



## Ohio Administrative Code Rule 1501:13-9-15 Revegetation.

Effective: January 17, 2016

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### (A) Definitions.

(1) "Countable tree" means a tree or shrub that:

(a) Is in place for at least two years;

(b) Is alive and healthy;

(c) Has at least one-third of its length in live crown, with green foliage during its growing season, and is not diseased or insect-infested; and

(d) Has a root crown or root sprouts over one foot in height. Root crowns or root sprouts over one foot in height shall count as one towards meeting the stocking requirements. Where multiple stems occur, only the tallest stem will be counted.

(2) "Ground cover" means the area of ground covered by the aerial parts of perennial and biennial vegetation and the litter that is produced naturally onsite, expressed as a percentage of the total area of measurement.

(3) "Herbaceous species" means grasses and non-woody legumes.

(4) "Woody plants" means woody shrubs, trees, and vines.

(B) General requirements. The permittee shall establish on regraded areas and on all other disturbed areas except water areas and the surface areas of roads that are approved as part of the postmining land use, and other small incidental areas where revegetation would conflict with the postmining land use and no environmental harm would result, a vegetative cover that is in accordance with the approved permit and reclamation plan and that is:



- (1) Diverse, effective, and permanent;
  - (2) Comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the chief;
  - (3) At least equal in extent of cover to the natural vegetation of the area; and
  - (4) Capable of stabilizing the soil surface from erosion.
- (C) Use of native and introduced species.
- (1) The reestablished plant species shall:
    - (a) Be compatible with the approved postmining land use;
    - (b) Have the same seasonal characteristics of growth as the original vegetation;
    - (c) Be capable of self-regeneration and plant succession;
    - (d) Be compatible with the plant and animal species of the area; and
    - (e) Meet the requirements of applicable state and federal seed, poisonous and noxious plant, and introduced species laws or regulations.
  - (2) The chief may grant exceptions to the requirements of paragraphs (C)(1)(b) and (C)(1)(c) of this rule when the species are necessary to achieve a quick-growing, temporary, stabilizing cover, and measures to establish permanent vegetation are included in the approved permit and reclamation plan.
  - (3) When the chief approves a cropland postmining land use, the chief may grant exception to the requirements of paragraphs (B)(1), (B)(3), (C)(1)(b) and (C)(1)(c) of this rule. The requirements of rule 1501:13-13-03 of the Administrative Code apply to areas identified as prime farmland.



(D) Time of revegetation. Seeding and planting of disturbed areas shall be conducted during the first normal period for favorable planting conditions after replacement of the topsoil or topsoil substitute. The normal period for favorable planting shall be that planting time generally accepted locally for the type of plant materials selected. When necessary to effectively control erosion, any disturbed areas shall be seeded and planted as contemporaneously as practicable after the completion of backfilling, grading, and topsoiling with a temporary cover of small grains, grasses, or legumes until a permanent cover is established.

(E) Mulching and other soil stabilizing practices.

(1) Suitable mulch and/or other stabilizing practices shall be used on all areas that have been regraded and resoiled in order to control erosion, promote germination of seeds, or increase the moisture-retention capacity of the soil. The chief may suspend the requirements for mulch if the permittee can demonstrate that:

(a) Seasonal, soil, or slope factors result in a condition for which mulch and other soil-stabilizing practices are not necessary to control erosion and to promptly establish an effective vegetative cover; and

(b) Alternative procedures will achieve the revegetation success standards of this rule for the approved postmining land use and will not cause or contribute to air or water pollution.

(2) Annual grasses and grains may be used alone as natural mulch, or in conjunction with another mulch, when the chief determines that they will provide adequate soil erosion control and cover and will later be replaced by perennial species approved for the postmining land use.

(3) Chemical soil stabilizers alone, or in combination with appropriate mulches, may be used in conjunction with vegetative covers approved for the postmining land use.

(F) General requirements for measuring success of revegetation.

