

Title 38
Legislative Rules
Department of ENR 057

WEST VIRGINIA ADMINISTRATIVE REGULATIONS
Department of Natural Resources
Chapter 20-6B
Series VII-B 2B
1981e

Subject: Regulations for Mining and Reclamation of Minerals Other Than Coal

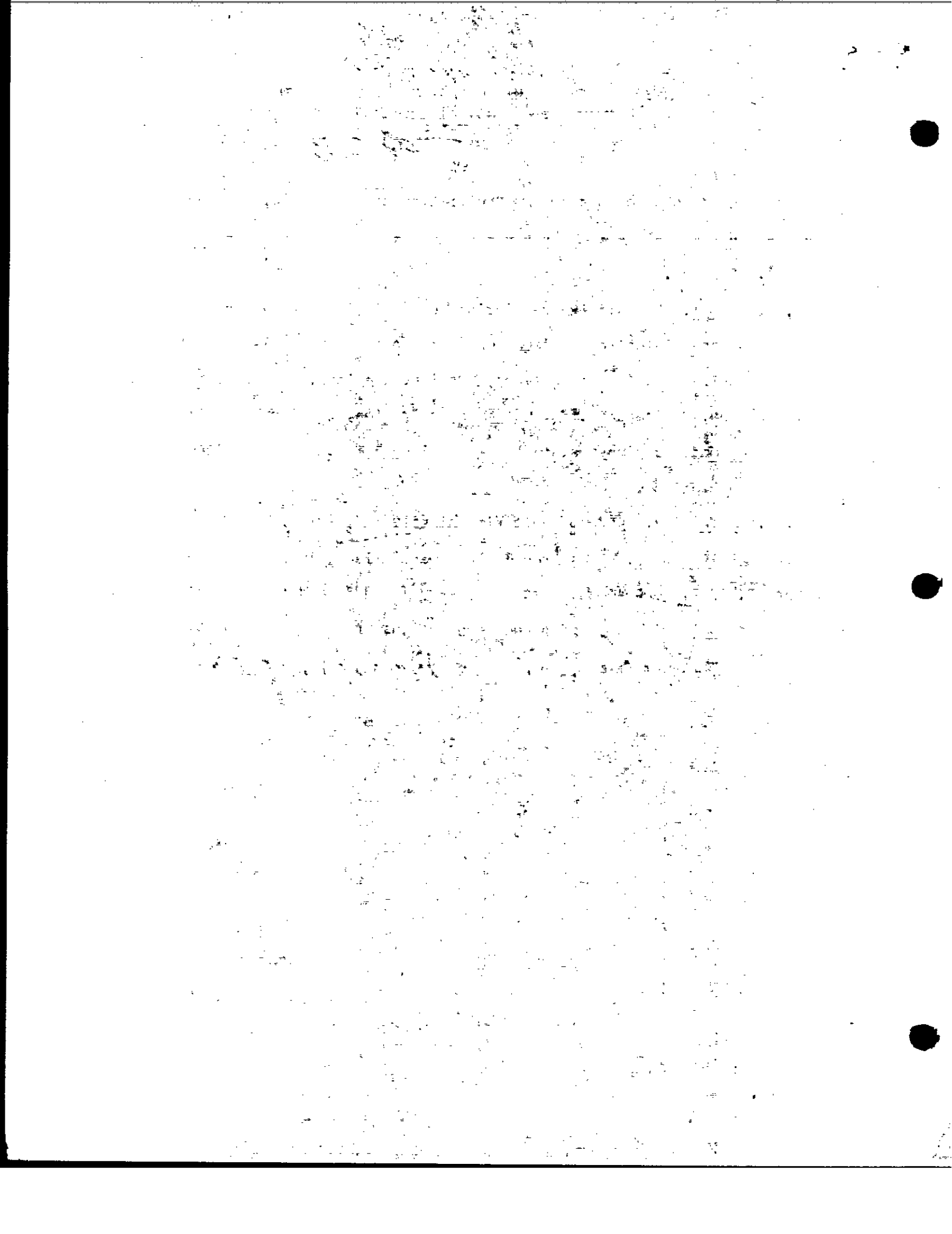
Section 1. General.

