It has not been practicable to develop and publish regulations for this category in proposed form, to provide a 60 day comment period, and to make any necessary revisions in light of the comments received within the time constraints imposed by the court order referred to above. Accordingly, the Agency has determined pursuant to 5 USC § 553(b) that notice and comment on the interim final regulations would be impracticable and contrary to the public interest. Good cause is also found for these regulations to become effective immediately upon publication.

Interested persons are encouraged to submit written comments. Comments should be submitted in triplicate to the Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460, Attention: Distribution Officer, WH-552. Comments on all aspects of the regulation are solicited. In the event comments are in the nature of criticisms as to the adequacy of data which are available, or which may be relied upon by the Agency, comments should identify and, if possible, provide any additional data which may be available and should indicate why such data are essential to the amendment or modification of the regulation.

In the event comments address the approach taken by the Agency in establishing an effluent limitation or guideline EPA solicits suggestions as to what alternative approach should be taken and why and how this alternative better satisfies the detailed requirements of sections 301 and 304(b) of the Act.

A copy of all public comments will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2922 (EPA Library), Waterside Mall, 401 M Street, S.W., Washington D.C. A copy of preliminary draft contractor reports, the Development Document and economic study referred to above, and certain supplementary materials supporting the study of the industry concerned will also be maintained at this location for public review and copying. The EPA information regulation, 40 CFR Part 2, provides that a reasonable fee may be charged for copying.

At the date of preparation of this notice the "Development Document" is not yet printed. When it becomes available a notice of its availability will be published in the FEDERAL REGISTER. All comments received within sixty days of publication of that notice of availability or this notice whichever is later will be considered. Steps previously taken by the Environmental Protection Agency to facilitate public response within this time period are outlined in the advance notice concerning public review procedures published on August 6, 1973 (38 FR 21202). In the event that the final regulation differs substantially from the interim final regulation set forth herein the Agency will consider petitions for reconsideration of any permits issued in accordance with this interim final regulation.

In consideration of the foregoing, 40 CFR Part 435 is hereby amended as set forth below.

Dated: September 29, 1976.

RUSSELL E. TRAIN,
Administrator.

Part 435 is amended by adding the following sections:

Subpart C—Onshore Subcategory

Sec.
435.30 Applicability; description of the onshore subcategory.
435.31 Specialized definition.
435.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart D—Coastal Subcategory

435.40 Applicability; description of the coastal subcategory.
435.41 Specialized definition.
435.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart E—Beneficial Use Subcategory

435.50 Applicability; description of the beneficial use subcategory.
435.51 Specialized definition.
435.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart F—Stripper Subcategory

435.60 Applicability; description of the stripper subcategory.
435.61 Specialized definition.
435.62 [Reserved]

AUTHORITY: Secs. 301, 304 (b) and (c), 306 (b) and 307(c), Federal Water Pollution Control Act, As Amended (the Act); 33 U.S.C. 1251, 1311, 1314 (b) and (c), 1316(b) and 1317(c); 86 Stat. 816 et seq.; Pub. L. 92-500.

Subpart C—Onshore Subcategory

§ 435.30 Applicability; description of the onshore subcategory.

The provisions of this subpart are applicable to the onshore facilities engaged in the production, field exploration, drilling, well completion, and well treatment in the oil and gas extraction industry. This subpart is not applicable to those onshore facilities defined in subparts D, E, and F.

§ 435.31 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "onshore" shall mean all land and water areas landward from the inner boundary of the territorial seas as defined in 40 CFR 125.1(gg)—(including the Great Lakes).

§ 435.32 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 facility, raw materials, production processes, product 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 quantity or quality of pollutants or pollutant properties, 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: there shall be no discharge of waste water pollutants into navigable waters from any source associated with production, field exploration, drilling, well completion, or well treatment (i.e., produced water, drilling muds, drill cuttings, and produced sand).

Subpart D—Coastal Subcategory

§ 435.40 Applicability; description of the coastal subcategory.

The provisions of this subpart are applicable to coastal facilities engaged in the production, field exploration, drilling, well completion, and well treatment in the oil and gas extraction industry.

§ 435.41 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR shall apply to this subpart.

(b) The term "M10" shall mean those coastal facilities continuously manned by ten (10) or more persons.