(1) Success standards will differ depending on the approved postmining use of an area. In all



revegetation efforts, the general requirements of this rule shall be met and the success of revegetation shall be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the cover occurring in natural vegetation of the area, and the requirements of paragraphs (B) and (C) of this rule. Statistically valid sampling techniques for measuring success of ground cover, production, or stocking for final performance security release shall be specified in guidelines for evaluating revegetation success compiled by the chief. The statistical sampling techniques shall use a ninety per cent confidence interval (i.e., one-sided test with a 0.10 alpha error).

(2) Except as provided in paragraph (F)(2)(a) of this rule the period of extended responsibility for revegetation success under the performance security requirement shall continue for not less than five full years.

(a) On lands eligible for remining included in permits issued pursuant to the requirements of rule 1501:13-4-12 of the Administrative Code and renewals thereof, the period of extended responsibility for revegetation success under the performance security requirement shall continue for not less than two full years.

(3) Except as provided in paragraph (F)(3)(a) of this rule, the period of extended responsibility shall begin on the date of the last augmented seeding, fertilizing, planting or other work necessary to ensure successful vegetation. The date of this last seeding, fertilizing, planting or other work shall be the same date that is recorded in the planting report required in paragraph (P) of this rule.

(a) For row crops planted on areas to be used for agricultural cropland, including prime farmland, the period of extended responsibility for revegetation shall commence on the date on which the initial planting of the crop has been completed. Promptly thereafter, the chief shall inspect the area to verify that the initial planting has been completed.

(4) The following practices will not be considered augmentative when the practice and the rate of application is an accepted local practice for comparable unmined lands that can be expected to continue as a postmining practice:

(a) Seeding, applying soil amendments, and irrigating to maintain productivity, as recommended by or



as specified in technical guidelines published by the Ohio state university cooperative extension service as normal practices on cropland, pasture land or grazing land;

(b) Limited repair of rills and gullies. The chief will classify instances of rill and gully erosion repair as either limited or extensive, based on the extent of repairs needed and the cause of the erosion. The chief will consider extensive repairs to be augmentative;

(c) Reseeding and adding soil amendments when necessary to repair damage to land and/or established permanent vegetation that is unavoidably disturbed in order to meet the reclamation standards of this chapter, provided that:

(i) The damage is not caused by a lack of planning, design, or implementation of the mining and reclamation plan, inappropriate reclamation practices on the part of the permittee, or the lack of established permanent vegetation; and

(ii) The total acreage of repaired areas under paragraphs (F)(4)(b) and (F) (4)(c) of this rule does not exceed ten per cent of the total land affected, with no individual area exceeding three acres;

(d) Replanting of trees as a reinforcement measure on areas for which the approved planting plan requires woody vegetation; and

(e) Reseeding of legumes within three years after the initial planting where the legumes are expected to be present at the end of the period of extended responsibility.

(5) Reseeding of areas that have been unavoidably disturbed in the course of gaining access for removal of structures that are part of the sediment control system or initial seeding of areas upon which the sediment control system was located and subsequently removed will not restart the period of extended responsibility for revegetation success.

(6) For the purposes of paragraphs (F)(4)(c) and (F)(5) of this rule, permanent vegetation that is established or reestablished on these areas must have been seeded a minimum of twelve months prior to the request for phase III performance security release unless the chief determines the extent of the area of repair was limited in size and the permittee remains in compliance with paragraph (G)(3)(b)



of this rule.

(G) Revegetation success standards for pasture or grazing land.

(1) Species diversity, seasonal variety and regenerative capacity of the vegetation of the revegetated area shall be evaluated on the basis of the results which could reasonably be expected using the revegetation methods described in the reclamation plan.

(2) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when the species planted in accordance with the approved reclamation plan, including natural succession and non-noxious volunteer species consistent with the reclamation plan, are established and the area has sufficient ground cover to control erosion. As used in this paragraph, "established" means that individual plants have matured to the point that they are deriving their nourishment from the soil instead of from stored food in the seed. Development of secondary leaves is considered an indication that a plant is established.

