



STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
CHARLESTON 25305

T. R. SAMSELL
DIRECTOR

August 28, 1967

The Honorable Robert D. Bailey
Secretary of State
State Capitol
Charleston, West Virginia 25305

Dear Mr. Bailey:

Enclosed are two copies of regulations issued by the Reclamation Commission regarding reclamation of areas disturbed by surface mining operations. These regulations are designated Series I of Chapter 20-6 of the West Virginia Administrative Regulations.

I hereby certify that the attached regulations are true and accurate copies of official regulations adopted by this Commission on August 28, 1967.

Sincerely yours,

T. R. Samsell
Director

TRS/fd

Attachment

FILED IN THE OFFICE
ROBERT D. BAILEY
SECRETARY OF STATE
THIS DATE 8/28/67

WEST VIRGINIA SURFACE MINING RECLAMATION REGULATIONS
Department of Natural Resources

Chapter 20-6
Series 1
(1967)

Subject: Rules and regulations pertaining to the reclamation of areas disturbed by surface mining operations, particularly with regard to requirements for permits, performance bonds, haulageways, backfilling and regrading, revegetation, prospecting, and other mining operations on disturbed areas.

Section 1. General

1.01. Scope - These regulations establish general and specific rules for prospecting, for the construction of haulageways, for backfilling and regrading, for the revegetation of lands disturbed by surface mining operations, for bonds and permits, and for other mining operations.

1.02. Authority - These regulations are issued under the authority of Article 6, Chapter 20, Code of West Virginia.

1.03. Effective Date - These regulations were promulgated on the 28th day of August, 1967 and became effective on the 1st day of October, 1967.

1.04. Filing Date - These regulations were filed in the Office of the Secretary of State on the 28th day of August, 1967.

1.05. Certification - These regulations were certified authentic by the Secretary of State by Certification Number _____.

FILED IN THE OFFICE
ROBERT D. BAILEY
SECRETARY OF STATE
THIS DATE 8/28/67

Section 2. Definitions: Unless the context in which used clearly requires a different meaning, as used in these regulations or as referred to in Article 6, Chapter 20, Code of West Virginia:

2.01. Acidity shall mean a sour reaction, generally expressed by pH, the symbol referring to degrees of acidity or alkalinity. On this scale, pH of 1 is the strongest acid, pH of 14 is the strongest alkali, pH of 7 is the point of neutrality.

2.02. Acid-Producing Substances shall mean mineral compounds generally associated with coal mining which will, when acted upon by water and air, cause acids to form. Such substances may include, but not be limited to, rider, rooster, blossom, boney, culm, or other sulphur or aluminum bearing substances.

2.03. Acid Water Breakthrough shall mean underground water of a degree of acidity of less than pH 5.5 flowing onto the surface of the land.

2.04. Area Surface Mining shall mean open-cut or multiple-cut mining carried out on level to gently-rolling topography, which does not produce a bench.

2.05. Auger Mining shall mean mining of coal from an exposed vertical coal face by means of a mechanically-driven boring machine which employs an auger to cut and remove the coal.

2.06. Backfill shall mean literally, to place material back into an area that has been excavated to a predetermined slope.

2.07. Bench shall mean the result of surface mining in areas where the average slope of the original ground has an inclination of more than twenty-five per cent (25%) from the horizontal, being: (a) the levelled surface of an excavated area measured horizontally at any point in the overburden or spoil between the base of the highwall and the original surface of the ground, on which excavating equipment can set, move and operate; or (b) a working base extending from the base of a highwall.

2.08. Bench Width shall mean the width of the bench as measured horizontally from the base of the highwall to the outer point of the original fill bench.

2.09. Coal Seam shall mean a layer, vein, bed or deposit of coal; a stratigraphic part of the earth containing coal.

2.10. Completion of Mining shall mean an operation where no mineral has been removed or overburden removed for a period of six consecutive months, unless the operator, within thirty (30) days of receipt of the director's notification declaring completion, submits sufficient evidence that the operation is in fact not completed.

2.11. Contour Surface Mining shall mean the removal of overburden and the mining of a mineral that normally approaches the surface at approximately the same elevation, a contour bench resulting.

2.12. Cut shall mean a longitudinal excavation made by excavating equipment to remove overburden in a single progressive line.

2.13. Cross-Drain shall mean a ditch constructed to carry away excessive drainage from a main collecting point or ditch.

2.14. Cut-fill shall mean overburden removed from an elevated portion of a road or bench and deposited in a depressed portion in order to maintain a desired grade.

2.15. Deep Mining shall mean removal of the mineral being mined without the disturbance of the surface as distinguished from surface mining.

2.16. Director and/or his Authorized Agent shall mean the Director of the Department of Natural Resources, the Chief of the Division of Reclamation, the Assistant Chief of the Division of Reclamation, and all duly authorized inspectors and supervisors.

2.17. Diversion Ditch shall mean a machine-made waterway used for collecting ground water or a ditch designed to change the actual or normal course of ground and/or surface water.

2.18. Face of Coal shall mean the exposed vertical cross-section of the natural coal seam or deposit being mined and generally forming the base of the highwall left by excavating operations in surface mining.

2.19. Field Indicator shall mean apparatus or equipment designed to measure the acidity of soil or mineral substances, such as litmus paper or Cornell test kit, or glass electrode pH meter with pH range of 0.0 to 7.5.

2.20. Fill Bench shall mean that portion of a bench formed by spoil or overburden which has been deposited over the original slope.

2.21. Georgia Type V-Ditch shall mean a ditch for the collection of ground and surface water, constructed on the solid bench area, with the opposing slopes being constructed in such a manner so as to permit the total area to be transversed by farm equipment.

2.22. Haulageway or Access Road shall mean any road constructed or improved by the operator which ends at the pit or bench. Paths or trails between pits or benches or to prospecting areas, for the temporary movement of equipment, or movement of coal for testing, shall not be considered as haulageways but, nevertheless, shall be considered part of the disturbed area.

