

#### **405 KAR 18:200. Revegetation.**

RELATES TO: KRS 350.093, 350.095, 350.100, 350.151, 350.405, 350.410, 350.420, 350.435, 350.465, 30 C.F.R. Parts 730-733, 735, 817.111-817.116, 917, 30 U.S.C. 1253, 1255, 1266

STATUTORY AUTHORITY: KRS Chapter 13A, 350.028, 350.100, 350.151, 350.465, 30 C.F.R. Parts 730-733, 735, 817.111-817.116, 917, 30 U.S.C. 1253, 1255, 1266

CERTIFICATION STATEMENT:

NECESSITY, FUNCTION, AND CONFORMITY: KRS Chapter 350 in pertinent part requires the cabinet to promulgate rules and administrative regulations establishing performance standards for protection of people and property, land, water and other natural resources, and aesthetic values, during underground mining activities and for restoration and reclamation of surface areas affected by underground mining activities. This administrative regulation sets forth requirements for revegetation of areas affected by surface operations and facilities of underground mining activities, including requirements for temporary and permanent vegetative cover, use of introduced species, timing of revegetation, mulching and other soil stabilizing practices, standards for measuring revegetation success, and reporting requirements.

##### Section 1. General Requirements.

(1)

(a) Each permittee shall establish on all areas affected by surface operations and facilities a diverse, effective, and permanent vegetative cover that meets the requirements of this administrative regulation and the revegetation provisions of 405 KAR 18:180, and that supports the approved postmining land use.

(b) For prime farmland areas, the requirements of 405 KAR 20:040 shall apply in lieu of the productivity standards of this administrative regulation unless those areas are exempted by 405 KAR 8:050, Section 3, in which case the productivity standards of this administrative regulation shall apply.

(2) All revegetation shall be in compliance with the plan submitted under 405 KAR 8:040, Sections 24(4) and 37, as approved by the cabinet, and shall be carried out in a manner that encourages a prompt vegetative cover and recovery of productivity levels compatible with the approved postmining land use.

(3) If the approved postmining land use is not cropland or pastureland, all disturbed land except water areas, rock areas such as those used for drainage control and wildlife enhancement, and surface areas of roads that are approved as a part of the postmining land use or uses shall be seeded or planted to achieve a permanent vegetative cover of the same seasonal variety native to the region that is capable of soil stabilization, self-regeneration, and plant succession. The vegetative cover shall be considered of the same seasonal variety if it consists of a mixture of species of equal or superior utility for the approved postmining land use, when compared with the utility of naturally occurring vegetation during each season of the year.

(4) If the postmining land use is cropland or pastureland, establishment of crops or pasture species normally grown in the mine vicinity and normal husbandry practices, and compliance with 405 KAR 18:180, Section 3(2) for cropland, will meet the requirements of subsection (1)(a) of this section.

(5)

(a) Plant species used for revegetation shall be compatible with the plant and animal species of the area, and shall meet the requirements of applicable state and federal laws or regulations for seeds, poisonous and noxious plants, and introduced species.

(b) Except for cropland, selection of species, distribution patterns, seeding rates, and planting arrangements shall be approved case-by-case by the cabinet based upon this

administrative regulation and TRM #21, "Plant Species, Distribution Patterns, Seeding Rates, and Planting Arrangements for Revegetation of Mined Lands", Kentucky Department of Fish and Wildlife Resources, Kentucky Department of Natural Resources, Division of Forestry, and Kentucky Department for Surface Mining Reclamation and Enforcement (January 6, 1995). This document is incorporated by reference. It may be reviewed, copied, or obtained at the Department for Natural Resources, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m. Two (2) or more permanent legume species and two (2) or more permanent grasses shall be established on pastureland unless fewer species are approved by the cabinet based on a pasture management plan specifically tailored to the species mix.

(6) Subject to the approval of the cabinet, small incidental areas related to the fulfillment of the postmining land use may be exempted from the revegetation standards if no adverse environmental impact will occur if the exemption is granted.