(3) Revegetation shall be determined to be successful for a phase III performance security release when:

(a) The period of extended responsibility has expired and the species planted in accordance with the approved reclamation plan, including natural succession and non-noxious volunteer species consistent with the reclamation plan, equal or exceed the county average yield for hay for any two years of the period of extended responsibility except the first year; and

(b) For the last year of the period of extended responsibility and one additional year, except the first year, the ground cover shall equal or exceed ninety per cent and no single area with less than thirty per cent cover shall exceed the lesser of three thousand square feet or 0.3 per cent of the land affected.

(H) Revegetation success standards for areas to be used for agricultural cropland, other than prime farmland.

(1) Revegetation shall be determined to be successful for a reclamation phase approval or a phase II performance security release for row and hay crops when the species planted in accordance with the



approved reclamation plan meet, at a minimum, the ground-cover standards of paragraph (G)(2) of this rule.

(2) Revegetation shall be determined to be successful for a phase III performance security release for row and hay crops when:

(a) The period of extended responsibility has expired and the yield data of crop harvest on the mined area for any two years of the period of extended responsibility, except the first year, equals or exceeds the average county yield for comparable crops and hay crops; and

(b) The vegetation meets, at a minimum, the ground cover standards of paragraph (G)(3)(b) of this rule during the last year of the period of extended responsibility.

(I) Revegetation success standards for prime farmland.

(1) The success in revegetation shall be determined on the basis of an average crop production from the reclaimed prime farmland areas compared to the target yields specified in the web soil survey administered by the U.S. department of agriculture, natural resources conservation service, as approved by the chief. The website for the web soil survey is <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

(2) The measurement of soil productivity shall be initiated within ten years after completion of soil replacement.

(3) The level of management applied during the measurement period shall be the same as the level of management used on nonmined prime farmland in the surrounding area.

(4) The reference crop on which restoration of soil productivity is proven shall be selected from the crops most commonly produced on the surrounding prime farmland. Where row crops are the dominant crops grown on the prime farmland in the area, the row crop requiring the greatest rooting depth shall be chosen as one of the reference crops.

(5) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase



II performance security release for row and hay crops when the yield data from three years of crop harvest on the mined area equals or exceeds the target yields specified in the web soil survey administered by the U.S. department of agriculture, natural resources conservation service, as approved by the chief. The website for the web soil survey is <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

(6) Revegetation shall be determined to be successful for a phase III performance security release for row and hay crops when the period of extended responsibility has expired and the yield data from at least three years of crop harvest on the mined area equals or exceeds the target yields specified in the web soil survey administered by the U.S. department of agriculture, natural resources conservation service, as approved by the chief. The website for the web soil survey is <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. The same yield data that was submitted for the phase II approval or the phase II release may be submitted for the phase III release.

(7) The average crop yield for prime farmland may be adjusted, if approved by the chief with the concurrence of the U.S. natural resources conservation service, for:

(a) Disease, pest, and weather-induced seasonal variations; or

(b) Differences in specific management practices when the overall management practices of the crops being compared are equivalent.

(J) Revegetation success standards for areas for which the postmining land use is industrial, residential, or commercial use, other than commercial forest land.

(1) For areas to be developed for the intended postmining land use within two years after regrading is completed:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when the species planted in accordance with the approved mining and reclamation plan provide sufficient ground cover to control erosion; and

(b) Revegetation shall be determined to be successful for a phase III performance security release in





the last year of the period of extended responsibility for revegetation success when substantial construction has begun, the area not disturbed by construction activity has sufficient ground cover to control erosion and the period of extended responsibility has expired.

(2) For areas to be developed for the intended postmining land use two or more years after regrading is completed, revegetation shall meet the ground cover success standards contained in paragraph (G)(2) of this rule for reclamation phase II approval or phase II performance security release and paragraph (G)(3)(b) of this rule for phase III performance security release, except that only one ground cover evaluation in the last year of the period of extended responsibility for revegetation success is necessary for phase III performance security release.

(K) General requirements for woody vegetation.