1.01. Scope. Legislative regulations establishing general and specific rules for surface mining and reclamation operations for minerals other than coal including requirements for definitions, permits, preplans, haulageways or access roads, blasting, drainage system, method of operation, grading, backfilling and revegetation, modifications, state and federal compliance and validity of regulations and exceptions.

1.02. Authority. Code of West Virginia §20-1-7, 20-6D.

1.03. Filing Date. These regulations were filed July 27, 1981, and refiled December 30, 1982, to become effective January 1, 1983, and shall remain in effect unless otherwise amended or new regulations are issued by the Director.

1.4 Effective Date - January 1, 1983



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, AS AMENDED:

2.01. Acidity shall mean the capacity of water to donate protons. The symbol pH referring to the 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 materials shall mean mineral compounds which will, when acted upon by water and air, cause acids to form.

2.03. Acid-producing overburden shall mean material that may cause spoil which upon chemical analysis, shows a pH of 3.5 or less.

2.04. Active surface mine operation shall mean an operation where land is being disturbed or mineral is being removed.

2.05. 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.

2.06. Backfill shall mean to place material back into an excavation and return the area to a predetermined slope.

2.07. Base of highwall shall mean the intersection of the vertical plane with the horizontal plane at any point in the overburden, spoil or mineral.

2.08. Bench shall mean the result of surface mining in areas where the average slope or the original ground has an inclination of more than thirty per cent (30%) from the horizontal, being: (a) the leveled surface of an excavated area measured horizontally at any point in the overburden, spoil, or mineral between the base of the highwall and outer point of original fill bench; or (b) a working base extending from the base of a highwall on which excavating equipment

2.09. 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.

2.10. Completion of mining shall mean an operation where no mineral has been removed or overburden removed for a period of two 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, generally a contour bench resulting.

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

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

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 or underground 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, Assistant Chiefs of the Division of Reclamation and all duly authorized supervisors, inspectors and inspectors in training.

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. Drainage plan or system shall mean the proposed method of collection, treatment, and discharge of all waters within the affected drainage area, as defined by the approved pre-plan.

2.19. Field indicator shall mean any approved apparatus or equipment used in the field to measure pH, iron, turbidity or such other parameters as may be required.

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

2.21. Georgia Type V-Ditch shall mean a ditch for the collection and removal 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 traversed by farm equipment.

2.22. Haulageway or access road shall mean any road constructed, improved, or maintained by the operator which ends at the pit or bench and which is located within the permit area. A bench may serve as a haulageway, but a haulageway cannot serve as a bench.

2.23. Highwall shall mean the vertical or near vertical wall consisting of the exposed strata after excavating operations.

2.24. Mineral shall mean a layer, vein, seam, bed or deposit; a stratigraphic part of the earth.

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

2.26. Monument shall mean a permanent marker consisting of metal or wood used to identify the permit 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' X 3' sign affixed to the top of the pipe with company name and permit number permanently affixed. Any suitable equivalent substitute may be approved.

2.27. Natural drainway shall mean any water course or channel which carries water to the tributaries and rivers of the watershed. The United States Geological Survey classification of perennial or intermittent streams shall be considered as natural drainways.

2.28. Operation shall mean the permit area indicated on the approved map submitted by the operator.

2.29. Outer spoil or outer slope shall mean the disturbed area extending from the outer point of the bench to the extreme lower limit of the disturbed land.