(7) The extended liability period under the performance bond requirements of 405 KAR Chapter 10 shall begin after the last time of augmented seeding, fertilizing, irrigating, or other related work, and shall continue for not less than five (5) years; except:

(a) Discrete areas of 0.25 acre or less needing reseeding due to circumstances specified in subparagraphs 1 through 5 of this paragraph may be reseeded (including reliming, refertilizing, and mulching) without restarting the five (5) year liability period. The total acreage of these areas reseeded during the liability period shall not exceed three (3) percent of the acreage affected by surface operations and facilities. This paragraph shall only apply to:

1. Reseeding associated with repair of rills and gullies;
2. Reseeding areas where vegetation was disturbed by vehicular traffic not under the control of the permittee;
3. Reseeding areas where vegetation was disturbed by the installation or removal of oil and gas wells or utility lines;
4. Reseeding areas where there was poor seed germination of the initial seeding; and
5. Reseeding areas where vegetation was unavoidably disturbed in the course of conducting some other necessary reclamation activity.

(b) Liming, fertilizing, mulching, seeding, or stocking of haul roads, locations where sedimentation ponds and off-site temporary diversions that divert water to or away from sedimentation ponds have been removed, and locations where collected sediment and embankment material from sedimentation pond removal have been disposed shall not restart the five (5) year liability period. Vegetation established in these areas shall be in place for at least two (2) years before Phase III bond release;

(c) For cropland, the five (5) year liability period shall commence at the date of initial planting for the long-term intensive agricultural postmining land use;

(d) Irrigating, reliming, and refertilizing cropland and pastureland; reseeding cropland; and renovating pastureland by overseeding with legumes after Phase II bond release and after three (3) years from the initial seeding shall be considered normal husbandry practices and shall not restart the liability period, if the amount and frequency of these practices do not exceed normal agricultural practices used on unmined land within the region; and

(e) Other normal husbandry practices that may be conducted without restarting the liability period are disease, pest, and vermin control; pruning; and transplanting and replanting of trees and shrubs in accordance with Section 6 of this administrative regulation.

(8) For pastureland, and for cropland except prime farmland subject to 405 KAR 20:040, ground cover and productivity success standards shall be met during the growing seasons of any two (2) years of the liability period except the first year; and areas approved for

other uses shall equal or exceed the applicable success standards during the growing season of the last year of the liability period.

Section 2. Use of Introduced Species. Introduced species may be substituted for native species only if approved by the cabinet under the following conditions:

(1) The species shall meet the applicable requirements of Section 1(2), (3), (4), and (5) of this administrative regulation.

(2)

(a) Appropriate field trials or other studies shall be conducted or published literature shall be submitted to demonstrate to the satisfaction of the cabinet that proposed, unproven, introduced species are desirable and are necessary for achieving the postmining land use; or

(b) The species are necessary to achieve a quick, temporary, and stabilizing cover that aids in controlling erosion; and measures to establish permanent vegetation are included in the approved plans submitted under 405 KAR 8:040, Sections 24(4)(e) and 37.

Section 3. Timing. Seeding and planting of disturbed areas with permanent species shall be conducted no later than during the first normal period for favorable planting conditions after final preparation. The normal period for favorable planting shall be that planting time generally accepted locally, or as approved by the cabinet in the permit, for the type of plant materials selected. In accordance with Section 4 of this administrative regulation and 405 KAR 18:020, a disturbed area shall be seeded and mulched, as contemporaneously as practicable with the completion of backfilling and grading, to establish a temporary cover of small grains, grasses, or legumes until a permanent cover is established.

Section 4. Soil Amendments and Stabilization.

(1) Nutrients and soil amendments shall be applied to regraded areas in accordance with 405 KAR 18:050, Section 5.

(2) Suitable mulch or other soil stabilizing practices shall be used in addition to temporary cover on all regraded and topsoiled areas to control erosion, promote germination of seeds, and increase the moisture retention capacity of the soil. The cabinet may, on a case-by-case basis, waive the requirement for mulch if the cabinet finds, based on seasonal, soil, and slope factors, that the temporary vegetative cover will achieve proper erosion control until a permanent cover is established, except that no waiver shall be granted for any area having a slope greater than ten (10) percent.

(3) For areas within the area affected by surface operations and facilities to be used as cropland, the area shall be seeded or planted in order to maintain a vegetative cover effective in controlling erosion until the permittee chooses to grow crops.