2.23. Highwall shall mean the vertical wall consisting of the exposed overlying strata after excavating operation.

2.24. Monument shall mean a permanent marker used to identify an area being mined under a surface mining permit, consisting of a two-inch pipe driven three feet into the earth with a minimum of four feet exposed and a 2'x3' sign affixed to the top of the pipe with company name and permit number permanently affixed. Any suitable equivalent substitute may be approved.

2.25. Natural Drainway shall mean any natural or existing channel, stream bed or drain which normally or continuously carries storm, ground, or seepage water toward the tributaries and rivers of the watershed system.

2.26. Overburden shall mean the earth, rock and other materials lying in the natural state above a mineral deposit before or after excavation.

2.27. Peak shall mean a small hill or mound left in the process of surface mining, or the tops of spoil banks before grading.

2.28. Pit shall mean that part of the surface mining operation from which coal is being actively removed, or the entire contiguous mined area.

2.29. Prospecting shall mean the use of excavating equipment in an area not covered by a surface mining permit for the purpose of removing the overburden to determine the location, quantity or quality of a natural coal deposit, or to make feasibility studies, or for any other purpose.

2.30. Reclamation shall mean the process of reconvertng land disturbed by mining operations to other stable forms of productive use.

2.31. Regrade or Grade shall mean to change the contour of any surface by the use of levelling or grading equipment.

2.32. Seepage Water shall mean any water entering the ground from the surface through capillary action, cracks, faults or any other natural modes of entry, and finding its way to the surface again.

2.33. Slope shall mean the angle of repose from the horizontal plane of spoil banks or ridges of overburden material made in the surface mining operation; the angle of a hill or mountain. A gentle slope shall mean 0% to 10%; moderate to steep slope shall mean 10% to 45%; very steep slope shall mean 45% and over.

2.34. Solid Bench shall mean that portion of the bench surface formed by earth or rock strata which has not been removed, as distinguished from spoil bench.

2.35. Spoil shall mean all overburden material removed or displaced by excavating equipment, blasting or any other means.

2.36. Stabilize shall mean to settle, or fix in place, usually with reference to spoil or overburden by means of planting trees, grasses, vines, shrubs or legumes.

2.37. Stoniness shall mean a characteristic of earth, overburden or spoil reflecting its relative proportion of sizable aggregate content as opposed to its sand, loam, or fine aggregate content. Sites too stony to hand-plant with seedlings shall be classified as extremely stony; those having less stone but too much stone for tillage shall be classified as stony.

2.38. Storm Water shall mean any water flowing over or through the surface of the ground caused by precipitation; generally, surface run off.

2.39. Suspension of Permit shall mean an act of the director or the commission with legal justification temporarily nullifying the validity of a permit insofar as the mining and removal of the mined minerals are concerned.

Section 3. Prospecting

3.01. Bond Coverage - The amount of bond or its equivalent as provided in Section 7, Article 6, Chapter 20 shall be one hundred and fifty dollars (\$150) per acre or any fraction thereof.

3.02. Notification of Approval - The director shall notify the applicant by certified mail within fifteen (15) days after the receipt of the prospecting permit application and the reclamation plan for the area to be disturbed by prospecting, if they are or are not acceptable. If application and plan are not acceptable, he shall set forth the reasons why they are not acceptable, and he may propose modifications, delete areas, or reject the permit on the basis of the reclamation plan or for other justifiable reasons set forth in the Code and/or rules and regulations.

3.03. Reclamation Fee - No special reclamation fee, as outlined in Section 17 of Article 6, Chapter 20, is required for a prospecting permit. However, if said permit is to be converted to a surface mining permit, the acreage disturbed by prospecting shall be included as a part of the total area to be assessed the special reclamation fee, as set forth in Section 17, Article 6, Chapter 20 of the Code of West Virginia.

3.04. Renewal of Permit - A prospecting permit shall be valid for one year from its date of issue. If the operator is in compliance with provisions of Article 6, Chapter 20 of the Code, and if a verified application accompanied by the required information and bond is submitted, or renewed, the director shall renew the permit from year to year. If additional acreage is to be disturbed, a separate prospecting permit shall be required.

3.05. Governing Regulations - Prospecting and reclamation procedures shall be governed by the following regulations of the commission:

- a. Sec. 4 - Haulageways;
- b. Sec. 5 - Method of Operation - Backfilling and Regrading;
- c. Sec. 6 - Revegetation and Standards for Evaluating Vegetative Cover.

3.06. Removal of Minerals - Minerals may be removed during prospecting operations for testing purposes only, and shall be limited to a maximum of two hundred, fifty (250) tons for each permit area. Request for permission to remove greater amounts than two hundred, fifty (250) tons of minerals shall be submitted to the director and may be approved at his discretion.

3.07. Postponement of Reclamation - In the event the holder of a prospecting permit desires to surface mine the area covered by the prospecting permit, and has fulfilled all the remaining requirements of a surface mining permit, the director may permit the postponement of reclamation of the relevant acreage and allow its incorporation into the complete reclamation plan submitted with the application.

3.08. Bond Release - The bonds accompanying a prospecting permit shall be released in the same manner as surface mining permit bonds.

Section 4. Haulageways

4.01. Location - The location of the proposed haulageway must be identified on the site by visible markings at the time the plan of reclamation is approved and prior to commencement of construction.

4.02. Grading - The grading of a haulageway shall be such that:

- a. No sustained grade should exceed 10%;
- b. The maximum pitch grade shall not exceed 25% for 300 feet;
- c. There should not be more than 300 feet of maximum pitch grade for each 1,000 feet of road constructed.

4.03. Curves - The grade on switchback curves must be reduced to less than the approach grade and should not be greater than 10%.