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

2.31. Pit shall mean that part of the surface mining operation from which the mineral is being actively removed.

2.32. Reclamation shall mean the process of converting disturbed land to a stable form for productive use.

2.33. Regrade or grade shall mean to change the contour of any surface by the use of leveling or grading equipment.

2.34. Sand shall mean individual rock or mineral fragments having a diameter less than 2.00 mm but greater than .02 mm.

2.35. 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.

2.36. 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%; extremely steep slope shall mean 45% and over.

2.37. Soil shall mean any earthen material excluding bedrock.

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

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

2.40. Stabilize shall mean to settle, or fix in place by mechanical or vegetative means, including the planting of trees, grasses, vines, shrubs, or legumes.

2.41. 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; tillable sites shall be classified as non-stony.

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

2.43. Surface water shall mean that water, from whatever source, which is flowing on the surface of the ground.

2.44. Suspension of permit shall mean an act of the director or the Reclamation Commission or an authorized agent of the director or Reclamation Commission with legal justification temporarily nullifying the validity of a permit insofar as the mining and removal of the mined minerals are concerned.

2.45. Water analyses shall mean those water analyses performed by or for the operator using the analytical procedures set forth in Standard Methods, Thirteenth Edition, or employing such other field testing methods which have been approved by the Division of Water Resources.

SECTION 3. HAULAGEWAYS.

3.01. Location - The location of the proposed haulageway shall be identified on the site by visible markings at the time the reclamation and mining plan is pre-inspected and prior to commencement of construction.

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

- a. No sustained grade shall exceed 10%;
- b. The maximum pitch shall not exceed 15% for 300 feet;
- c. There shall not be more than 300 feet of maximum pitch grade for each 1,000 feet of road constructed;
- d. The surface shall be insloped toward the ditch line at the minimum rate of 1/2 inch per foot of surface width or crowned at the minimum rate of 1/2 inch per foot of surface width as measured from the center line of the haulageway.

3.03. Curves - The grade on switchback curves shall be reduced to less than the approach grade and should not be greater than ten per cent (10%).

3.04. Cut Slopes - Cut slopes should not be more than 1:1 in soils or 1/4:1 in rock.

3.05. 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.

3.06. Culverts - Ditch relief culverts shall be installed according to the following provisions:

a. Road Grade in Per Cent	Spacing of Culverts in Feet
2 - 5	300 - 800
6 - 10	200 - 300
11 - 15	100 - 200

left out

- b. The culvert shall cross the haulageway at a 30 degree angle downgrade;
- c. The inlet end shall be protected by a headwall of suitable material and the outlet end shall be placed below the toe of the fill with an apron of suitable material provided for the outflow to spill on;
- d. The culvert shall be covered by compacted fill to a depth of one foot or half the culvert diameter, whichever is greater.

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

3.08. Natural Drainway - Minor alterations and relocations of natural drainways as shown on the reclamation plan will be permitted if the natural drainway will not be blocked and if no damage is done to the natural drainway or to adjoining landowners.

3.09. Stream Crossings -Drainage structures shall be required in order to cross a stream channel. They shall be such so as not to affect the flow of the stream. Consideration will be given to the time of year the stream is crossed and length of time the stream channel is used, but in no event, and under no condition will the flow of the stream be affected or the sediment load of the stream increased during construction and/or use.

3.10. Removal of Drainage Structures -No bridges, culverts, stream crossing, etc., necessary to provide access to the operation, may be removed until reclamation is completed and approved by the director. The same precautions as to water quality are to be taken during removal of drainage structures as those taken during construction and use.

3.11. Stabilization of Slopes -All fill and cut slopes shall be stabilized after the construction of a haulageway.

3.12. Haulageway Surfacing -Haulageways shall not be surfaced with any acid-producing or toxic material or with any material which will produce a concentration of suspended solids in surface drainage.

3.13. 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%).

3.14. Water Bars - Water bars of the ditch and earth berm or log type shall be installed according to the following table of spacings in terms of per cent of haulageway grade prior to the abandonment of a haulageway.