Section 5. Success Standards for Ground Cover and Productivity.

(1) Determination of success of ground cover and productivity may be made on the basis of reference areas from unmined lands in the vicinity of the operation, where applicable, or by application of the specific ground cover and productivity standards of this section (tree and shrub stocking standards are set forth in Section 6 of this administrative regulation).

(2)

(a) For an approved postmining land use of pastureland or cropland used for the production of hay (except prime farmland subject to 405 KAR 20:040);

1. Ground cover (percent) and productivity (tons of forage per acre) shall be at least ninety (90) percent of that of an approved reference area with a statistical confidence of ninety (90) percent; or

2. Ground cover shall be at least ninety (90) percent, and productivity shall be at least ninety (90) percent of the average yield for that hay in the county in the three

(3) years prior to the year of measurement, as determined from "Kentucky Agricultural Statistics 1989-1990", "Kentucky Agricultural Statistics 1990-1991", "Kentucky Agricultural Statistics 1991-1992", "Kentucky Agricultural Statistics 1992-1993", and "Kentucky Agricultural Statistics 1993-1994", with a statistical confidence of ninety (90) percent.

3. "Kentucky Agricultural Statistics 1989-1990", "Kentucky Agricultural Statistics 1990-1991", "Kentucky Agricultural Statistics 1991-1992", "Kentucky Agricultural Statistics 1992-1993", and "Kentucky Agricultural Statistics 1993-1994", Kentucky Agricultural Statistics Service, Kentucky Department of Agriculture, and National Agricultural Statistics Service, United States Department of Agriculture, are incorporated by reference. These documents may be reviewed, copied, or obtained at the Department for National Resources, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. through 4:30 p.m.

(b) For areas within the area affected by surface operations and facilities where row crops will be planted (except prime farmland subject to 405 KAR 20:040):

1. Ground cover on any area not planted in row crops shall be at least ninety (90) percent with a statistical confidence of ninety (90) percent; and

2. Crop production shall be at least ninety (90) percent of that of an approved reference area or at least ninety (90) percent of the average yield for the crop in the county in the three (3) years prior to the year of measurement, as determined from "Kentucky Agricultural Statistics 1989-1990", "Kentucky Agricultural Statistics 1990-1991", "Kentucky Agricultural Statistics 1991-1992", "Kentucky Agricultural Statistics 1992-1993", and "Kentucky Agricultural Statistics 1993-1994", with a statistical confidence of ninety (90) percent.

(c) Forest land, or other areas within the area affected by surface operations and facilities where woody plants are stocked, shall have at least eighty (80) percent ground cover with a statistical confidence of ninety (90) percent, with no sign of significant erosion as set forth in 405 KAR 18:190, Section 4.

(d) For all other land uses, ground cover shall be at least eighty (80) percent with a statistical confidence of ninety (90) percent, with no sign of significant erosion as set forth in 405 KAR 18:190, Section 4.

(e) For all land uses other than cropland planted in row crops, at Phase III bond release there shall be no discrete bare area or sparsely covered (less than fifty (50) percent ground cover) area greater than 0.25 acre in size.

(3) For previously mined areas that were not reclaimed to the requirements of 405 KAR Chapters 16 through 20, the ground cover of living plants shall not be less than the ground cover existing before the redisturbance and shall be at least eighty (80) percent with a statistical confidence of ninety (90) percent, with no sign of significant erosion as set forth in 405 KAR 18:190, Section 4.

Section 6. Tree and Shrub Stocking. This section sets forth stocking standards and criteria for counting woody plants for measuring stocking success, and shall apply in addition to Section 5 of this administrative regulation, where the approved postmining land use or the approved fish and wildlife protection and enhancement plan requires the planting of trees or shrubs.

(1) If forest land is the approved postmining land use, a minimum stocking density of 300 trees or trees and shrubs per acre determined with a statistical confidence of ninety (90) percent, with tree (not shrub) species comprising at least seventy-five (75) percent of the total stock, shall be achieved on at least seventy (70) percent of the area stocked.

