

to public health or safety nor will they pose any actual or probable threat of water flow diminution or pollution.

(7) The use or uses will not involve unreasonable delays in reclamation.

(8) Necessary approval of measures to prevent or mitigate adverse effects on fish and wildlife has been obtained from the regulatory authority and appropriate State and Federal fish and wildlife management agencies.

(9) Proposals to change premining land uses of range, fish and wildlife habitat, forest land, hayland, or pasture to a postmining cropland use, where the cropland would require continuous maintenance such as seeding, plowing, cultivation, fertilization, or other similar practices to be practicable or to comply with applicable Federal, State, and local laws, shall be reviewed by the regulatory authority to assure that—

(i) There is a firm written commitment by the permittee or by the landowner or land manager to provide sufficient crop management after release of applicable performance bonds to assure that the proposed postmining cropland use remains practical and reasonable;

(ii) There is sufficient water available and committed to maintain crop production; and

(iii) Topsoil quality and depth are shown to be sufficient to support the proposed use.

(10) The regulatory authority has provided by public notice not less than 45 days nor more than 60 days for interested citizens and local, State and Federal agencies to review and comment on the proposed land use.

[42 FR 62680, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978]

§ 715.14 Backfilling and grading.

In order to achieve the approximate original contour, the permittee shall, except as provided in this section, transport, backfill, compact (where advisable to ensure stability or to prevent leaching of toxic materials), and grade all spoil material to eliminate all highwalls, spoil piles, and depressions. Cut-and-fill terraces may be used only in those situations expressly identified in this section. The postmining graded slopes must approximate the

premining natural slopes in the area as defined in paragraph (a).

(a) *Slope measurements.* (1) To determine the natural slopes of the area before mining, sufficient slopes to adequately represent the land surface configuration, and as approved by the regulatory authority in accordance with site conditions, must be accurately measured and recorded. Each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed; or, where this is impractical, at locations specified by the regulatory authority. Where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances as determined by the regulatory authority to be representative of the premining configuration of the land. Slope measurements shall take into account natural variations in slope so as to provide accurate representation of the range of natural slopes and shall reflect geomorphic differences of the area to be disturbed. Slope measurements may be made from topographic maps showing contour lines, having sufficient detail and accuracy consistent with the submitted mining and reclamation plan.

(2) After the disturbed area has been graded, the final graded slopes shall be measured at the beginning and end of lines established on the prevailing slope at locations representative of premining slope conditions and approved by the regulatory authority. These measurements must not be made so as to allow unacceptably steep slopes to be constructed.

(b) *Final graded slopes.* (1) The final graded slopes shall not exceed either the approximate premining slopes as determined according to paragraph (a)(1) and approved by the regulatory authority or any lesser slope specified by the regulatory based on consideration of soil, climate, or other characteristics of the surrounding area. Postmining final graded slopes need not be uniform. The requirements of this paragraph may be modified by the regulatory authority where the mining is re-affecting previously mined lands that have not been restored to the

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standards of this section and sufficient spoil is not available to return to the slope determined according to paragraph (a)(1). Where such modifications are approved, the permittee shall, as a minimum, be required to—

(i) Retain all overburden and spoil on the solid portion of existing or new benches; and

(ii) Backfill and grade to the most moderate slope possible to eliminate the highwall which does not exceed the angle of repose or such lesser slopes as is necessary to assure stability.

(2) On approval by the regulatory authority and in order to conserve soil moisture, ensure stability, and control erosion on final graded slopes, cut-and-fill terraces may be allowed if the terraces are compatible with the postmining land use approved under §715.13, and are appropriate substitutes for construction of lower grades on the reclaimed lands. The terraces shall meet the following requirements:

(i) Where specialized grading, foundation conditions, or roads are required for the approved postmining land use, the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land use plan.

(ii) The vertical distance between terraces shall be as specified by the regulatory authority to prevent excessive erosion and to provide long-term stability.

(iii) The slope of the terrace outslope shall not exceed 1v:2h (50 percent). Out-slopes which exceed 1v:2h (50 percent) may be approved if they have a minimum static safety factor of more than 1.5 and provide adequate control over erosion and closely resemble the surface configuration of the land prior to mining. In no case may highwalls be left as part of terraces.

(iv) Culverts and underground rock drains shall be used on the terrace only when approved by the regulatory authority.