<u>Percent of Haulageway</u>	<u>Spacing of Water Bars in Feet</u>
2	250
5	135
10	80
15	60
20	45
Above 20	25

left out

3.15. Dust Control - Reasonable means shall be employed to prevent loss of haulageway surface material in the form of dust.

3.16. Abandonment of Haulageway - Upon abandonment of a haulageway, the haulageway shall be seeded and every effort made to prevent erosion by means of culverts, water bars or other devices.

SECTION 4. BLASTING.

4.01. Assessment - Any assessment as set forth in Section 11a, Article 6D, Chapter 20 of the Code of West Virginia, as amended, shall be paid within 10 days after receipt of said assessment notice.

4.02. Sign - A sign permanently affixed at or near the permanent monument shall describe "warning, blasting area." The sign shall be a minimum of 2' X 3' with legible letters to be erected at the time mining operations begin.

4.03. Written Notification - Prior to mining operations, written notification of blasting shall be given by certified mail to all residents, owners or other persons who are adjacent to any part of the proposed operation. The United States Post Office Department certified receipt of notification shall be maintained with the blasting log.

4.04. Blasting Time - Blasting shall be limited to the hours between sunrise and sunset. Blasting on Sunday is strictly prohibited.

4.05. Approaches to Area - All approaches to the blast area shall be guarded against unauthorized entry prior to and immediately after blast.

4.06. Blasting warning - When blasting is to be done within five hundred (500) feet of any occupied dwelling, the operator or his authorized representative shall notify all persons involved that a blast is to be detonated, stating the approximate time of same. A minimum of one hour notification must be given prior to detonation.

4.07. Blasting Prohibited - The director or his authorized agent may prohibit blasting in specific areas where it is deemed necessary for the general safety of the area.

SECTION 5. DRAINAGE SYSTEM.

5.01. Drainage Plan - There shall be submitted with the application for surface mining a drainage plan which will show the proposed method of drainage on and away from the area of land to be disturbed. Said plan shall indicate the directional flow of water, constructed drainways, natural waterways used for drainage, streams or tributaries receiving or to receive this discharge, location of sediment dams and other silt retarding structures, location of all water test sites, treatment and all other data as may be required.

5.02. Natural Drainways - Natural drainways in the area of land disturbed by surface mining operations shall be kept free of overburden except where over-burden placement has been approved. Such drainways shall be identified on the maps submitted with the application. Surface mining operations will be prohibited 50 feet on either side of a natural drainway. Overburden placement and haulageways across natural drainways will be constructed so as not to affect the flow of the stream, or materially increase the sediment load in the stream.

5A. Constructed Drainways.

5A.01. Ditch Above Highwall - All surface water which drains into the pit shall be effectively intercepted on the uphill side of the highwall by suitable and adequate diversion ditches and conveyed by adequate channels or other suitable means of discharge to natural drainways outside the disturbed area. The director may, in the exercise of his sound discretion, when not in conflict with Article 6D, Chapter 20, Code of West Virginia, as amended, waive this regulation.

5A.02. Ditch on Bench - Drainage ditches will be constructed on the excavated solid bench in order to carry off storm, surface or seepage water. The breaking point for ditches on the bench will fall at or near the midpoint between natural or constructed drainways. In no case shall water be discharged over a spoil slope. Removal of water from the bench shall be accomplished by use of adequate pipe, a rock riprap flume, asphalt or concrete chutes, or by grading a channel to nonerosive rock.

5A.03. Ditch Below Spoil Slope - All surface water draining off the spoil slopes will be intercepted by suitable and adequate diversion ditches which will carry the water to suitable treatment ponds before discharge into a natural drainway. These ditches will be located within twenty-five (25) feet of the anticipated toe of the spoil slope. If at any time spoil material interferes with the flow of water in these ditches, that material shall be cleaned out immediately. The director may, in the exercise of his sound discretion, when not in conflict with Article 6D, Chapter 20, Code of West Virginia, as amended, waive this regulation.