4.04. Cut Slopes - Cut slopes should not be more than 20° (22 degrees) in soils.

4.05. Ditches - A ditch shall be provided on both sides of a through-cut and on the inside shoulder of a cut-fill section, with ditch relief cross-drains being spaced according to grade. Water shall be intercepted before reaching a switchback or large fill and led off. Water on a fill or switchback shall be released below the fill, not over it.

4.06. Culverts - Ditch relief culverts should be installed according to the following table of spacings in terms of per cent of haulageway grade in order to minimize siltation. Ample fill shall be placed over culverts.

ROAD GRADE IN PER CENT

SPACING OF CULVERTS IN FEET

2-5	300-800
6-10	200-300
11-15	100-200
16-20	100

4.07. Culvert Openings - Culvert openings installed on haulage-ways should not be less than one hundred (100) square inches in area, but, in any event, all culvert openings shall be adequate to carry normal run off and shall receive necessary maintenance to function properly at all times.

4.08. Streams - Minor alterations and relocations of streams as shown on the reclamation plan will be permitted if the stream will not be blocked and if no damage is done to the stream or to adjoining land-owners.

4.09. Stream Crossings - If drainage structures are required in order to cross a stream channel, they shall be such so as not to affect the normal flow of the stream. Consideration will be given to the time of year the stream is crossed and the length of time the stream channel is used, but in no event, and under no condition will the normal flow of the stream be affected or the sediment load of the stream be materially increased.

4.10. Removal of Drainage Structures - No bridges, culverts, stream crossings, etc., necessary to provide access to the operation, may be removed until the reclamation is completed.

4.11. Seeding of Slopes - All fill and cut slopes shall be seeded during the first planting and/or seeding season after the construction of a haulageway in accordance with Section 6 of these regulations, unless waived by the director. Consideration will be given to short duration haulageways.

4.12. Haulageway Surfacing - Haulageways shall not be surfaced with any acid-producing material which will produce pollution, or with any material which will produce a high concentration of suspended solids into surface drainage, the surface being that part of the haulageway exposed to the elements of wind, rain, and sun.

4.13. Modifications - Should the director determine modifications are necessary because of topography or particular watershed situations, the director may, at his discretion, and with the approval of the commission, make such modifications.

4.14. Tolerance - All grades referred to in this section shall be subject to a tolerance of two per cent (2%) grade. All linear measurements referred to in this section shall be subject to a tolerance of ten per cent (10%) of measurement. All angles referred to in this section shall be measured from the horizontal and shall be subject to a tolerance of five per cent (5%).

4.15. Abandonment of Haulageway - In the event that the landowner desires permanent use of a haulageway, a roadway form as prescribed by the Department shall be completed and signed by the landowner, who shall thereby allow access for the purpose of reclamation of disturbed lands.

Section 5. Method of Operation - Backfilling, Regrading, and Sealing of Acid Water Breakthrough.

5A. Contour Surface Mining

5A.01. Operator Responsibility - In planning and executing surface mining operations, the operator shall have, at all times, proper regard for all backfilling and regrading requirements imposed by Article 6, Chapter 20, and all rules and regulations adopted pursuant thereto. All reasonable measures shall be required so as not unnecessarily to lose or make unavailable overburden material for the backfilling or regrading required.

5A.02. Bench Width - The bench width of the first cut shall not exceed those widths shown in Table One of this regulation and illustration #1. The operator shall show on the map, filed with the application for a permit, the per cent of slope of original surface within each five hundred (500) foot interval along the contour of the operation, the first measurement to be taken at the starting point of the operation. Measurement shall be made from the estimated crop line or proposed coal seam down slope to the estimated toe of the outer spoil. All reasonable measures shall be taken so as not to overload the fill bench. Except as to haulageways and auger mining operations, trees and brush shall be removed from the upper one-third portion of the fill section, and no trees or brush removed from the cut section shall be placed therein or thereon.

TABLE I

PER CENT OF SLOPE OF ORIGINAL SURFACE	MAX. BENCH WIDTH- FEET
27% (15°)	250
36% (20°)	150
46% (25°)	120
58% (30°)	100
65% (33°)	60

Above 65% (33°) No fill material beyond cut section.

5A.03. Fill Bench - No fill bench shall be produced on slopes of more than sixty-five per cent (65%), except for the construction of haulageways, and such haulageways shall not exceed forty five (45) feet in width.

5A.04. Final Bench Slope - The table portion of the restored area shall be a bench with a slope toward the reduced highwall that will direct the surface water toward the highwall in such a manner so as to prevent water from flowing over the outer slope of the disturbed area as indicated in illustration #2.

5A.05. Georgia Type V-Ditch - In all areas where lands will be used in production of annual crops or more intensive use is made, a Georgia Type V-Ditch backfill shall be required. The distance of the ditch from the highwall shall be directly proportional to the height of the highwall. The outside spoil shall be graded in a finished unsettled slope of not more than ten per cent (10%) in the direction of the highwall.

5A.06. Natural Drainways - Natural drainways in the area of land disturbed by the operation shall be kept free from overburden. Such drainways shall be identified on the map submitted with the application. If, in the operation, it is necessary to cross or fill such a drainway, proper drainage structures shall be provided to allow free-flowing drainage and minimize erosion. If necessary, as determined by the director, water retarding structures shall be placed in the drainways.

5A.07. Lateral Drainage Ditches - Lateral drainage ditches connecting to natural or constructed waterways shall be constructed to control water run off and erosion whenever directed by the director, but there shall be no depressions to accumulate water. The depth and width of the diversion ditch may vary depending on the length and degree of slope.

5A.08. Treatment of Toxic Material - All acid-producing and/or toxic material which are part of or directly associated with the coal seam or seams being mined, shall be localized and separated from the remaining overburden or spoil, and shall be placed back into the pit area before final regrading is begun.

5A.09. Covering the Pit - A minimum of two (2) feet of material suitable for vegetative growth shall be placed over the pit area and over any toxic or acid-producing material previously placed in the pit. In the event there is sufficient material available, additional material suitable for vegetative growth shall be placed over the pit area over and above the minimum two (2) feet required.