(c) The term "M9IM" shall mean those coastal facilities continuously manned by nine (9) or less persons or intermittently manned by any number of persons.

(d) The term "coastal" shall mean all land and water areas landward from the inner boundary of the territorial seas as defined in 40 CFR 125.1(gg) and bounded on the inland side by the line defined by the inner boundary of the territorial seas a defined above eastward of the point defined by 89°45' W. Longi-

tude and 29°46' N. Latitude and continuing as follows west of that point:

Direction to West Longitude	*Direction to North Latitude*
West, 89°48'----------	North, 29°50'.
West, 90°12'----------	North, 30°06'.
West, 90°20'----------	South, 29°35'.
West, 90°35'----------	South, 29°30'.
West, 90°43'----------	South 29°25'.
West, 90°57'----------	North, 29°32'.
West, 91°02'----------	North, 29°40'.
West, 91°14'----------	South, 29°32'.
West, 91°27'----------	North, 29°37'.
West, 91°33'----------	North, 29°46'.
West, 91°46'----------	North, 29°50'.
West, 91°50'----------	North, 29°55'.
West, 91°56'----------	South, 29°50'.
West, 92°10'----------	South, 29°44'.
West, 92°55'----------	North, 29°46'.
West, 93°15'----------	North, 30°14'.
West, 93°49'----------	South, 30°07'.
West, 94°03'----------	South, 30°03'.
West, 94°10'----------	South, 30°00'.
West, 94°20'----------	South, 29°53'.
West, 95°00'----------	South, 29°35'.
West, 95°13'----------	South, 29°28'.
East, 95°08'----------	South, 29°15'.
West, 95°11'----------	South, 29°08'.
West, 95°22'----------	South, 28°56'.
West, 95°30'----------	South, 28°55'.
West, 95°33'----------	South, 28°49'.
West, 95°40'----------	South, 28°47'.
West, 96°42'----------	South, 28°41'.
East, 96°40'----------	South, 28°28'.
West, 96°54'----------	South, 28°20'.
West, 97°03'----------	South, 28°13'.
West, 97°15'----------	South, 27°58'.
West, 97°40'----------	South, 27°45'.
West, 97°46'----------	South, 27°28'.
West, 97°51'----------	South 27°22'.
East, 97°46'----------	South, 27°14'.
East, 97°30'----------	South 26°30'.
East, 97°26'----------	South, 26°11'.

East to 97°19' W., Longitude and Southward to the U.S.-Mexican border. Along all boundaries of the territorial seas as defined in 40 CFR 124.1 (gg) except the Gulf of Mexico, the term "coastal" is not defined.

§ 435.42 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 facility, raw materials, production processes, product 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 quantity or quality of pollutants or pollutant properties, 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:

Effluent limitations

[In milligrams per liter]

Pollutant parameter Waste source	Oil and grease: Maximum for any 1 day	Oil and grease: Average of daily values for 30 consecutive days shall not exceed—	Residual chlorine minimum for any 1 day
Produced water	72	48	
Deck drainage	72	48	
Drilling muds	(1)	(1)	
Drill cuttings	(1)	(1)	
Well treatment	(1)	(1)	
Sanitary-M10			[2] 1
M9M[3]			
Domestic[3] produced sand	(1)	(1)	

[1] No discharge of free oil.
[2] Minimum of 1 mg/l and maintained as close to this concentration as possible.
[3] There shall be no floating solids as a result of the discharge of these wastes.

Subpart E—Beneficial Use Subcategory

§ 435.50 Applicability; description of the beneficial use subcategory.

The provisions of this subpart are applicable to the onshore facilities for which the produced water has a beneficial use when discharged to navigable waters. These facilities are engaged in the production, drilling, well completion, and well treatment in the oil and gas extraction industry.

§ 435.51 Specialized definitions.

For the purpose of this subpart: (a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "onshore" shall mean all land and water areas landward from the inner boundary of the territorial seas as defined in 40 CFR 125.1 (gg)—(including the Great Lakes).

(c) The term "beneficial use" shall mean that the produced water is of good enough quality to be used for livestock watering or other agricultural uses and is being put to such use.

§ 435.52 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 facility, raw materials, production processes, product 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) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutants or pollutant properties, 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:

(1) There shall be no discharge of waste water pollutants into navigable waters from any source (other than produced water) associated with production, field exploration, drilling, well completion, or well treatment (i.e., drilling muds, drill cuttings, and produced sands).