5B. Sediment

5B.01. Sediment Control - Embankment type sediment dams or excavated sediment ponds will be constructed in appropriate locations in order to control sedimentation. All such impoundments shall have a minimum capacity to store .125 acre-ft./acre of disturbed area in the watershed. This disturbed area will include all land affected by previous operations that is not presently stabilized and all land that will be affected throughout the life of the permit. Design criteria and construction specifications for embankment type sediment dams, excavated ponds and other water retarding structures will be found in the "Technical Handbook for Surface Mining."

5C. Water Quality

5C.01. Water Quality Control - All reasonable measures shall be taken to intercept all surface water by the use of diversions, culverts and drainage ditches or other methods to prevent water from entering the pit area. All water accumulation into the pit shall be removed as rapidly as possible with due recognition to water quality requirements. All water discharges from the permit area are to be monitored daily by the operator and a written record of the testing dates and analytical data shall be kept current and made available for inspection. A monthly compilation of the foregoing information will be submitted monthly to the Chief of the Reclamation Division. Any treatment works necessary to meet "adequate treatment" shall be approved by the director. Discharge from the permit area shall not in any case violate Federal or State water quality standards or effluent limitations. The monitoring frequency for suspended solids shall be governed by the standards set forth in the NPDES Program under the Federal Water Pollution Control Act as amended, 33 U.S.C. 1251 et. seq. and the rules and regulations promulgated thereunder.

Water tests shall be taken before surface mining operations begin and the results of these tests will be shown on the "drainage plan" map. The location for these preliminary tests will be:

1. On natural drainways above proposed surface mining operations;
2. On natural drainways below proposed surface mining operations at or near the affected drainage area boundary;
3. On natural drainways upstream from the mouth of a natural drainway affected by surface mining.

5C.02. Treatment Facilities for Drainage from Surface Mine Operations -

The Chief of the Division of Reclamation or his duly authorized agent shall conduct such investigation as it is deemed necessary and proper in order to determine whether or not any such permit should be granted or denied. In making such investigation and determination as to any such application, the chief of the division of reclamation shall consult with the chief of the division of water resources. Such cooperation shall include, but not be limited to, a written recommendation approving or disapproving the granting of the permit and the reason or reasons for such recommendation.

5D. Seeding

5D.01. Seeding of Drainage System - All areas disturbed in the installation of the drainage system shall be seeded and mulched after construction in accordance with section 7 of these regulations.

5E. Technical Handbook for Surface Mining

5E.01. Technical Handbook for Surface Mining - Design criteria and construction specifications for embankment type sediment dams, excavated sediment ponds, stone check dams, log and pole structures, diversion ditches, outlets and other water control structures are to be found in the "Technical Handbook for Surface Mining" published by the Department of Natural Resources.

SECTION 6. METHOD OF OPERATION

6.01. 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 6D, Chapter 20, Code of West Virginia, as amended, and all rules and regulations adopted pursuant thereto, and all provisions of the approved pre-plan.

6.02. Topsoiling or Other Material Suitable for the Post Mining Land Use - These materials shall be removed in a separate layer and distributed over the backfilled area, or if not utilized immediately, segregated and stockpiled in a separate location as specified in the pre-plan. Topsoil not immediately utilized shall be protected from wind and water erosion. Any material used for topsoiling must be capable of supporting and maintaining the approved post mining land use.

6.03. Treatment of Toxic Material - ~~Any exposed mineral seams remaining after mining and~~ ~~delete within brackets~~ Any acid-forming, toxic-forming, combustible materials, or any other waste materials that are exposed, shall be covered with a minimum of four (4) feet of nontoxic and noncombustible material; or test, treat and blend material to provide materials suitable to prevent water pollution. If necessary, this material shall be treated to neutralize toxicity in order to prevent water pollution and sustained combustion and/or to minimize adverse effects on plant growth and land uses. Where necessary to protect against upward migration of salts, exposure by erosion, to provide an adequate depth for plant growth, or to otherwise meet local conditions, the director shall specify thicker amounts of cover using non-toxic material. Acid-forming or toxic-forming material shall not be buried or stored in proximity to a drainage course so as to cause or pose a threat of water pollution.

