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GUIDANCE FOR ESTABLISHING RELIEF FROM EFFLUENT LIMITATIONS FOR THE COAL MINING POINT SOURCE CATEGORY

(U.S.) ENVIRONMENTAL PROTECTION AGENCY, WASHINGTON, DC

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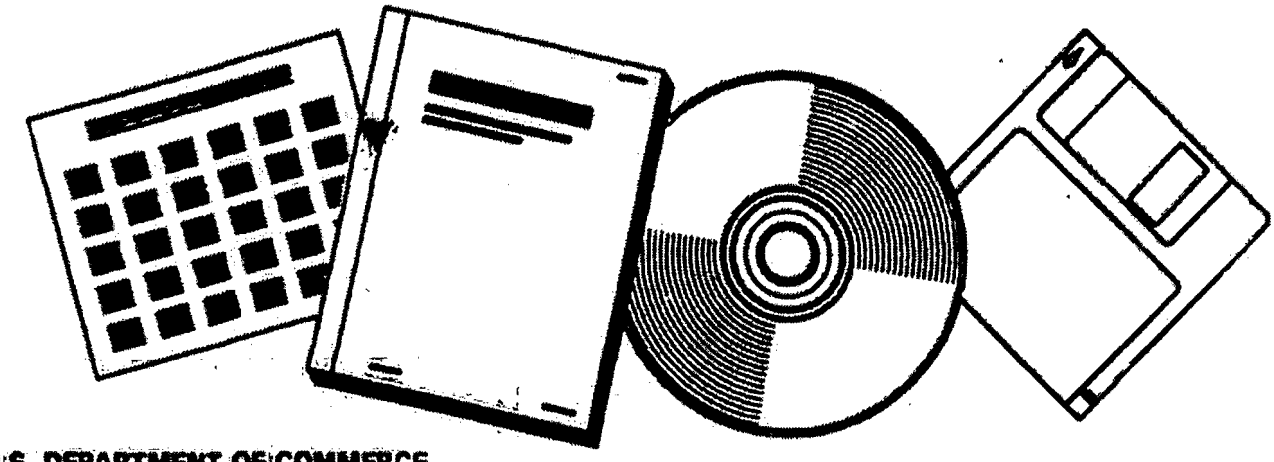

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This memorandum offers guidance on the application of the exemption clause contained in the BPT and NSPS regulation for coal mining point source category

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

SUBJECT: Guidance for Establishing Relief from Effluent Limitations for the Coal Mining Point Source Category

FROM: Robert B. Schaffer, Director
Effluent Guidelines Division

TO: Deputy Assistant Administrator for Water Enforcement
Regional Enforcement Directors
Director, Permit Division
Director, Office of Environmental Review

Summary:

This memorandum offers guidance on the application of the exemption clause contained in the BPT and NSPS regulation for the coal mining point source category. General guidance is offered which is applicable to all discharges from the coal mining point source category. Specific considerations are offered for discharges from surface mines, from deep mines, and from coal preparation plants. The specific considerations are further divided for the purpose of the exemption, as to the meaning of the term "contain" and the meaning of the term "treat" as they relate to runoff from a 10-year 24-hour rainfall. Examples are provided to further explain the exemption.

History:

On April 26, 1977, the Agency promulgated effluent limitations guidelines representing best practicable control technology currently available (BPT) for the Coal Mining Point Source Category (42FR21380). Contained in this final BPT regulation was an exemption for discharges resulting from any precipitation event at facilities designed, constructed, and maintained to contain or treat the volume of discharge which would result from a ten-year 24-hour precipitation event.

On January 12, 1979, the Agency promulgated final new source performance standards (NSPS) for the Coal Mining Point Source Category (44FR2586). The NSPS also contained an exemption for discharges resulting from precipitation events for facilities designed, constructed, and maintained to contain or treat the volume of wastewater which would result from a 10-year 24-hour precipitation event. However, the exemption in the NSPS differed from the exemption in the BPT regulation in that relief from NSPS effluent standards was granted only upon the occurance of a 10-year 24-hour or larger precipitation event or snow melt. That is, relief was predicated both on the design, construction, and maintenance of the facility and upon demonstration by the operator that a 10-year 24-hour precipitation event had occurred.

In order to make EPA's BPT regulations identical to the NSPS, and to make both consistent with the regulations promulgated by the Department of Interior under the Surface Mining Control and Reclamation Act of 1977, the Agency on April 2, 1979, amended the BPT regulation, changing the exemption in BPT to agree with the exemption contained in the NSPS (44FR19193).