(2) Produced water discharges shall not exceed the following limitation:

Effluent characteristic:	*limitation Effluent*
Oil and grease	45 mg 1 [1]

[1] Maximum for any 1 day.

(b) The discharger must show beneficial use of the produced water being discharged to qualify for this subpart.

Subpart F—Stripper Subcategory

§ 435.60 Applicability; description of the stripper subcategory.

The provisions of this subpart are applicable to the onshore facilities which produce less than 10 barrels per calendar day of crude oil and are operating at the maximum feasible rate of production and in accord with recognized conservation practices. These facilities are engaged in production and well treatment in the oil and gas extraction industry.

§ 435.61 Specialized definitions.

For the purpose of this subpart: (a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "onshore" shall mean all land and water areas landward from the inner boundary of the territorial seas as defined in 40 CFR 125.1(gg) (including the Great Lakes).

§ 435.62 [Reserved]

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 and guidelines, pursuant to sections 301 and 304(b) of the Act, for the onshore subcategory (Subpart C), the coastal subcategory (Subpart D), the beneficial use subcategory (Subpart E), and the stripper subcategory (Subpart F) of the oil and gas extraction 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 Interim Final Effluent Limitations Guidelines and New Source Performance Standards for the Oil and Gas Extraction Point Source Category" provides, pursuant to section 304(c) of the Act, information on such processes, procedures or operating methods.

(2) New sources. Section 306 of the Act requires the achievement by new sources of a Federal standard of performance providing for the control of the discharge of pollutants which reflects the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.

Section 306 also requires the Administrator to propose regulations establishing Federal standards of performance for categories of new sources included in a list published pursuant to section 306 of the Act. The regulation proposed herein sets forth the standards of performance applicable to new sources for the onshore subcategory (Subpart C), the coastal subcategory (Subpart D), the beneficial use subcategory (Subpart E) and the stripper subcategory (Subpart F) of the oil and gas extraction point source category.

(3) Pretreatment for existing sources and for new sources.

Section 307(b) of the Act requires the establishment of pretreatment standards for pollutants introduced into publicly owned treatment works and 40 CFR 128 establishes that the Agency will propose specific pretreatment standards at the time effluent limitations are established for point source discharges.

Section 307(c) of the Act requires the Administrator to promulgate pretreatment standards for new sources at the same time that standards of performance for new sources are promulgated pursuant to section 306. In another section of the FEDERAL REGISTER regulations are proposed in fulfillment of these requirements which may not be fulfilled by this interim final regulation.

APPENDIX B

TECHNICAL SUMMARY AND BASIS FOR REGULATIONS

This Appendix summarizes the basis of interim final effluent limitations and guidelines for existing sources, proposed effluent limitations and guidelines for existing sources to be achieved by the application of the best available technology economically achievable, proposed standards of performance for new sources, and proposed pretreatment standards for both new and existing sources.

(1) General methodology. The effluent limitations and 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 production, product produced, 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-process 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 onshore subcategory (Subpart C), the coastal subcategory (Subpart D), the beneficial use subcategory (Subpart E), and the stripper subcategory (Subpart F), of the oil and gas extraction point source category.

(i) Categorization. For the purpose of studying waste treatment and effluent limitations the onshore segment of the oil and gas extraction point source category was divided into four discrete subcategories. These subcategories were primarily based on consideration of (1) geographic location; (2) type of facility; (3) waste water characteristics and treatability; (4) waste water volume; and (5) economic impact and costs. These considerations are outlined in the Development Document for Interim Final Effluent Limitations and Guidelines for the Oil and Gas Extraction Point Source Category. These subcategories are defined as:

(1) Subpart C—Onshore Subcategory. This subcategory includes those onshore facilities engaged in the production, field exploration, drilling, well completion, and well treatment of the oil and gas extraction industry. Excluded from the subpart are those facilities as defined in subparts D, E, and F.

(2) Subpart D—Coastal Subcategory. This subcategory includes those coastal facilities engaged in the production, field exploration,

drilling, well completion, and well treatment of the oil and gas extraction industry.

(3) Subpart E—Beneficial Use Subcategory. This subcategory includes those onshore facilities with produced water discharges that have a beneficial use.