5A.10. Highwall Reduction - If highwall is composed of materials of sufficient hardness so as to ordinarily require blasting to displace, where there is insufficient soil available to provide a suitable vegetative cover on the reduced highwall, or where the reduction of the highwall will result in excessive damage to undisturbed vegetated lands above the highwall, such highwall shall be backfilled with soil available from the operation. Where operations mining more than one coal seam are being carried out, modifications may be approved by the director, following submission of adjusted plans. However, in no instance shall the backfilling be less than four (4) feet above the seam of coal being worked, and subject to the discretion of the director, no greater than sixty per cent (60%) from the horizontal.

5A.11. Highwall Access - Suitable access to the lands above the highwall for a four-wheel-drive vehicle shall be provided, number and location of which shall be subject to the approval of the director as proposed in the complete reclamation plan.

5A.12. Grading Spoil Toe - Spoil impinging onto undisturbed agricultural lands shall be graded so as to blend into the adjoining undisturbed agricultural lands. All rocks and boulders rolling onto agricultural land shall be removed to some approved location or buried.

5A.13. Bench Surface - The surface of the graded bench shall be free of debris and loose rocks so as to permit the use of farm implements and machinery.

5B. Area Surface Mining

5B.01. Drainage - Diversion ditches as will control the water run off on long uninterrupted slopes shall be constructed in the final grading whenever required by the director. All drainage shall conform to the requirements for lateral drainage ditches and natural drainways under subsection 5A.06 and 5A.07 of this section, and shall remove surface water run off to a safe natural outlet.

5B.02. Treatment of Toxic Material - All acid-producing and/or toxic material which are part of or directly associated with the coal seam or seams being mined shall be localized and separated from the remaining overburden or spoil, and shall be placed back into the pit area before final regrading is begun.

5B.03. Covering the Pit - A minimum of four (4) feet of material suitable for vegetative growth shall be placed over the pit area and over any toxic or acid-producing material previously placed in the pit.

5B.04. Final Surface Deviations - Final surface of the restored area may deviate from the original contour of the land if such deviation is proposed in the original or amended reclamation plan and approved by the director.

5B.05. Grading Spoil Toe - Spoil impinging onto undisturbed agricultural lands shall be graded so as to blend into the adjoining undisturbed agricultural lands. All rocks and boulders rolling onto agricultural land shall be removed to some approved location or buried.

5B.06. Debris and Rocks - The final surface of the graded disturbed area shall be free of debris and loose rocks so as to permit the use of farm implements and machinery.

5C. Requirements for Special Land Use Purposes

5C.01. Alternative Plans - Alternative plans for restoration of the disturbed area may be submitted to the director. If such restoration will be consistent with the purpose of Article 6, Chapter 20 of the Code of West Virginia, and if such plans are approved by the director and complied with within such time limits as may be determined by him as being reasonable for carrying out such plans, the backfilling and grading requirements heretofore contained may be modified.

5C.02. Water Impoundments - The following conditions shall be necessary for approval of such plans relative to water impoundments:

- a. Adequate sources of water shall be available to maintain the water level of the impoundment. Such sources of water supply for impoundments may be from springs, drainage areas of sufficient size, ground water percolation, a flowing stream or any combination of these sources.
- b. Undesirable seepage into and away from the impoundment shall be prevented
- c. Adequate spillways or other safety measures necessary to control overflow are provided.

- d. Adequate access such as roads or ramps shall be left or provided to the water impoundment.
- e. Consent of the landowner for such impoundment has been obtained and submitted on the specified form.
- f. Conformity with the regulations of the State Public Service Commission.

5C.03. Sanitary Landfills - Alternative plans for sanitary landfills shall be accompanied by the written approval of the State Department of Health.

5D. Keeping Operation Current

5D.01. Twelve-Month Limitation - Reclamation of the area of land disturbed by surface mining operations or prospecting shall be commenced in accordance with the reclamation plan previously approved by the director and shall be completed within twelve (12) months after the permit has expired.

5D.02. Contour Surface Mining - Grading, backfilling and water management practices as approved in the plans shall be kept current as follows:

- a. Should the operation include only stripping (no augering or highwall mining), the grading and backfilling shall follow the mineral removal by a period not to exceed sixty (60) days;
- b. Should the operation include stripping and augering, the augering shall follow the stripping by a period not to exceed ninety (90) days, and the grading and backfilling shall follow the augering by not more than thirty (30) days;

- c. Should the operation include stripping and highwall mining, the highwall mining shall follow the stripping within ninety (90) days, or a reasonable time as prescribed by the director. Grading and backfilling shall follow the highwall mining by not more than forty-five (45) days;
- d. Should the operation include only augering or highwall mining, the grading and backfilling shall follow the augering or highwall mining by a period not to exceed thirty (30) days;
- e. Modification of these requirements may be made by the director.

5D.03. Area Surface Mining - The grading and backfilling shall not be more than two spoil ridges behind the pit being worked, the spoil from this pit being considered the first ridge. All backfilling and grading shall be completed within ninety (90) days after completion of an operation or a prolonged suspension of work in the area. Modifications of these requirements may be made by the director in connection with the backfilling of the final pit.

5D.04. Weather Conditions - Should weather conditions make grading impracticable, the period of time required to be current may be reasonably extended.

5D.05. Removal of Equipment - All backfilling and grading shall be completed before equipment necessary for such backfilling and grading is moved from the operation, except under circumstances which, in the judgment of the director, would work an unreasonable hardship

on the operator. Such deviations shall be subject to approval, in writing, from the director.

5E. Sealing and Treatment of Acid Water Breakthrough

5E.01. Water Analysis - Any breakthrough of water caused by the operator during the course of his operation shall be sampled immediately and analyzed for pH, total acidity and total iron content. Such analysis shall be made by a competent water analyst or chemist. The original and at least one copy of such analysis shall be retained by the operator, and two copies submitted to the director.