(a) For noncommercial (unmanaged) forest land, at least four (4) species of trees or trees and shrubs shall be planted in a mixed distribution pattern with each of the four

- (4) species comprising at least ten (10) percent of the total stock; however, none of the species shall comprise more than fifty (50) percent of the total stock
- (b) For commercial (managed) forest land, at least seventy-five (75) percent of the total stock shall be tree (not shrub) species providing good to excellent commercial value. The species shall be selected from those listed in TRM #21, except the cabinet may approve other species on a case-by-case basis.
- (2) For other postmining land uses:
- (a) If fish and wildlife is the postmining land use, at least thirty (30) percent of the area shall be planted in multiple rows or plots of trees or shrubs.
- (b) For subareas within the area affected by surface operations and facilities where trees or shrubs will be planted for the purpose of creating wildlife habitat (either for a fish and wildlife postmining land use or for fish and wildlife enhancement of other postmining land uses):
1. The stocking density of woody plants shall be at least 300 plants per acre, including volunteers. At least four (4) species of trees or shrubs listed in Appendix A of TRM #21, including at least one (1) hard mast species, one (1) conifer species, and two (2) soft mast or shrub species, shall be present and the stocking densities of these species shall be at least ninety (90) hard mast plants per acre, thirty (30) conifer plants per acre, and thirty (30) plants per acre for each of the two (2) soft mast or shrub species. Stocking densities shall be determined with a statistical confidence of ninety (90) percent.
  2. In place of the requirements of subparagraph 1 of this paragraph the cabinet may, if requested by the applicant, approve stocking densities and woody plant species that are recommended by the Kentucky Department of Fish and Wildlife Resources for the permit area based upon site-specific considerations, except the stocking density of recommended species shall be at least 150 woody plants per acre, including volunteers. Stocking densities shall be determined with a statistical confidence of ninety (90) percent.
  3. Tree and shrub species shall be selected, grouped, and distributed in a manner which optimizes edge effect, cover, and food for wildlife.
  4. This amendment to this paragraph shall apply to original applications for permits and applications for permit amendments submitted after the effective date of this amendment. Permits issued or applications submitted prior to the effective date of this amendment may be revised to comply fully with this paragraph.
- (c) For subareas within the area affected by surface operations and facilities where trees and shrubs will be planted for the purposes of creating recreation areas, green belts, fence rows, woodlots, or shelter belts for wildlife, or otherwise facilitating the postmining land use, the minimum stocking density shall be 300 woody plants per acre, unless a lesser density is approved by the cabinet based on site-specific considerations.
- (3) For determining tree or shrub stocking success for areas within the area affected by surface operations and facilities to be stocked with woody plants, the following criteria shall apply:
- (a) At Phase II bond release, each tree or shrub counted shall be alive and healthy and shall have been in place for not less than one (1) growing season. At Phase III bond release, each tree or shrub counted shall be alive and healthy and shall have been in place for not less than two (2) growing seasons:
- (b) At Phase III bond release each tree or shrub counted shall have at least one-third (1/3) of its height in live crown;
- (c) At Phase III bond release, only woody plants over one (1) foot in height shall be counted, and if multiple stems occur on the same plant, only the tallest stem shall be counted;

- (d) Up to a cumulative twenty (20) percent of the woody plants needed to meet the approved stocking may be replanted during the liability period without restarting the liability period;
- (e) At Phase III bond release, at least eighty (80) percent of the trees and shrubs used to determine success shall have been in place for three (3) years or more;
- (f) Volunteer plants that meet all applicable requirements of this administrative regulation may be counted; and
- (g) Portions of the site occupied by approved rock areas, brush piles, permanent impoundments, permanent roads, and surface drainageways shall be excluded from the stocking success determinations.

#### Section 7. Use of Reference Areas.

##### (1) Access.

- (a) If the reference area is not under the control of the permittee, there shall be a written agreement between the permittee and the landowner specifying that the area may be used for the purposes of a reference area;
- (b) The agreement shall also specify that representatives of the cabinet and OSM have right of entry for the purpose of observing and measuring vegetation; and
- (c) The agreement shall be effective until final bond release on the permit area, and a copy of the agreement shall be submitted in the permit application.