(1) For areas for which the approved postmining land use requires woody plants as the primary vegetation, success of revegetation shall be determined on the basis of tree, shrub, or half-shrub stocking and ground cover to ensure that commercial tree species, non-commercial tree species, or shrubs, sufficient for adequate use of available growing space, are established after coal mining.

(2) Quality stock and proven field techniques in the science of woody revegetation on mined areas shall be employed.

(3) The chief shall determine the appropriate stocking level of trees and shrubs, the appropriate species of trees and shrubs, the appropriate herbaceous species and mixtures of herbaceous species, and the appropriate planting arrangement after consultation with and approval by the division of forestry for areas where the approved postmining land use is forest, or consultation with and approval by the division of wildlife for areas where the approved postmining land use is fish and wildlife habitat or undeveloped land.

(4) The number of stems per unit area will be used to determine the degree to which space is occupied by properly distributed acceptable trees. Volunteer stems of acceptable tree species may also be counted.

(L) Revegetation success standards for forest land, fish and wildlife habitat, or other postmining



land uses that require establishment of woody vegetation.

(1) For areas where the approved postmining land use is forest or fish and wildlife habitat, revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when:

(a) There are at least six hundred trees or shrubs per acre on each acre on which trees or shrubs are to be planted; and

(b) The herbaceous ground cover provides the greater of thirty per cent cover or sufficient cover to control erosion.

(2) Revegetation shall be determined to be successful for a phase III performance security release in the last year of the period of extended responsibility for revegetation success when the period of extended responsibility has expired, the herbaceous ground cover is at least seventy per cent, and:

(a) For areas where the approved postmining land use is forest, the area has a minimum of four hundred fifty countable trees per acre, of which a minimum of seventy-five per cent are commercial tree species, and of which eighty per cent have been in place for at least three years, on each acre on which trees or shrubs are to be planted; or

(b) For areas where the approved postmining land use is fish and wildlife habitat, the area has a minimum of two hundred fifty countable trees per acre, of which eighty per cent have been in place for at least three years, on each acre on which trees or shrubs are to be planted.

(M) Revegetation success standards for undeveloped land.

(1) For areas for which the approved postmining land use is undeveloped land, success of revegetation shall be determined on the basis of ground cover and the proper planting of appropriate tree and shrub species specified in the approved planting plan. Such plans shall include tree or shrub plantings over ten to fifty per cent of the revegetated area. Planting locations shall include slopes steeper than twenty degrees and areas along drainways and permanent sources of water.



(2) In addition to meeting the general requirements for woody vegetation contained in paragraphs (K)(2) and (K)(3) of this rule, the selected tree and shrub species and herbaceous ground cover species shall have value as wildlife habitat, and the herbaceous ground cover species shall be compatible with the growth of acceptable species of trees and shrubs, as determined by the chief with consultation of the division of wildlife.

(3) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when the herbaceous ground cover species are established and provide sufficient ground cover to control erosion.

(4) Revegetation shall be determined to be successful for a phase III performance security release when the period of extended responsibility has expired, and:

(a) Acceptable species of trees and shrubs have been properly planted and in accordance with the approved planting plan at a rate of six hundred trees or shrubs per acre on each acre on which trees or shrubs are to be planted;

(b) The herbaceous ground cover on areas not planted with trees or shrubs meets the ground cover standards of paragraph (G)(3)(b) of this rule, except that only one ground cover evaluation in the last year of the period of extended responsibility for revegetation success is necessary for phase III performance security release; and

(c) The herbaceous ground cover on areas on which trees or shrubs are planted is at least seventy per cent in the last year of the period of extended responsibility for revegetation success.

(N) Revegetation success standards for recreation areas.

(1) For areas where the approved postmining land use is developed recreation facilities, including but not limited to portions of parks, camps, and amusement areas where woody vegetation would be incompatible with the approved postmining land use, the area shall meet the ground cover standards of paragraph (G)(2) of this rule for reclamation phase II approval or phase II performance security release and paragraph (G)(3)(b) of this rule for phase III performance security release, except that only one ground cover evaluation in the last year of the period of extended responsibility for



revegetation success is necessary for phase III performance security release.