5E.02. Construction of Seals - Should said analysis indicate the water to be acid with a pH of less than 5.5, or is acid and/or contains more than 10 mg/l of iron, seals shall be immediately constructed. These seals shall either:

- a. prevent any air from entering the mine by way of the breakthrough; or
- b. prevent any air from entering the breakthrough while allowing the water to flow from the breakthrough; or
- c. seal the breakthrough of acid water so that it cannot flow.

Such seals shall be constructed of stone, brick, block, earth or similar impervious materials which are acid resistant. Any cement or concrete employed in the construction of these seals shall also be of an acid resistant, impervious type.

5E.03. Approval of Plans - The director or his designated representative shall approve all plans and/or specifications for seals prior to their installation or construction. Drawings illustrating various techniques currently available will be provided upon request to the Reclamation Division.

5E.04. Water Treatment - A breakthrough of acid water, which, even after the construction of the seals, is still acid and of such a nature so as to statutorily pollute any stream into which it flows shall be subject to the requirements of the Water Pollution Control Act, Code of West Virginia, Chapter 20, Article 5A.

5E.05. Alternate Methods - Alternate methods of sealing and/or treating acid water breakthrough may be employed as they are developed. The operator must, however, receive the written consent of the director prior to the employment of any of these new methods.

5E.06. Modifications - Should the director determine modifications are necessary because of topography or particular watershed situations, the director may, at his discretion, and with the approval of the commission, make such modifications.

Section 6. Revegetation and Standards for Evaluating Vegetative Cover.

6A. Scope

6A.01. Objective in Revegetation - The objective in revegetation is to stabilize the area as quickly as possible after it has been disturbed in order to achieve permanent and protective vegetative cover. Plants that will give a quick, permanent, protective cover and enrich the soil shall be given priority. All plants shall be considered both as a tool in obtaining stabilization and as an end result, in terms of forest products, wildlife habitat, and agricultural benefits.

6B. Seeding and Planting

6B.01. Seasonal Feasibility - Appropriate vegetation shall be planted, seeded, or hydro-seeded as soon after grading approval as soil tests indicate soil suitability, provided that planting, seeding, or hydro-seeding shall be performed in the proper season in accordance with accepted agricultural and reforestation practices.

6B.02. Spoil Characteristics - Surface Mining of minerals and removal of overburden results in spoil which varies greatly in acidity and stoniness. These two characteristics, together with steepness of slope, shall be used in determining classification for the purpose of establishing vegetation.

6B.03. Soil Acidity Tests - Tests for soil acidity, expressed as pH shall be made after final grading and before seeding or planting. As a guide, until experience is achieved, a minimum of ten (10) random samples shall be taken per acre. Soil tests may be made with accepted field indicators.

6B.04 Acidity Relating to Species - Revegetation methods and species selection shall be based on the following guidelines:

- a. Agricultural use should only be attempted on spoil with a pH of 5.5 or above;
- b. Legumes and perennial grasses should not be seeded where pH is below 4.5;
- c. Trees or shrubs planted in spoil down to pH 4.0 will make acceptable growth; however, between pH 3.5 and 4.0 only selected acid-tolerant trees or shrubs will survive;
- d. No vegetation can be expected to survive below pH 3.5.

6B.05. Planting of Seedlings - Seedlings should be planted on all spoil slopes that are reasonably accessible, as the expectation of survival is relatively higher than for direct seeding, which should be resorted to only in areas of limited accessibility.

6B.06. Development of Planting Plan - A planting plan shall be prepared and submitted to the director for his approval after the grading and backfilling of the operation have been approved. This plan shall be based on the foregoing conditions, using Table One of these regulations to determine the capability class or classes. Some flexibility is intended based on the planner's judgment of the observable features, but the classification shall be made and recorded, based on the physical and chemical features of the spoil. Table One is a modification of the Land Use Capability Classification of the U. S. Department of Agriculture, using Land Classes VI, VII, VIII.

6C. Plant Material Selection and Treatment

6C.01. Specifications - The following specifications should govern the selection and establishment of seeds and plants used in the revegetation of surface mine spoil and based upon the capability classes computed from Table One for such spoil:

a. Class VI s 8 - on favorable spoil material, prepared

for perennial cover crop use, including Group 1 spoil, non-stony and with pH 5.5 or higher, one of the following mixtures should be used:

- (1) Seed mixtures #1, 2, or 3, from Table Two of this regulation, should be applied where annual maintenance treatment is assured. Mixture #4 should be applied where the graded portion of spoil is to be used as a firebreak or occasionally as a haulageway.
- (2) Establishment of grass, legume, or perennial grass cover crop should require the following treatment:
 - (i) Inoculation of legume seed with proper strain;
 - (ii) Protection of seeded spoil area from grazing by livestock;
 - (iii) Application of lime to pH 6.0 for mixture #4, to pH 6.5 to 7.0 for all other mixtures;
 - (iv) Application of fertilizer;
 - (v) Preparation of seed bed by harrowing, discing or other approved methods;
 - (vi) Completion of fall seeding for legumes and forages shall be completed by September first and all other grasses by September thirtieth.

(3) Maintenance of cover crop should be carried out by the operator or his assignee through two growing seasons, or until the cover crop is adjudged by the director to be satisfactorily established and may require the following treatment:

- (i) Maintain pH 6.5 - 7.0 for Mixture 1;
- (ii) Maintain pH 6.0 - 6.5 for Mixtures 2, 3, 5, and 6;
- (iii) Maintain pH 5.5 - 6.0 for Mixture 4;
- (iv) Topdress annually with 350 lbs. per acre 0-20-20 for Mixtures 1, 2 and 3;
- (v) Topdress every two years with 400 lbs. per acre 5-10-10 for Mixture 4;
- (vi) Topdress every two years with 400 lbs. per acre 0-20-20 for Mixture 5.

b. Class VI s 8 - on favorable spoil material prepared for woodland and wildlife use, any one mixture from Table Three of this regulation, along with proportions and treatment prescribed for it, should be selected for use in the direct seeding of herbaceous species and planting of trees or seedlings.