##### (2) Selection and management.

- (a) Reference areas shall be:
  - 1. Located in unmined areas;
  - 2. Of sufficient area to allow meaningful vegetation measurements and comparisons with the area affected by surface operations and facilities;
  - 3. As close to the area affected by surface operations and facilities as practicable;
  - 4. Representative of the geology, soil, and slope of the area affected by surface operations and facilities, and have the same vegetative type or crops proposed for the postmining land use; and
  - 5. Delineated on the vegetation map pursuant to 405 KAR 8:040, Section 19 or on another appropriate map.
- (b) Management of the reference area shall be comparable to that which is required for the approved land use of the area affected by surface operations and facilities.

#### Section 8. Planting Report.

- (1) Prior to or simultaneously with the submittal of an application for Phase I bond release on an area, the permittee shall file a certified planting report with the cabinet, on a form prescribed and furnished by the cabinet, giving the following information:
  - (a) Identification of the operation;
  - (b) The type of planting or seeding, including mixtures and amounts;
  - (c) The date of planting or seeding;
  - (d) The area of land planted or seeded; and
  - (e) Any other relevant information that the cabinet requires.
- (2) A planting report as described in subsection (1) of this section shall also be submitted to the cabinet if any augmentive reseeding or replanting, or other augmentive work, is performed within the area affected by surface operations and facilities.

#### Section 9. Measurement of Vegetation Success.

- (1) Ground cover and tree and shrub stocking shall be measured using the techniques outlined in TRM #19. TRM #19, "Field Sampling Techniques for Determining Ground Cover, Productivity, and Stocking Success of Reclaimed Surface Mined Lands", Department for Natural Resources, June 28, 1991, is incorporated by reference. It may be

reviewed, copied, or obtained at the Department for Natural Resources, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m.

(2) Productivity for pastureland and cropland shall be measured by either:

(a) The techniques established in TRM #19 or alternatives approved under subsection (3) of this section;

(b) Harvesting and weighing the entire crop or forage by the permittee to determine total yield from the entire surface operations and facilities area or the entire portion designated as cropland (including prime farmland) or pastureland. Representative samples shall be taken to determine moisture content. Procedures for determining total yields under this option shall be approved in advance by the cabinet.

(3) The cabinet may approve alternative sampling and measurement techniques for productivity determinations in addition to those established by TRM #19 if:

(a) A complete description and justification of the methodology is submitted to the cabinet;

(b) The cabinet determines that use of the methodology would provide substantial benefit to the user in terms of cost, efficiency, or accuracy of measuring productivity;

(c) The methodology is determined by the cabinet to be procedurally and statistically valid and in compliance with this administrative regulation;

(d) Methodologies used for prime farmland shall be approved in consultation with SCS; and

(e) Alternative methodologies shall not be used unless they are approved by OSM.

(4) Measurements of ground cover, tree and shrub stocking, and productivity for Phase II and Phase III bond release shall be made by the cabinet, except the permittee may measure productivity.

(a) If the permittee intends to measure productivity, he shall notify the department's appropriate regional office of the measurement dates in order to provide the opportunity for cabinet personnel to observe the measurements. This notification shall be provided in writing at least thirty (30) days prior to the anticipated measurement dates and shall be provided by telephone or in person within two (2) days prior to the measurement dates.

(b) If the permittee measures productivity, he shall ensure that the measurements are made by qualified persons.

(c) The cabinet may make measurements or take other appropriate action as deemed necessary to verify measurements made by the permittee.

(5) All crop and forage yields shall be adjusted to standard moisture content: fifteen (15) percent for pasture and hay, fifteen and five-tenths (15.5) percent for corn, and twelve and five-tenths (12.5) percent for soybeans and wheat.

(6) Whether measured by the cabinet or the permittee, vegetation success shall be measured prior to the submittal of an application for a Phase II or Phase III bond release.

(405 KAR 018:200. 8 Ky.R. 1579; eff. 1-6-1983; 18 Ky.R. 442; 1125; 2248; eff. 12-17-1991; 21 Ky.R. 541; 1352; 2125; eff. 2-22-1995; TAm eff. 8-9-2007; TAm eff. 7-6-2016; Crt eff. 7-3-2018; Crt eff. 6-26-2025.)