6.04. Small Depressions - The requirement of this section to achieve approximate original contour does not prohibit construction of small depressions if they are approved by the director to minimize erosion, conserve soil moisture or promote revegetation. These depressions shall be compatible with the approved post-mining land use.

6.05. Bench Surface - The surface of the regraded bench shall be graded so as to permit the use of farm implements and machinery.

6.06. (Reserved)

6.07. Final Graded Slopes - Final graded slopes shall mean slopes backfilled and graded to eliminate the highwall which does not exceed the angle of repose or such lesser slope as is necessary to assure stability.

6.08. Grading Outer Spoil - All outer spoil shall be graded so as to blend into the adjoining undisturbed lands.

6.09. Regrading or Stabilizing Rills and Gullies - Any rills or gullies deeper than nine (9) inches forming in areas that have been regraded and the topsoil replaced but where vegetation has not yet been established will be deemed unacceptable and any such rills or gullies shall be filled, graded, or otherwise stabilized and revegetated. Rills or gullies of lesser size shall also be stabilized if they will be disruptive to the approved postmining land use or may result in additional erosion and sedimentation:

6.10. Inactive Status - Inactive operation status will be considered for a period not to exceed one (1) year from date of approval providing that prior written approval is obtained from the director.

6.11. Keeping Operation Current - 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 or 3,000 linear feet.
- b. Should the operation include stripping and highwall mining, the highwall mining shall follow the stripping within sixty (60) days, or a reasonable time as prescribed by the director. Grading and backfilling shall follow the highwall mining by not more than thirty (30) days or 1,000 linear feet.
- c. Should the particular site conditions or weather make adherence to these guidelines impractical the period of time or the distance required to be current may be reasonably extended.

Section

6A. Requirements for Special Land Use Purposes

6A.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 6D, Chapter 20, Code of West Virginia, as amended, 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.

6A.02. Water Impoundments - Prior to the construction of an impounding area for the storage of water after mining, approval must be obtained from the director for such impoundment. The Division of Water Resources will cooperate with the Division of Reclamation in reviewing all portions of any plan for water impoundments as they relate to water quality and will give its recommendations therefore, to the Division of Reclamation. This plan will include but not be limited to the following:

- a. Location of the impounding area;
- b. Dimensions of the area as to capacity and depth (average, maximum and minimum);
- c. Plot plan of impoundment area;
- d. Source of water entering the impoundment;
- e. Quality of the water entering the impoundment;
- f. Quality of water leaving the impoundment and mechanism of discharge;
- g. Mineral or seams mined or involved with impoundment;
- h. Chemical characteristics of the soils and underlying strata in the impoundment area as they relate to acid production;
- i. Safety aspects considered such as spillway overflow, emergency spillway, access to area; and
- j. Consent of the landowner for such impoundment with submission on specified forms.

6A.03. Sanitary Landfills - Where waste materials from a coal preparation or conversion facility or from other activities conducted outside the permit area such as municipal wastes, garbage, etc., are used for fill material, plans for such use shall be approved by the director. Such plans for sanitary landfills and/or solid waste disposal areas shall be accompanied by the written approval of the Division of Water Resources and where appropriate, the State Department of Health.

Section 6B. Steep Slope Mining

6B.01. Applicability - On surface mining operations where the natural slope exceeds twenty degrees (20°), the provisions of this section in addition to other applicable provisions of these regulations, shall apply. On lesser slopes that require measures to protect the area from disturbance as determined

by the director based on consideration of soils, climate, method of operation, geology, and other regional characteristics, the provisions of this section, in addition to other applicable provisions of these regulations, shall also apply. These provisions do not apply where mining is done on a flat or gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominately flat area.