- (1) Establishment of plant growth for woodland cover should require:

- (i) Spring planting of seedlings not later than May first, and preferably before April fifteenth.
 - (ii) Spacing of shrubs and all trees in a pattern six feet by seven feet apart or 1,000 trees per acre.
- (2) Establishment of crown vetch-ryegrass or Serecia-tall Fescue mixtures for wildlife cover may be done in accordance with Class VI s 8 under 6C.01. a. (2) of this regulation.
- c. Class VII s 3 - on moderately favorable spoil material, prepared for woodland and wildlife use, Group 1, with pH 5.5 and above, graded but stony, on moderate to steep slopes, and Group 2 with pH 4.0 - 5.5, graded and moderate to steep slopes, non-stony and stony, one of the mixtures with specified proportion and treatment from Table Four of this regulation should be used.
- (1) Overseeding on moderate to steep slopes on tree planting sites shall be carried out on spoil in Group 1 and Group 2, Class VII s 3, in order to prevent siltation, establish ground cover and minimize erosion, using one of the following recommended seed mixtures:

- (i) Seresia Lespedeza 15 lbs. per acre
- (ii) Ky. 31 Fescue 15 lbs. per acre
- (iii) Sweet Clover 6 lbs. per acre
Ky. 31 Fescue 12 lbs. per acre
- (iv) Sweet Clover 6 lbs. per acre
Perennial Ryegrass 12 lbs. per acre
- (v) Crown Vetch 10 lbs. per acre
- (vi) Perennial Ryegrass 12 lbs. per acre

(2) Establishment of plant growth shall require inoculation of legume seed with proper strain, and shall be protected from grazing^u by livestock.

d. Class VIII s 3 - on favorable spoil material prepared for woodland and wildlife use, which includes all extremely steep and/or stony spoil in Groups 1 and 2, and all of Group 3, one of the mixtures with specified proportions and treatment from Table Five of this regulation should be used.

- (1) Establishment of plant growth should require:
- (i) Broadcasting Mixture 1 and 3 before May first and frost seeding of Mixture 2 by early March.
 - (ii) Black Locust seed must be scarified and be seventy per cent (70%) or more viable. All legumes must be inoculated and must be protected from grazing by livestock.
 - (iii) Spoil in Group 3 shall be planted after tested acidity indicates a pH of 4.0 or better.

(iv) Mixture No. 1 of Table Five should be used for extremely stony areas when tested acidity indicates a pH of 4.0 or better.

e. Other species of trees, shrubs, grasses, legumes or vines may be approved by the director.

6D. Standards for Evaluating Vegetative Cover

6D.01. Planting Report - A planting report shall be prepared and filed with the director on the prescribed form for his approval when the planting of a permit area is completed. All planting reports shall be certified by the operator or by the party with which the operator contracted for planting. In the event the director authorizes an operator to defer planting to provide vegetative cover for an area of land, he shall set the time limit within which such planting shall be carried out.

6D.02. Time for Inspection - Inspection and evaluation of vegetative cover shall be made as soon as it is possible to determine if a satisfactory stand has been established. In no instance shall the official vegetative cover check be carried out until the planting concerned has survived two growing seasons.

6D.03. Function of Annual Grasses - On areas where excessive erosion is likely to occur, rapid establishment of vegetative cover is highly recommended. Seeding of annuals on such areas shall be considered as a means for achieving temporary vegetative cover only and not acceptable in the achievement of permanent cover.

6D.04. Standards for Perennials - Standards for legumes and perennial grasses shall require at least an eighty per cent (80%) ground cover. Bare areas shall not exceed one-fourth (1/4) acre (100' x 100') in size nor total more than twenty per cent (20%) of the area seeded unless such areas are too stony to support vegetation.

6D.05. Standards for Woody Plants - Standards for woody plants shall require the survival of a minimum of six hundred (600) trees (including volunteer tree species) and/or planted shrubs per acre. Distribution of stems shall be generally uniform, with no areas larger than one-fourth (1/4) acre with substandard stocking, that is, with spacing averaging more than seventy (70) square feet per stem. Exception may be made for occasional patches of substandard stocking greater in size than one-fourth (1/4) acre when caused by acidity below pH 4.0 or by massive earth movements or by areas too stony to support vegetation.

6D.06. Standards for Woody Plants with Perennials - Standards for woody plants with legumes and perennial grasses overseeded shall require a fifty per cent (50%) establishment of ground cover of legumes and perennial grasses, or a sixty per cent (60%) survival of woody plants, or a combination of legumes, perennial grasses or woody plants, providing a satisfactory vegetative cover as determined by the director. Bare areas shall not exceed one-fourth (1/4) acre (100' x 100') in size nor total more than thirty per cent (30%) of the area seeded or planted unless such areas are too stony to support vegetation.

6D.07. Revegetation Evaluation Report - A revegetation evaluative report shall be prepared and filed during the second complete growing season. Following inspection to confirm that the above evaluative standards, where applicable, have been complied with, the director shall approve the report and the remainder of bonds shall be released.

6E. Modifications - Should the director determine modifications are necessary because of topography or particular watershed situations, the director may, at his discretion, and with the approval of the commission, make such modifications.