The Agency received many comments from industry on this change and was sued by the National Coal Association on both NSPS and the revised BPT precipitation exemptions.

On July 6, 1979 the Agency suspended that portion of the exemption which required that a 10-year 24-hour or larger precipitation event actually occur and initiated a new rulemaking (44FR39391). On August 14, 1979, the Agency circulated and made available for public comment two technical reports concerning the issue (44FR47595). ?

After receiving comments on these reports the Agency again promulgated, on December 28, 1979, an exemption from otherwise applicable effluent limitations and new source performance standards for the coal mining point source category (44FR76788). With small modifications, the exemption is essentially the same as the original provision contained in the BPT regulations promulgated on April 26, 1977.

Background:

The Agency has always recognized that relief is necessary as a practical matter for many discharges from the coal mining point source category during and immediately after some precipitation events. It would be unreasonable to require the coal mining industry to construct retention structures or treatment facilities to handle the runoff from extreme rainfall conditions which could statistically occur. It must be emphasized, however, 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 and new source performance standards limit the concentration of pollutants which may be discharged, but allow for an excursion from the normal requirements when precipitation causes an overflow or increase in the volume of a discharge from a facility properly designed, constructed, and maintained to contain or treat a 10-year 24-hour rainfall.

This relief applies to the excess volume caused by precipitation or snow melt, and the resulting increase in flow or shock flow to the settling facility or treatment facility.

While there has been criticism of the relief used by the Agency, the few alternatives suggested by environmental groups and industry are substantially less satisfactory in light of the data available to the

Agency at this time. This is discussed in detail in the preamble to the original BPT regulation (42FR21380) and in the preamble to the precipitation exemption amendment (44FR76789).

In order to minimize duplication and inconsistency in regulation of this industry, the Agency and the Department of Interior's Office of Surface Mining (OSM) are working closely together on rulemaking and permits. On December 31, 1979, OSM suspended its existing precipitation event exemption contained in its final regulation and stated that relevant elements of EPA's revised precipitation exemption would be used in lieu of the OSM exemption pending further OSM rulemaking (44FR77440).

As a result of the EPA and OSM rulemaking, there have been numerous requests by EPA Regional offices and the Office of Surface Mining for guidance for granting relief from effluent limitations and guidelines.

The general relief or exemption as promulgated on December 28, 1979, states that:

> "Any overflow, increase in volume of discharge or discharge from a by-pass system caused by precipitation or snow melt shall not be subject to the limitations set forth in .... of this section. This exemption shall be available only if the facility is designed, constructed and maintained to contain or treat the volume of water which would fall on the areas covered by this subpart during a 10-year 24-hour or larger precipitation event (or snow melt of equivalent volume). The operator shall have the burden of demonstrating to the appropriate authority that the prerequisites for an exemption set forth in this subsection are met."

General Guidance for Granting Relief

1. The exemption as stated in the final rule of December 28, 1979 must be included in the operators' permit in order to be applicable to that facility. Many existing permits have exemptions or relief clauses stating requirements other than those set forth in the final rule. Such relief clauses remain binding unless and until an operator requests a modification of his permit to include the exemption as stated in the final rule of December 28, 1979.

2. The precipitation exemption is an affirmative defense to an enforcement action. Therefore, there is no need to evaluate each and every settling pond or treatment facility now under permit.

3. Relief can be granted to deep mine, surface mine, and preparation plant discharges. This includes discharges subcategorized as Coal Preparation Plants and Associated Areas, Acid or Ferruginous Mine

Drainage, and Alkaline Mine Drainage in the final rules for BPT and NSPS.

4. Relief is granted as an excursion to the requirements for normal operating conditions (i.e. without overflow, increase in volume of discharge, or discharge from a by-pass system) caused by surface runoff only.

5. Relief can be granted for discharges during and immediately after any precipitation or snow melt. The intensity of the event is not specified.

6. The term "maintain" is intended to be synonymous with "operate." The facility must be operated at the time of the precipitation event to contain or treat the specified volume of wastewater. Specifically, in making a determination of the ability of a facility to contain a volume of wastewater, sediment and sludge must not be permitted to accumulate to such an extent that the settling facility or pond cannot in fact hold the volume of wastewater resulting from a 10-year 24-hour rainfall. That is, sediment and sludge must be removed as required to maintain a specific volume of wastewater.

7. "Contain" and "maintain" do not mean providing for draw down of the pool level of the settling facility. There is no requirement that relief be based on the settling basin or facility being emptied prior to the rain fall or snow melt upon which the relief is granted.