(4) Subpart F—Stripper Subcategory. This subcategory includes those onshore facilities which produce less than 10 barrels per calendar day of crude oil.

(ii) Waste characteristics.

The major pollutant parameters in the waste waters resulting from the oil and gas extraction industry are oil and grease, residual chlorine, floating solids, and dissolved solids. The water insoluble hydrocarbons and free floating emulsified oils in the waste water will effect the aquatic flora and fauna by interfering with oxygen transfer, coating bottom fauna and fish spawning grounds, damaging the plumage and coats of water fowl and animals, by adhering to the gills of fish, and by causing taste and toxicity problems. Thus, due to the significant impact of oil and grease upon aquatic systems and existence of technologically and economically viable treatment systems, effluent limitations have been developed to control this pollutant parameter. Residual chlorine concentrations are directly correlatable to fecal coliform bacterial counts in the sanitary wastes generated by coastal facilities. Fecal coliform bacteria concentrations serve as an indication of the pathogenetic potential of water resulting from the disposal of human wastes. Compliance with residual chlorine limitations is readily achieved through the proper control of waste water chlorinators. Floating solids are primarily the result of discharges from domestic and sanitary wastes from manned and intermittently manned coastal facilities. These pollutants may settle to form detrimental deposits or they may continue to float and produce objectionable odors. The technologies and "good-housekeeping" practices necessary to control floating solids are readily available. Dissolved solids effect the palatability of water and may have a laxative effect when ingested. Stresses resulting from salinity shocks, anamalous ion ratio and strange buffer systems leave few organisms capable of adapting to brine dominated systems.

Interim final effluent limitation guidelines achievable through the application of the best practicable control technology currently available are established below to control each of the above pollutants. No limitations have been established for several other existing waste water pollutants because: they occur in insignificant quantities; the technology is not presently available to control the pollutant discharge; the benefit derived from removal of the pollutants does not justify the high treatment costs; or available data indicate they are normally reduced incidentally with the removal or reduction of a limited pollutant parameter.

(iii) Origin of waste water pollutants in the onshore segment of the oil and gas extraction category.

(1) Subpart C—Onshore Subcategory. The waste waters generated in this subcategory are the result of several different sources. These sources are: produced water; drilling muds; drill cuttings; well treatment and produced sands. Produced waters are those waste waters generated when the natural oil-water or gas-water interfaces within the oil-gas bearing formations are disrupted. Drilling muds are those materials used to maintain hydrostatic pressure control in the well, lubricate the drilling bit, remove drill cuttings from the well, or stabilize the walls of the well during drilling or workover. Drill cuttings wastes contain metallic and mineral particles resulting from drilling into subsurface geologic formations. Drill cuttings are brought to the surface of the well with the drilling muds and then separated from the muds. Well treatment wastes result from acidizing and hydraulic fracturing to improve oil recovery. Produced sands wastes consist of the slurried particles used in hydraulic fracturing and of the accumulated formation sands generated during production.

(2) Subpart D—Coastal Subcategory. The waste waters generated in this subcategory are the result of eight separate sources. These sources are: produced water; deck drainage; drilling muds; drill cuttings; well treatment; sanitary; domestic; and produced sands. Produced waters are those waste waters generated when the natural oil-water or gas-water interfaces within the oil-gas bearing formations are disrupted. Deck drainage includes all waste resulting from platform washings, deck washings, and run-off from curbs, gutters, and drains including drip pans and work areas. Drilling muds are those materials used to maintain hydrostatic pressure control in the well, lubricate the drilling bit, remove drill cuttings from the well, or stabilize the walls of the well during drilling or workover. Drill cuttings wastes contain metallic and mineral particles resulting from drilling into subsurface geologic formations. Drill cuttings are brought to the surface of the well with the drilling muds and then separated from the muds. Well treatment wastes result from acidizing and hydraulic fracturing to improve oil recovery. Sanitary wastes include human body wastes discharged from toilets and urinals on board the platforms. Domestic wastes are those wastes discharged from sinks, showers, laundries, and galleys. Produced sands wastes consist of the slurried particles used in hydraulic fracturing and of the accumulated formation sands generated during production.

(3) Subpart E—Beneficial Use Subcategory. The waste water pollutant sources for this subcategory are the same as those outlined for the onshore subcategory.