(2) For areas where the approved postmining land use is recreation area with less intensive uses, such as hiking or canoeing, the area shall meet the general requirements for woody vegetation in accordance with paragraph (K) of this rule, and the revegetation success standards of paragraph (L)(1) of this rule for reclamation phase II approval or phase II performance security release and paragraph (L)(2) of this rule in the last year of the period of extended responsibility for revegetation success for phase III performance security release.

(O) Revegetation success standards on lands eligible for remining.

(1) For pasture and grazing land:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when the standards of paragraph (G)(2) of this rule are met; and

(b) Revegetation shall be determined to be successful for a phase III performance security release when the period of extended responsibility has expired and the species planted in accordance with the approved reclamation plan, including natural succession and non-noxious volunteer species consistent with the reclamation plan, have provided, during the last year of the period of extended responsibility, ground cover equal to or exceeding seventy percent cover and adequate to control erosion, with no single area with less than thirty percent cover exceeding the lesser of three thousand square feet or 0.3 per cent of the land affected.

(2) For cropland, other than prime farmland:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when the standards of paragraph (G)(2) of this rule are met; and

(b) Revegetation shall be determined to be successful for a phase III performance security release when:

(i) The period of extended responsibility has expired and the yield data of crop harvest on the mined



area for any year of the period of extended responsibility, except the first year, equals or exceeds the average county yield for comparable crops and hay crops; and

(ii) The vegetation meets, at a minimum, the ground cover standards of paragraph (O)(1)(b) of this rule during the last year of the period of extended responsibility.

(3) For industrial, residential, or commercial land use, other than commercial forest land:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when vegetation meets the ground cover success standards of paragraph (G)(2) of this rule; and

(b) Revegetation shall be determined to be successful for a phase III performance security release when vegetation meets the standards of paragraph (O)(1)(b) of this rule.

(4) For forest land, fish and wildlife habitat, or other land use which requires the establishment of woody vegetation:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release when vegetation meets the success standards of paragraph (L)(1) of this rule; and

(b) Revegetation shall be determined to be successful for a phase III performance security release when vegetation meets the standards of paragraph (L)(2) of this rule, except that of the minimum countable trees per acre, eighty per cent have been in place for at least two years, on each acre on which trees or shrubs are to be planted.

(5) For undeveloped land:

(a) Success of revegetation shall be determined as provided in paragraphs (M)(1), (M)(2) and (M)(3) of this rule; and

(b) Revegetation shall be determined to be successful for a phase III performance security release



when the period of extended responsibility has expired and the vegetation meets the requirements of paragraph (M)(4) of this rule except that the herbaceous ground cover on areas not planted with trees or shrubs must meet the standards of paragraph (O)(1)(b) of this rule.

(6) For recreation areas:

(a) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release, for areas where herbaceous vegetation comprises the ground cover, when the standard of paragraph (G)(2) of this rule are met;

(b) Revegetation shall be determined to be successful for a phase III performance security release, for the areas listed in paragraph (O)(6)(a) of this rule, when the standards of paragraph (O)(1)(b) of this rule are met;

(c) Revegetation shall be determined to be successful for a reclamation phase II approval or a phase II performance security release, for areas which require the planting of woody vegetation as described in paragraph (N)(2) of this rule, when the standards of paragraph (L)(1) of this rule are met; and

(d) Revegetation shall be determined to be successful for a phase III performance security release for areas listed in paragraph (O)(6)(c) of this rule, when the standards of paragraph (L)(2) of this rule are met.

(P) Planting report. Upon completion of planting, the permittee shall file planting reports with the chief, on a form prescribed and furnished by the chief, providing the following information:

(1) Permit number;

(2) The type of planting or seeding, including mixtures and amounts;

(3) The date of planting, seeding, or reseeded;

(4) The area of land planted; and



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(5) Such other relevant information as the chief may require.