8. The relief does not grant, nor is it intended to imply to the operator, the option of ceasing in his attempt to contain or treat the runoff resulting from a precipitation event or snow melt. For example, an operator does not have the option of turning off the lime feed to a facility treating acid mine drainage at the start of or during a precipitation event, regardless of the design and construction of the wastewater facility. The operator must continue to operate his facility to the best of his ability.

9. Under the regulation, relief is granted from all effluent limitations contained in the final rules for BPT and NSPS: TSS, iron, manganese, and pH.

10. In general, relief can not be granted to treatment facilities which employ clarifiers, thickeners, or other mechanically aided settling devices. The use of mechanically aided settling usually is restricted to deep mine drainage and coal preparation plant discharges which are not affected by runoff.

11. In general, the relief was intended for discharges from settling ponds, basins, lagoons, etc. that are associated with and part of treatment facilities. The relief will most often be based on the construction and maintainance of these settling facilities to

"contain" a volume of water. Additional guidance is offered below as to the meaning of the term "contain" for the purpose of the precipitation exemption.

12. The term "treat" for the purpose of the exemption means the addition of flocculants in addition to physical settling to meet the effluent limitations. "Treat" means the wastewater facility was designed, constructed, and maintained to meet the daily maximum effluent limitations for the maximum flow that would result from a 10-year 24-hour rainfall. While BPT was not based on flocculation, flocculants may be used to meet effluent limitations and the operator has the option to "treat" the volume of water that would result from a 10-year 24-hour rainfall in order to qualify for the rainfall exemption. As mentioned in paragraph 11 above, the second option is to "contain" the volume of wastewater.

The following guidance presents specific considerations for surface mines, deep mines, and preparation plants. The considerations are divided as to the meaning and determination of a facility's ability to "contain" a volume equivalent to the runoff from a 10-year 24-hour rainfall and as to the meaning and determination of a facility's ability to "treat" a volume equivalent to the runoff from a 10-year 24-hour rainfall.

In the following guidance, definitions are the same as those contained in the final BPT rule which is attached to this memorandum (42FR21380). These definitions are also contained in the final NSPS.

Guidance for Granting Relief to Surface Mines

The most frequent request for interpretation and guidance on the precipitation exemption involves mine drainage from surface mines and the discharge from settling ponds.

CASE 1. Relief can be granted to a surface mine drainage discharge based on a facility being designed, constructed, and maintained to contain a volume equivalent to the runoff from a 10-year 24-hour rainfall.

Alternative A

- The mine operator must show the calculation of the area contributing runoff to the settling basin or treatment facility. This area includes the "active mining area" (A1) as defined in paragraph 434.11, 42FR21380 in the case of surface mines. In addition, the area includes the drainage area (A2) which is commingled with the drainage from the active mining area as described in paragraph 434.32(d) and paragraph 434.42(c) of the final regulation (42FR21380).

- The mine operator must show the "10-year 24-hour precipitation event" (P) used for the location as defined in paragraph 434.11(l) of the final regulation (42FR21380).

- Obviously, all rainfall does not go to runoff. Some rainfall does percolate into the ground to enter the ground water system. Therefore, the operator may show a runoff coefficient (C). Many factors affect the runoff coefficient, including the soil texture, topography, and vegetation. In lieu of other calculations and methods of determining the runoff coefficient, the operator and the permitting authority may use the following runoff coefficients:

Runoff Coefficient Factors (C)

	Soil Texture		
	Sandy Loam	Clay and Loam	Clay
Virgin Land and Land Under Reclamation	0.1	0.3	0.4
Active Mine Area	0.3	0.5	0.6

The above values are for land with 0-5% slopes. Increase the value by 0.1 for land with 5-10% slope and 0.2 for land with 10-30% slope.

The above runoff factors are from "Erosion and Sediment Control Surface Mining in the Eastern United States Design", Environmental Protection Agency, Technology Transfer Branch.

- The operator must show that the settling pond was maintained by removal of the sludge and silt to maintain a pond volume (V) equivalent to or greater than -

$$V = P/12\ [(A1 \times C1) + (A2 \times C2)]$$

where:
- V = volume in acre - feet
- P = 10-year 24-hour rainfall at the facility's site in inches
- A1 = area of the active mining area in acres
- C1 = runoff coefficient factor for the active mining area
- A2 = area from which runoff is commingled with runoff from the active mining area in acres.
- C2 = runoff coefficient factor for the area from which runoff is commingled with runoff from the active mining area

Example

An enforcement action is initiated against a surface mine operator because of violation of the limitations for mine drainage.