(3) All operations on steep slopes of 20 degrees or more or on such lesser slopes as the regulatory authority defines as a steep slope shall meet the provisions of §716.2 of this chapter.

(c) *Mountaintop removal.* The requirements of this paragraph and of §716.3

shall apply to surface mining operations which remove entire coal seams in the upper part of a mountain, ridge, or hill by removing all of the overburden, and where the requirements for achieving the approximate original contour of this section cannot be met. Final graded top plateau slopes on the mined area shall be less than 1v:5h so as to create a level plateau or gently rolling configuration and the out-slopes of the plateau shall not exceed 1v:2h, except where engineering data substantiates and the regulatory authority finds that a minimum static safety factor of 1.5 (or higher factors specified by the regulatory authority) will be attained. Although the area need not be restored to approximate original contour, all highwalls, spoil piles, and depressions except as provided in paragraphs (d) and (e) of this section shall be eliminated. All mountaintop removal operations shall in addition meet the provisions of §716.3 of this chapter.

(d) *Small depressions.* The requirement of this section to achieve approximate original contour does not prohibit construction of small depressions if they are approved by the regulatory authority to minimize erosion, conserve soil moisture or promote revegetation. These depressions shall be compatible with the approved postmining land use and shall not be inappropriate substitutes for construction of lower grades on the reclaimed lands. Depressions approved under this section shall have a holding capacity of less than 1 cubic yard of water or, if it is necessary that they be larger, shall not restrict normal access throughout the area or constitute a hazard. Large, permanent impoundments shall be governed by paragraph (e) of this section and by §715.17.

(e) *Permanent impoundments.* Permanent impoundments may be retained in mined and reclaimed areas provided all highwalls are eliminated by grading to appropriate contour and the provisions for postmining land use (§715.13) and protection of the hydrologic balance (§715.17) are met. No impoundments shall be constructed on top of areas in which excess materials are deposited pursuant to §715.15 of this part. Impoundments shall not be used to meet

the requirements of paragraph (j) of this section.

(f) *Definition of thin and thick restored overburden.* The thin overburden provisions of paragraph (g) of this section may apply only where the final thickness is less than 0.8 of the initial thickness. The thick overburden provisions of paragraph (h) of this section may apply only where the final thickness is greater than 1.2 of the initial thickness. Initial thickness is the sum of the overburden thickness and coal thickness. Final thickness is the product of the overburden thickness times the bulking factor to be determined for each mine area. The provisions of paragraphs (g) and (h) apply only when operations cannot be carried out to comply with the requirements of paragraph (a) of this section to achieve the approximate original contour.

(g) *Thin overburden.* In surface coal mining operations carried out continuously in the same limited pit area for more than 1 year from the day coal-removal operations begin and where the volume of all available spoil and suitable waste materials is demonstrated to be insufficient to achieve approximate original contour, surface coal mining operations shall be conducted to meet, at a minimum, the following standards:

(1) Transport, backfill, and grade, using all available spoil and suitable waste materials from the entire mine area, to attain the lowest practicable stable grade, which may not exceed the angle of repose, and to provide adequate drainage and long-term stability of the regraded areas.

(2) Eliminate highwalls by grading or backfilling to stable slopes not exceeding 1v:2h (50 percent), or such lesser slopes as the regulatory authority may specify to reduce erosion, maintain the hydrologic balance, or allow the approved postmining land use.

(3) Transport, backfill, grade, and revegetate to achieve an ecologically sound land use compatible with the prevailing land use in unmined areas surrounding the permit area.

(4) Transport, backfill, and grade to ensure the impoundments are constructed only where it has been demonstrated to the regulatory authority's satisfaction that all requirements of

§ 715.17 have been met and that the impoundments have been approved by the regulatory authority as meeting the requirements of this part and all other applicable Federal and State regulations.

(h) *Thick overburden.* In surface coal mining operations where the volume of spoil is demonstrated to be more than sufficient to achieve the approximate original contour surface coal mining operations shall be conducted to meet at a minimum the following standards:

(1) Transport, backfill, and grade all spoil and wastes not required to achieve approximate original contour in the surface mining area to the lowest practicable grade.

(2) Deposit, backfill, and grade excess spoil and wastes only within the permit area and dispose of such materials in conformance with this part.

(3) Transport, backfill, and grade excess spoil and wastes to maintain the hydrologic balance in accordance with this part and to provide long-term stability.