(4) Subpart F—Stripper Subcategory. The waste water pollutant sources for this subcategory are the same as those outlined for the onshore subcategory.

(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.

The major source of waste waters generated by offshore facilities are produced waters. These produced waters account for 0 to 99 percent of the total volume of fluids produced. This extreme fluctuation of flow volumes of produced waters is dependent on natural phenomena and is not subject to process controls. Consequently, the effluent limitations guidelines for the onshore segment of the oil and gas extraction industry are concentration-based as opposed to a mass per unit production basis.

(1) Treatment in the Onshore Subcategory. For those wastes originating from produced water sources best practicable control technology is no discharge of pollutants. The technology used to achieve this will vary with the type of production and location of the facility. In arid and semi-arid areas evaporation ponds may be best suited. If pressure maintenance in the formation is being carried out by water injection, all or part of the produced water may be used for that purpose. The third alternate will be subsurface disposal, injection to a salt water aquifer. The method of disposal of drilling muds, drill cuttings, well treatment wastes and produced sands is to be land disposal so as not to reach navigable waterways.

(2) Treatment in the Coastal Subcategory. Several technologies have been identified as the best practicable control technology currently available. The determination of which technology is to be applied to meet these interim final limitations is dependent upon the source of the waste water within this subcategory. For those waste waters originating from produced water sources or deck drainage sources, any of the following treatment technologies may be employed to achieve these interim final limitations: gas flotation; parallel plate coalescers; loose or fibrous media filter systems; or gravity separation. The drilling muds and drill cuttings may be discharged if they are water based and their discharge does not result in free oil on the surface waters. Muds and cuttings that are oil based may not be discharged. Well treatment waste waters are typically combined with other waste streams entering the waste water treatment system. This waste may not be discharged without treatment. Sanitary wastes from platforms manned continously by ten or more personel will be required to maintain a residual chlorine concentration as close to 1 mg/l as possible. This is easily achieved by the introduction of either dry or gaseous chlorine in flow dependent amounts. Sanitary wastes from platforms manned by 9 or less persons or from platforms that are intermittently manned must prevent the discharge of floating solids. This may be accomplished by the use of screening devices, shredders or similar devices. Produced sand wastes must be treated by solvent washes or other oil removal processes to prevent the discharge of free oil to surface waters or disposed of onshore.

Oil and gas extraction facilities in this subcategory may have the option of piping their waste waters to onshore treatment facilities. In many cases this method of treating wastes will be preferable to treatment on the facility.

The best available technology economically achievable limitations and the new source performance standards will require no discharge of waste water pollutants to navigable waters for wastes generated by produced waters sources of this subcategory. This will generally require subsurface disposal technologies. In those cases where the produced waters are needed for pressure maintenance the produced waters may be reinjected into the original formation. If the produced waters are either incompatible or are not needed they must be injected into formations other than their place of origin. When deep-well injection is chosen as the method of disposal adequate precautions must be taken to prevent the horizontal or vertical migration of pollutants. Alternative technologies include discharge to lined pits, ponds, or reservoirs for evaporation, and disposal by commercial waste collectors.

(3) Treatment in the Beneficial Use Subcategory. Best practicable control technology, best available technology and new sources performance standards for the disposal of drilling muds, drill cuttings, well treatment wastes, and produced sand for this subcategory is the same as for the onshore subcategory.

Several technologies have been identified as the best practicable control technology currently available: (1) ponds; (2) flotation cells; (3) filters; and (4) combinations of the previous three. Best available technology and new source performance standards are based on the same technology and carry the same limits. Future technological improvements and/or operating experience may require modifications of these limits at a later date.

(4) Treatment in the Stripper Subcategory. The various technologies shown for the above subcategories will all cause severe eco-

nomic impact for the facilities in this subcategory. This results from the limited future life of these facilities for which to amortize capital costs. Evaluation is continuing into less capital intensive alternates, such as contract hauling.

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.

The application of best practicable control technology currently available results in no additional solid waste disposal problems, since current industry practice results in proper disposal of solid wastes.

(v) Cost estimates for control of waste water pollutants.

The costs for providing in-plant controls are largely those associated with capital investment for process and equipment modifications. The capital investment costs for compliance with the 1977 limitations for the subcategories of the oil and gas extraction point source category added by this regulation range from approximately $44.38–$57.78 million. The operating and maintenance costs associated with these capital costs are estimated to vary from $8.05–$10.76 million.