The mine operator requests relief under the exemption contained in his permit, which is the exemption contained in 44FR76788. The sampling was conducted during a measurable precipitation event. The mine operator shows that he designed and constructed a settling basin having a capacity of 15 acre feet from the top of the stage of the highest dewatering device to the original bottom of the basin at the time of construction.

At the time of sampling the mine operator shows he had 25 acres (A1) in the "active mining area", including the bench and fill. At the time of sampling, the settling basin received drainage from an additional 35 acres (A2) of virgin land and land undergoing reclamation.

The active mine area has a slope of 0 to 5% and the virgin land and land under reclamation where runoff goes to the settling basin has a slope of 10% to 30%. The soil is clay and loam. Therefore, from the table above, the runoff coefficient for the active mining area (C1) is 0.5. For the other area contributing runoff to the settling basin, the runoff coefficient (C2) is .3 + .2 for slopes of 10% to 30% or C2 = .5.

The 10-year 24-hour precipitation event for the mine location as taken from the National Weather Service Technical Paper No. 40, "Rainfall Frequency Atlas of the United States," May 1961, is four inches (P)

$$V = P/12\ [(A1 \times C1) +)A2 \times C2)]$$

V = 4/12 [(25 x .5) + (35 x .5)]
V = 10 acre ft.

The mine operator can show that the sludge in the settling basin was cleaned prior to the day of sampling and is presently less than one-third full. Therefore, the settling pond was maintained to contain the required volume.

All requirements have been met for the operator to receive relief from the effluent limitations and no enforcement action should be taken.

Alternative B

As an alternative to the above, the surface mine operator may use a model such as the Water Shed Storm Hydrograph, Penn State Urban Runoff Model, or similar model to determine the runoff volume at his site for a 10-year 24-hour precipitation event.

- The operator must show the calculation for the active area and the area contributing runoff to the settling basin as in Alternative A above.

- The operator must show the 10-year 24-hour rainfall as in Alternative A above.

- The operator must show the rationale for the composite curve number (CN or equivalent) used to determine the runoff volume for the area contributing runoff to the settling pond.

- The operator must show that the settling basin was maintained to contain the volume required for relief.

CASE 2. Relief can be granted to a surface mine drainage discharge based on the settling facility being designed, constructed, and maintained to treat the volume equivalent to the runoff from a 10-year 24-hour precipitation event.

- The operator must show the areas contributing runoff to the treatment facility as in CASE 1. above, including the active mine area and the area from which runoff is commingled with runoff from the active mining area.

- The operator must show the 10-year 24-hour precipitation event as in CASE 1. above.

- Using the area and the 10-year 24-hour rainfall, the operator must show what calculation was used to determine the volume of water that would result from a 10-year 24-hour rainfall and the corresponding design flow for the treatment system. The design flow is based on the maximum flow contributing to the volume.

- The mine operator must show his specific treatment for the <u>design flow</u> to meet the daily maximum effluent limitations.

Guidance for Granting Relief to Deep Mines

CASE 1. For deep mines relief can be granted when the operator designs, constructs, and maintains his facility to contain the volume of water equivalent to the runoff from a 10-year 24-hour precipitation event on the surface areas.

- Relief is not granted to facilities which receive only the discharge from an underground mine. Relief is granted to discharges caused by precipitation and the subsequent surface runoff. See paragraph 4 and 10 under General Guidance for Granting Relief.

- Relief can be granted to discharges from facilities which receive only surface runoff if the facilities are designed, constructed, and maintained to contain the volume of water equivalent to the runoff from a 10-year 24-hour precipitation event. To determine this volume refer to CASE 1, Alternative B under Guidance for Granting Relief to Surface Mines.

- Relief is not granted to facilities designed, constructed, and maintained to contain only the volume of water equivalent to the surface runoff going to the treatment facility when the runoff is commingled with mine drainage discharged from the underground mine itself. The discharge from the facility designed, constructed, and maintained to contain the runoff volume from a 10-year 24-hour rainfall plus the volume discharged from the underground mine itself may be granted relief from effluent limitations.

- For the purpose of determining the volume discharged by the underground mine itself, the volume discharged over 24 hours is used, or the discharges by the deep mine must be retained 24 hours.

Example

An enforcement action is taken against a deep mine operator because of violation of the effluent limitations for mine drainage.

The mine operator requests relief from the enforcement action, and the exemption contained in his permit is the exemption contained in 44FR76788. The sampling was conducted during a measurable precipitation event. The mine operator shows that he designed, constructed, and has maintained a settling basin capable of containing 10 acre feet of water.

The mine operator shows that 15 acres drain or send runoff to the settling pond.