(4) Transport, backfill, grade, and revegetate wastes and excess spoil to achieve an ecologically sound land use compatible with the prevailing land uses in unmined areas surrounding the permit area.

(5) Eliminate all highwalls and depressions except as stated in paragraph (e) of this section by backfilling with spoil and suitable waste materials.

(i) *Regrading or stabilizing rills and gullies.* When rills or gullies deeper than 9 inches form in areas that have been regraded and the topsoil replaced but vegetation has not yet been established the permittee shall fill, grade, or otherwise stabilize the rills and gullies and reseed or replant the areas according to § 715.20. The regulatory authority shall specify that rills or gullies of lesser size be stabilized if the rills or gullies will be disruptive to the approved postmining land use or may result in additional erosion and sedimentation.

(j) *Covering coal and acid-forming, toxic-forming, combustible, and other waste materials; stabilizing backfilled materials; and using waste material for fill—*
(1) *Cover.* All exposed coal seams remaining after mining and any acid-forming, toxic-forming, combustible

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materials, or any other waste materials identified by the regulatory authority that are exposed, used, or produced during mining shall be covered with a minimum of 4 feet of nontoxic and noncombustible material; or, if necessary, treated to neutralize toxicity in order to prevent water pollution and sustained combustion, and to minimize adverse effects on plant growth and land uses. Where necessary to protect against upward migration of salts, exposure by erosion, to provide an adequate depth for plant growth, or to otherwise meet local conditions, the regulatory authority shall specify thicker amounts of cover using nontoxic material. Acid-forming or toxic-forming material shall not be buried or stored in proximity to a drainage course so as to cause or pose a threat of water pollution or otherwise violate the provisions of §715.17 of this part.

(2) *Stabilization.* Backfilled materials shall be selectively placed and compacted wherever necessary to prevent leaching of toxic-forming materials into surface or subsurface waters in accordance with §715.17 and wherever necessary to ensure the stability of the backfilled materials. The method of compacting material and the design specifications shall be approved by the regulatory authority before the toxic materials are covered.

(3) *Use of waste materials as fill.* Before waste materials from a coal preparation or conversion facility or from other activities conducted outside the permit area such as municipal wastes are used for fill material, it must be demonstrated to the regulatory authority by hydrogeological means and chemical and physical analyses that use of these materials will not adversely affect water quality, water flow, and vegetation; will not present hazards to public health and safety; and will not cause instability in the backfilled area.

(k) *Grading along the contour.* All final grading, preparation of overburden before replacement of topsoil, and placement of topsoil, in accordance with §715.16, shall be done along the contour to minimize subsequent erosion and instability. If such grading, preparation or placement along the

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contour would be hazardous to equipment operators then grading, preparation or placement in a direction other than generally parallel to the contour may be used. In all cases, grading, preparation, or placement shall be conducted in a manner which minimizes erosion and provides a surface for replacement of topsoil which will minimize slippage.

[42 FR 62680, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978, as amended at 47 FR 18553, Apr. 29, 1982]

§715.15 Disposal of excess spoil.

(a) *General requirements.* (1) Spoil not required to achieve the approximate original contour within the area where overburden has been removed shall be hauled or conveyed to and placed in designated disposal areas within a permit area, if the disposal areas are authorized for such purposes in the approved permit application in accordance with paragraphs (a) through (d) of this section. The spoil shall be placed in a controlled manner to ensure—

(i) That leachate and surface runoff from the fill will not degrade surface or ground waters or exceed the effluent limitations of §715.17(a)

(ii) Stability of the fill; and

(iii) That the land mass designated as the disposal area is suitable for reclamation and revegetation compatible with the natural surroundings.

(2) The fill shall be designed using recognized professional standards, certified by a registered professional engineer, and approved by the regulatory authority.

(3) All vegetative and organic materials shall be removed from the disposal area and the topsoil shall be removed, segregated, and stored or replaced under §715.16. If approved by the regulatory authority, organic material may be used as mulch or may be included in the topsoil to control erosion, promote growth of vegetation, or increase the moisture retention of the soil.

(4) Slope protection shall be provided to minimize surface erosion at the site. Diversion design shall conform with the requirements of §715.17(c). All disturbed areas, including diversion ditches that are not riprapped, shall be vegetated upon completion of construction.