The costs associated with treatment to comply with 1983 limitations will require an estimated $45.38 million of capital investment and an estimated $3.65 million increase in annual operation and maintenance cost.

(vi) Energy requirements and nonwater quality environmental impacts.

Energy requirements for subcategories C, D, E, and F of this industrial category are approximately 52,000 KWH/day. This is approximately equal to 163 barrels of crude oil per day or 0.002% of the total crude oil produced from facilities in these subcategories.

These energy requirements are due primarily to the need for additional power generation equipment in subcategories D (coastal subcategory) and E (beneficial use subcategory). The energy requirements will generally be consumed in the form of diesel fuel.

The application of best practicable control technology will result in a negligible net energy loss. This results from the recovery of approximately 1 barrel of crude oil which would otherwise be discharged for every barrel of diesel oil expended for power generation.

The energy requirements for compliance with best available technology economically achievable are estimated to be approximately 383 barrels of crude oil per day or 118,000 KHW per day.

A minimal impact is expected for solid waste disposal from the facilities in subcategories C, D, E, and F. The collection of oily sand, silt and clays from the addition of desanding units, where appropriate, will generate a possible need for additional land disposal sites. There are no known radioactive substances used in the industry other than as integral components of instruments, such as well-logging instruments. Therefore, no radiation problems are expected. Noise levels will not be increased except in those cases where additional power generating equipment must be added to the facility. The only possible source of air pollution would result from the above mentioned power generation equipment.

(vii) Economic impact analysis.

Economic and Inflationary Impact Analysis

Executive Order 11821 (November 27, 1974) requires 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 inflationary impact of the proposal has been evaluated. The Administrator has established criteria for inflationary impact statements and those relevant here require regulatory actions where (1) additional national annualized costs of compliance, including capital charges (interest and depreciation), will total $100 million within any calendar year by the attainment date, if applicable, or within five years of implementation, and (2) total additional cost of production of any major product is more than 5% of the selling price of the product. The criteria regarding cost of production are exceeded because of regulations. Because they are major products, the Agency certifies that the inflationary impact has been considered in formulating these regulations and has prepared an inflationary impact statement contained in the report, "Economic Impact of Interim Final Effluent Guidelines—Onshore Oil and Gas Extraction Industry". Although the inflationary impact has been certified, we estimate that the cost for the coastal segment is actually significantly lower, and further analysis is being conducted.

There are three subparts of the on-shore petroleum and gas extraction point source category covered by these regulations:

(1) On-Shore wells located on land that produce ten or more barrels of oil per day (Onshore)

(2) Platform wells located in coastal waters that fall inside of the Chapman Line (Coastal)

(3) On-Shore wells located on land that use effluent waste water for beneficial use as defined by the individual state laws (Beneficial Use).

Internal costs have been defined as the costs faced by the industry itself in terms of the investment and operating costs of pollution abatement necessary to meet interim final and proposed effluent guidelines. Table I summarizes estimates of these costs. For existing operations, the 1977 standard will require an estimated $44.38–$57.78 million for investment and an estimated $8.05–$10.76 million initial increase in annual operations costs; the 1983 Guidelines are estimated to require an additional $45.38 million of investment and $3.65 million initial increase in annual operating costs.

The annual operating costs per barrel of oil produced are $.08/barrel for beneficial use production and between $.04/barrel and $.07/barrel for on land production. For coastal facilities, the costs average $.03 barrel for BPT and $.06/barrel for BAT.

External costs are assessed in terms of the effect which the increase in internal costs will have on prices, employment, communities, international trade, closures of existing well completions, and production. Prices of oil are regulated, which makes a projection of price increases that might be expected given these increases in investment requirements and operating costs, difficult. Prices for the industry's output are controlled by the U.S. Government.

Tables II and III summarize the estimates of the effect of increased investment requirements and operating costs regarding lost production and abandoned wells. In the states which presently allow discharge only for beneficial use .42% to .71% (90 to 153 wells) of existing well completions could be abandoned. In states with regulations on land wells, it is not expected that any wells will be abandoned but for coastal wells, .06% (84 wells) of existing completions in those states are expected to be abandoned as a result of 1977 guidelines and .85% (300 wells) as a result of 1983 guidelines.