The 10-year 24-hour rainfall is four inches and the runoff coefficient is .5 for clay and loam in a 0 to 5% slope.
V = 4/12 (15 x .5)
V = 2.5 acre feet

On the day of the violation the deep mine itself discharged one and a half million gallons of mine drainage. This volume of discharge is verified by pump records or flow meters such as a weir or similar device.

One million gallons equals 3.07 acre feet in volume, therefore, one and a half million gallons equal 4.6 acre feet.
V = 4.6 + 2.5 = 7.1 acre feet

All requirements have been met for the operator to receive relief from effluent limitations and no enforcement action should be taken.

CASE 2. Relief can be granted to deep mines when facilities are designed, constructed, and maintained to treat the volume of water equivalent to the runoff from a 10-year 24-hour precipitation event on their surface areas.

- Relief is not granted to facilities which receive only the discharge from an underground mine.

- A facility treating only surface runoff may be granted relief if the operator can show his treatment system through steps similar to those described in CASE 2 above under Guidance for Granting Relief to Surface Mines.

- Relief is not granted to facilities designed, constructed, and maintained to treat only the volume of surface runoff if the surface runoff is commingled with the drainage from the deep mine itself. The design, construction, and maintenance of the facility would have to include the volume discharged by the deep mine itself.

- The design flow for the treatment system, when surface runoff is commingled with the discharge from the deep mine itself, is the sum of the design flow attributable to the surface runoff and the design flow from the deep mine itself based on maximum flow from the deep mine. The design flow from surface runoff is determined as under CASE 2 above, under Guidance for Granting Relief to Surface Mines. The design flow from the deep mine itself may be determined from pump records or flow meters.

- The mine operator must show his specific treatment for the design flow for the treatment system to meet the daily maximum effluent limitations.

Guidance for Granting Relief to Preparation Plant Discharge

CASE 1. For preparation plants, relief can be granted to facilities which are designed, constructed, and maintained to contain the volume of water going to runoff from a 10-year 24-hour rainfall on the "coal preparation plant associated areas" as defined in the final regulation and, if the discharges are commingled, the discharge from the "coal preparation plant" as also defined (42FR21380).

- Relief is not granted to facilities which receive only the discharge from the coal preparation plant itself. Relief is granted to discharges caused by precipitation and the subsequent runoff from the coal preparation plant associated areas.

- In determining the volume of runoff from coal storage areas and refuse areas, the runoff coefficient for active areas shall be used. See Runoff Coefficient Factors under CASE 1 for Guidance for Granting Relief to Surface Mines.

- The volume of runoff from a 10-year 24-hour precipitation event for coal preparation plant associated areas can be determined by the methods used above under Guidance for Granting Relief to Surface Mines.

- If preparation plant wastewater is commingled with runoff from preparation plant associated areas, the facility must also be designed to contain the preparation plant wastewater discharge for 24 hours.

- To determine the volume of wastewater discharge from a coal preparation plant itself, an allowance for the volume of water recycled back to the plant, if any, is not to be considered.

- In determining the discharge from the preparation plant itself, the pump capacity of the discharge may be used, or a flow measuring device such as a weir may be used.

- Alternatively, the discharge from the preparation plant itself may be determined by the design of the preparation plant and the water use per ton of coal. Therefore, the tonnage run by the preparation plant that day may be used along with the design water use to determine the total discharge.

Example

On the day of the violation, the coal preparation plant processed 8,500 tons of coal. The preparation plant was designed to use 900 gallons per ton. Total discharge for the preparation plant is 1,650,000 gallons or 5 acre feet of water.

The coal preparation plant associated area would discharge 15 acre feet of water as determined from the calculated area, 10-year 24-hour rainfall, and the runoff coefficient.

If the settling facility has a volume greater than 20 acre feet and this volume has been maintained, an exemption is warranted; provided, that the sampling was conducted during a measurable precipitation event and the preparation plant permit had the exemption contained in 44FR76788.

CASE 2. Relief can be granted to discharges from preparation plants which design, construct, and maintain a facility to treat the volume of water going to runoff from a 10-year 24-hour rainfall on the coal preparation plant associated areas and, if the discharges are commingled, the discharge from the coal preparation plant itself.

- The design flow from the preparation plant associated areas can be determined from the volume as determined from the area, 10-year 24-hour rainfall, and runoff coefficient. Design flow is based on maximum flow.

- Where the discharge from the preparation plant itself is commingled with the runoff from the associated areas, the design flow must include this maximum discharge from the preparation plant itself.

- The operator must show his specific treatment for the design flow to meet the daily maximum effluent limitations.