Section 6

TABLE ONE

STRIP MINE SPOIL CLASSIFICATION			
Type of Spoil	Gently Sloping	Moderate to Steep Slope	Extremely Steep Slope
Group 1 - pH 5.5 and above			
Non-stony	VI s 3	VII s 3	VIII s 3
Stony	VII s 3	VII s 3	VIII s 3
Extremely Stony	VIII s 3	VIII s 3	VIII s 3
Group 2 - pH 4.0 - 5.5			
Non-stony	VII s 3	VII s 3	VIII s 3
Stony	VII s 3	VII s 3	VIII s 3
Extremely Stony	VIII s 3	VIII s 3	VIII s 3
Group 3 - pH below 4.0	VIII s 3	VIII s 3	VIII s 3

TABLE TWO

*APPROVED SEED MIXTURES			
1. Alfalfa	20 lbs.	4. Serocia (hulled)	20 lbs.
Orchardgrass	10 lbs.	Red top	3 lbs.
		Tall fescue	15 lbs.
2. Birdsfoot trefoil	10 lbs.	5. Crown vetch	15 lbs.
Tall fescue	15 lbs.	Tall fescue	15 lbs.
3. Birdsfoot trefoil	10 lbs.		
Orchardgrass	10 lbs.		
Fertilization rate to be determined at time of seeding.			

TABLE THREE

APPROVED WOODLAND PLANT MIXTURES

1. Black locust (below 3500') White pine <u>1/</u> <u>2/</u>	Plant in bands 6 or more rows in width. Black locust planting not to exceed 50% of the total area.
2. Black locust (below 3500') Scotch pine	Plant in bands 6 or more rows in width. Black locust planting not to exceed 50% of the total area.
3. Scotch pine White pine <u>1/</u> <u>2/</u> Red pine (above 2000') Virginia pine (below 2500')	Use mixtures of two or more species if available. Plant in bands of 3 or more rows.
4. Black locust (below 3500') Tulip poplar (below 3500') <u>1/</u> Sycamore (below 2500') <u>1/</u> Red Oak <u>1/</u> European black alder	Use up to one-half locust with one or more hardwood species. Plant in bands of 3 to 6 rows of each species.
5. Autumn olive and adapted pines or hardwoods	Where owner's interest is wild-life improvement, plant in bands of 3 to 6 rows or more, preferably with pines. Autumn olive planting not to exceed 25% of the total area.
6. European black alder Sycamore (below 2500') <u>1/</u> Indigo bush (<i>Amorpha fruticosa</i>) Autumn olive	Use these plants where protection from grazing is impractical or protection will not be maintained. Use indigo bush and autumn olive where wildlife development is desired. Use mixtures of alder and sycamore when available. Use 3 to 6 row bands where 2 or more species are planted.
7. Crown vetch - 15 lbs. Domestic ryegrass - 20 lbs.	Use as herbaceous ground cover where desired. Lime to pH 6.0 and apply 600 lbs. of 5-10-10 on prepared seed bed.
8. Sericea Lespedeza - 20 lbs.	Use as a herbaceous ground cover where desired. Lime to pH 6.0 and apply 600 lbs. of 5-10-10 on prepared seed bed.

1/ Growth may be slow on compacted heavy textured spoil.

2/ Plant only in ribes-free (currant-geoseberry) or ribes controlled areas.

TABLE FOUR

APPROVED WOODLAND PLANT MIXTURES

- | | |
|--|---|
| 1. Black locust | Avoid pure stands where possible. Use only on highly erodible outer slopes and other critical areas. |
| 2. Black locust (below 3500')
White pine <u>1/</u> <u>2/</u> | Use equal amounts on light porous or loose shaly soils only. Plant in bands 3 to 6 rows in width. Not well suited to highly erodible spoil. |
| 3. Scotch pine
White pine <u>1/</u> <u>2/</u>
Red pine (above 2000')
Virginia pine (below 2500') | Use mixtures of two or more species if available. May be used on moderate slopes, less erodible slopes and graded areas. Plant in bands of 3 or more rows or blocks. |
| 4. Black locust (below 3500')
Tulip poplar (below 2500')
Sycamore (below 2500') <u>1/</u>
Red oak <u>1/</u>
European black alder | Use up to one-half locust with one or more hardwood species. Plant in bands of 3 to 6 rows each species. |
| 5. Autumn olive and adapted pines or hardwoods | Where owner's interest is in wildlife improvement, plant in bands of 3 to 6 rows with pines. |
| 6. European black alder
Sycamore (below 2500') <u>1/</u>
Indigo bush (Amorpha Fruiticosa)
Autumn olive | Use where protection from grazing is impractical or protection will not be maintained. Use Indigo bush and autumn olive where wildlife development is desired. Use mixtures of sycamore and alder on less acid spoil. Use 3 to 6 row bands where two or more species are planted. |
| 7. European black alder | Use European alder alone on spoil testing around pH 4.0. |
| 8. Crown vetch - 15 lbs.
Domestic ryegrass - 20 lbs. | Use on Group 1 spoil only where quick stabilization is needed. Frost seed crown vetch in early March, alone on outer slopes without fertilizer. Elsewhere lime to pH 6.0 and apply 600 lbs. of 10-10-10 to seed bed for Mixture 8. |

TABLE FOUR (Cont.)

APPROVED WOODLAND PLANT MIXTURES

- 1/ Growth may be slow on compacted heavy textured soils. Use 3' to 6' row bands where two or more species are planted.
 - 2/ Plant only in ribes-free (currant-gooseberry) or ribes controlled areas.
-

TABLE FIVE

APPROVED WOODLAND PLANT MIXTURES

- | | | | |
|----|--|---------|---|
| 1. | Black locust (scarified) | 6 lbs. | Use black locust with serocia or one of the grasses. |
| | Serocia | 20 lbs. | |
| | Tall fescue | 15 lbs. | |
| | Tall oatgrass | 15 lbs. | |
| 2. | Crown vetch | 15 lbs. | Use only on Group 1 which contains sufficient soil material to support germination. Use where herbaceous rather than woody vegetation is desired. |
| 3. | Black locust with over-seeding mixture listed in VII s 3 | | |
-

Section 7. Bond and Permit Requirements

7.01. Permit Renewals - Permit renewals shall not allow for extension of new acreage not covered under the original permit. Additional acreage must be covered by a new permit and reclamation plan, except in circumstances where a portion of the undisturbed area under permit may be removed from the permit and comparable acreage included, so long as the new area is contiguous to the original permit area, and so long as the total acreage after adjustment does not exceed the acreage of the original permit.