For existing sources in beneficial use states, the loss of potential production is estimated between .38% and .64% (.479 to .814 million barrels per year) for existing sources for onshore platform wells, the potential production loss is .01% for 1977 (.161 million barrels per year) and .16% for 1983 (1.539 million barrels per year). For existing sources of inland wells, there is very little expected loss of potential production, as there are no expected closures.

The following three tables sum up the impact of the interim final regulations. Because of the fact that prices for oil are controlled by the government, the best measure of impact in this case is loss of potential production. This represents a better measure than well closures since many abandoned completions are already near the end of their producing life. No other significant economic effects (i.e., effects on employment, communities, or balance of trade) are anticipated.

TABLE 1.—*Internal costs: Range of likely costs to existing sources assuming producers absorb all costs*

[Millions of 1976 dollars]

	1977		1983	
	Investment	Operating	Investment	Operating
Total	−$44.38 57.78	−$8.056 10.762	$45.38	$3.653
Beneficial use	−12.80 21.88	−2.026 4.464		
Coastal	13.02	1.066	45.38	3.653
Onshore	−17.60 22.00	−3.430 4.312		

NOTE.—Initial increase in before-tax operating costs.

TABLE 2.—*Loss in annual potential production: Range of likely impact on existing sources assuming producers absorb all costs*

	Percent loss in production	Quantity loss of production (millions of barrels)
Beneficial use	0.38–0.65	0.479–0.814
Coastal:		
1977	.01	.161
1983	.16	1.539
Onshore	0	0

NOTE.—Percent loss in production represents loss from total amount being produced in that subcategory.

TABLE 3.—*Completions abandoned: Range of likely impact on existing sources assuming producers absorb all costs*

	Percent abandoned	Number abandoned
Beneficial use	0.42–0.71	90–153
Coastal:		
1977	.06	84
1983	.25	300
Onshore	0	0

NOTE.—Percent abandoned represents abandonment of wells in that specific subcategory.

APPENDIX C

SUMMARY OF PUBLIC PARTICIPATION

Prior to this publication, the agencies and groups listed below were consulted and given an opportunity to participate in the development of effluent limitations, guidelines and standards for the oil and gas extraction category. All participating agencies have been informed of project developments. An initial draft of the Development Document was sent to all participants and comments were solicited on that report. The following are the principal agencies and groups consulted: (1) Effluent Standards and Water Quality Information Advisory Committee (established under section 515 of the Act); (2) all State and U.S. Territory Pollution Control Agencies; (3) Exxon Chemical Corporation; (4) Nalco Chemical Company; (5) Phillips Petroleum Company; (6) Oil Operators, Inc.; (7) Sun Oil Company; (8) Petrolite Corporation; (9) Envirotech Corporation; (10) Pollution Control Engineering, Inc.; (11) Marathon Oil Company; (12) Mobil Oil Company; (13) Champlain Petroleum Company; (14) Brown & Root, Inc.; (15) Western Oil & Gas Association; (16) American Society of Mechanical Engineers; (17) The Conservation Foundation; (18) Businessmen for the Public Interest; (19) Environmental Defense Fund, Inc.; (20) Natural Resources Defense Council; (21) American Society for Civil Engineers; (22) Water Pollution Control Federation; (23) National Wildlife Federation; and (24) Kimberly Clark Corporation; (25) Offshore Operators Committee; (26) Exxon Company, U.S.A.; (27) American Petroleum Institute; (28) American Oil Company; (29) Atlantic Richfield Company; (30) Chevron Oil Company; (31) Continental Oil Company; (32) Gulf Oil Company; (33) Noble Drilling Company; (34) Rheem Superior; (35) Shell Oil Company; (36) Texaco, Inc.; (37) United States Filter; (38) Union Filter Company; (39) WEMCO.

The following responded with comments: Effluent Standards and Water Quality Information Advisory Committee; State of Wyoming; Exxon Chemical Company; North Carolina Department of Natural and Economic Resources State of Wyoming, Game and Fish Dept.; National Wildlife Federation; Commonwealth of Pennsylvania; Colorado Department of Health; Minnesota Pollution Control Agency; Cheyenne High Plains Audubon Society; Powder River Basin Resource Council; State of Wyoming, State Engineers Office; Wyoming Department of Agriculture; Wyoming League of Women Voters; Texas Mid-Continent Oil and Gas Association; American Petroleum Institute; Offshore Operators Committee; Marathon Oil Company; Mid-Continent Oil and Gas Association, Inc. Mississippi—Alabama Division; Atlantic Richfield Company; League of Women Voters, Cheyenne, Wyoming; Getty Oil Company; State of Nevada, Department of Conservation and Natural Resources; Illinois Environmental Protection Agency; Texas Mid-Continent Oil and Gas Association; Wyoming Environmental Institute; State of Michigan, Department of Natural Resources; L.U. Sheep Company; City of Worland, Wyoming; U.S. Dept. of the Interior; U.S. Department of Commerce; and Ohio Oil and Gas Association.

The more significant issues raised in the development of the interim final effluent limitations and guidelines and the treatment of these issues herein are as follows:

(1) Many commenters stated that the no discharge requirement for onshore oil and gas production should not be universal and that discharge of low TDS produced waters when used for cattle watering, irrigation, etc. should be excluded.

The discharge to surface waters of treated produced water is being allowed by this regulation, if it can be shown to the satisfaction of the permit issuing agency that this discharge is put to some beneficial use, such as cattle watering, or irrigation in water short areas.

(2) Several commenters argued that the daily and 30 day average limits of 87 and 57 mg/l of oil and grease were too high. It was suggested that the Wyoming standard of 10 mg/l should be used.

The limitations for discharged produced waters have been changed from the draft report. They are based on actual operating data using the freon-gravimetric analysis. The use of non-standard analytical methods (separation of extracted sulfur from the oil) are being used to achieve the 10 mg/l in Wyoming. Once enough data is collected using an EPA approved standard method for the determination of sulfur in freon extracted material, the regulation will be reexamined and new limits set based on that method.

(3) Some commenters suggested that tidally effected inland coastal waters, marshes, and wetlands should be considered offshore discharges and therefore be allowed to discharge.

The new coastal subcategory now covers the dischargers located in inland coastal waterways. This subcategory covers the areas of existing discharges into tidally effected areas, and these discharges will be allowed to continue. Within the area covered by this subcategory, there will be cases where, because of water quality consideration, no discharge will be allowed. It is important that each discharge in this subcategory be scrutinized carefully for potential environmental impact prior to issuance of the individual permits.

(4) Two commenters assumed that no discharge of pollutants meant the disposal of produced water to the producing horizon only.

Where no discharge of pollutants is required, it means no discharge to surface waters. The means of disposal (i.e. return of the producing horizon, disposal to another horizon, evaporation, etc.) is within the discretion of the individual discharger. Whatever means are chosen, must however meet any other applicable regulations, such as required under the Safe Water Drinking Act.

(5) Several commenters questioned the validity of the costs that EPA prepared to determine the impact of these regulations.

The relatively poor quality of the cost estimates for onshore compliance that appeared in the draft report was recognized by EPA. As a result, the past several months have been spent preparing a totally new set of costs and production profiles. These are now based on actual cost figures and were prepared on a region by region basis.

(6) A commenter stated that the cost of subsurface disposal will cause abandonment of low volume producers.

The cost of this regulation and the potential impact was carefully considered. This consideration was one of the criteria behind the final subcategorization. The limitations for the Stripper Subcategory have been temporarily reserved pending further investigation of alternates to single site disposal, which would result in a large percent of closings. The alternate under consideration is the pooling of wastes from multiple facilities. This might be accomplished through cooperative ventures or contract hauling to central disposal sites. The Agency requests comments and any available information on these alternates.

(7) Some commenters supplied information about the problems of taste and odor caused by produced water discharges, even when these wastes were low in TDS and were considered beneficial use discharges.

In order to qualify for the beneficial use subcategory it will be necessary that the discharge is in fact needed for cattle watering, irrigation, etc. Even if beneficial use can be shown, the discharge is still subject to further regulation resulting from the violation of applicable water quality standards.

(8) One commenter asked that consideration be given to setting limits for additional parameters such as BOD.

In those subcategories where discharge of pollutants will be allowed the only parameter limit on produced water discharges will be oil and grease (freon extractable). One reason for this is that there is no known treatment technology available for removal of parameters such as BOD that are less costly than subsurface disposal. Therefore, if it is necessary to limit other parameters for water quality purposes no discharge of pollutants is the only viable alternate.

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