7.02. Scale for Reclamation Plan Map - The scale required for maps prepared for submission with an application for a surface mining permit shall be as follows:

- a. Scale on a U. S. geological survey topographic 15-minute quadrangle shall be enlarged to approximately 1,320 feet to the inch;
- b. Scale on a U. S. geological survey topographic 7.5-minute quadrangle shall be enlarged to 500 feet to the inch;
- c. Scale on aerial photograph shall be 660 feet to the inch.

7.03. Scale for Progress and Final Maps - The scale required for progress maps and final maps shall be not less than 400 feet to the inch nor more than 660 feet to the inch, 500 feet to the inch being preferred. Written permission from the director shall be required prior to the submission of maps drawn to any scale other than set forth by regulation.

7.04 Map Size - All maps and plans shall be submitted on standard print paper, 24 inches by 36 inches. If supplementary maps or plans are attached, match lines shall be used.

7.05. Color Code - A color code shall be used in preparing the map to indicate critical features of the permit area as follows:

- a. Red shall indicate coal to be removed;
- b. Yellow shall indicate the total disturbed area, including access roads and haulageways;
- c. Blue shall indicate water and drainage;
- d. Brown shall indicate landfill and other special uses;
- e. Green shall indicate regrading.

7.06. Approval of Land Surveyor - Any land surveyor preparing and certifying any maps or plans required by the provisions of Article 6, Chapter 20 of the Code or by the regulations, shall first submit to the director a written resume of his past experience and training. On the basis of such resume, he shall be adjudged qualified or not as the case may be, and so notified by the director in writing within thirty (30) days.

7.07. Bond Release on Planting Contract - In the event the operator contracts with a private contractor to carry out the planting of an approved regraded area, the private contractor shall first submit an amount of bond comparable to the bond being held for that area in conformity with Section 16, Article 6, Chapter 20 of the Code before the director may release the operator's bond.

7.08. Permit or End of Strip Marker - A two-inch (2) pipe shall be driven into the earth with a minimum of three (3) feet exposed to permanently mark the beginning and ending points of the area under permit. It shall be identified by painting the exposed portion of the pipe red. Any suitable substitute may be approved.

Section 8. Other Mining Operations on Surface Mined Areas

8.01. Director's Approval - Reclamation plans for other mining operations to be carried out on a surface mined area on which the regrading, backfilling or revegetation have not been completed, shall require prior approval by the director.

8.02. Application Requirements - Application for approval of such reclamation plans shall be accompanied by the following:

- a. A map of the surface mining permit area, showing the portion of land to be disturbed by the other mining operations, including haulageways;
- b. A performance bond or equivalent as provided in Section 16, Article 6, Chapter 20 of the Code, the requirement for the first acre or fraction thereof of disturbed lands being five hundred dollars (\$500) and for each additional acre or fraction thereof of disturbed land an additional five hundred dollars (\$500);
- c. Written permission for other mining operations from the owner of the surface rights and/or the owner of the mineral rights or the controlling party of the same.

8.03. Applicability of Code and Regulations - All requirements for backfilling, regrading, revegetation, and bond release procedures as set forth in Article 6, Chapter 20 of the Code and in Sections 3, 4, 5, 6 and 7 of the regulations of the commission shall apply with equal force to the reclamation of disturbed areas from other mining operations.

SURFACE MINING RECLAMATION
FILING OF ADMINISTRATIVE REGULATIONS

References are to sections in W. Va. Adm. Reg. 20-6, Ser. I

Acid Water Breakthrough, 5E.01, 5E.02, 5E.03, 5E.04, 5E.05

Alternative Plans, 5C.01, 5C.02, 5C.03

Authority, 1.02

Bench, 5A.02, 5A.03, 5A.04, 5A.13

Bond, 3.01, 3.08, 7.07

Certification, 1.05

Definitions, 2.01 - 2.39

Drainage, 4.05, 4.10, 5A.06, 5A.07, 5B.01

Effective Date, 1.03

Equipment, 5D.05

Filing Date, 1.04

Haulageway, Abandonment, 4.15

Culverts, 4.06, 4.07

Curves, 4.03

Cut-slopes, 4.04

Grading, 4.02

Surfacing, 4.12

Tolerance, 4.14

Highwall, 5A.10, 5A.11

Maps and Plans, 7.02, 7.03, 7.04, 7.05

Approval, 7.06, 8.01, 8.02

Modifications, 4.13, 5E.06, 6E

Other Mining Operations, 8.03

Permit, 3.04, 7.01, 7.08

SURFACE MINING RECLAMATION
FILING OF ADMINISTRATIVE REGULATIONS

References are to sections in W. Va. Adm. Reg. 20-6, Ser. I

Plant Materials, 6C.01, 6D.01, 6D.02, Sec. 6, Tables 3, 4, 5
Planting, 6B.06, 6B.05, 6D.03

Standards, 6D.04, 6D.05, 6D.06, 6D.07

Prospecting, Governing Regulations, 3.05

Notification of Approval, 3.02

Postponement of Reclamation, 3.07

Removal of Minerals, 3.06

Reclamation Fee, 3.03

Regrading, Covering the Pit, 5A.09, 5B.03

Debris and Rocks, 5B.06

Final Surface Deviations, 5B.04

Georgia Type V-Ditch, 5A.05

Grading Spoil Toe, 5A.12, 5B.05

Keeping Operation Current, 5D.01, 5D.02, 5D.

Operator's Responsibility, 5A.01

Weather Conditions, 5D.04

Revegetation, Objective, 6A.01

Scope, 1.01

Seeding, 4.11, 6B.01, Sec. 6, Table 2

Soil Acidity, 6B.03, 6B.04

Spoil Characteristics, 6B.02

Classification, Sec. 6, Table I