- 6B.02. Downslope Placement - Spoil or debris including that from clearing and grubbing, shall not be placed on the downslope except as provided for in section 6D. or 6E. of these regulations.

6B.03. Highwall Elimination - The highwall shall be eliminated and the disturbed area graded. Land above the highwall shall not be disturbed unless the director finds that the disturbance will facilitate compliance with the requirements of this section.

6B.04. Stabilization - The material used to backfill and eliminate the highwall shall be sufficiently compacted or otherwise mechanically stabilized so as to insure stability of the backfill. Woody materials may be buried in the backfilled area only when the burial does not cause or add to instability.

Section 6C. Mountaintop Removal

6C.01. Applicability - Where the mountaintop removal technique is applied, the provisions of this section in addition to other applicable provisions of these regulations, shall apply.

6C.02. Outcrop Barrier - An outcrop barrier of sufficient width shall be retained where necessary to prevent slides and erosion. Where no outcrop exists due to previous mining, this requirement will be waived.

6C.03. The Final Graded Slopes - The final graded top plateau slopes on the mined area shall be less than 5 horizontal to 1 vertical so as to create a level plateau or gently rolling configuration and the outslopes of the plateau shall not exceed 2 horizontal to 1 vertical except where approved by the director, but in no case shall the minimum static safety factor be less than 1.5.

6C.04. Drainage - The resulting level or gently rolling contour shall be graded to drain inward from the outslope except at specific points where it drains over the outslope in protected channels.

Section 6D. Disposal of Spoil or Toxic Forming Materials or Permanent Overburden Disposal Sites by Methods Other Than Valley or Head-of-Hollow Fills

6D.01. Applicability - Spoil or toxic forming materials not required to achieve the approximate original contour or to be placed in permanent disposal sites shall be transported to and placed in a controlled manner in disposal areas other than the mine workings or excavation only if all the provisions of this section are met.

6D.02. Location of Disposal Sites - The disposal areas shall be within the permit area and they must be approved by the director as suitable for construction of fills. The disposal area shall be located on the most moderate slopes and naturally stable areas available. Where possible, fill materials suitable for disposal shall be placed upon or above a natural terrace, bench, or berm, if such placement provides additional stability and prevents mass movement.

6D.03. Certification - Certification of the fill shall be as follows:

a. The fill shall be designed using recognized professional standards and certified by an approved registered professional engineer or other approved professional specialist;

- b. The fill shall be inspected for stability by an approved registered professional engineer or other approved professional specialist after completion of the first 50-foot lift, to assure removal of all organic material and topsoil, placement of under-drainage systems, and proper construction in accordance with the approved pre-plan. The approved registered professional engineer or other approved professional specialist, shall also provide a certified report upon completion of the fill that the fill has been constructed as designed in the approved pre-plan, and
- c. Where fills are placed on slopes less than twenty degrees (20°) a certification shall not be required.

6D.04. Stabilization - Where the slope in the disposal area exceeds 2.8 horizontal to 1 vertical (36 per cent) or where necessary to achieve a static safety factor of 1.5, measures such as keyway cuts, rock toe buttresses or other techniques shall be used. All organic material shall be removed from the disposal area and the topsoil must be removed and segregated before the overburden is placed in the disposal area. Suitable organic material may be used as mulch or may be included in the topsoil. The spoil or toxic forming materials shall be transported and placed in a controlled manner, concurrently compacted as necessary to insure long-term mass stability and prevent mass movement. The fill shall be drained and graded to allow surface and subsurface drainage to be compatible with the natural surroundings.

6D.05. Drainage - The disposal area shall not contain springs, natural water courses or wet weather seeps unless lateral drains are constructed from the wet areas to the under drains in such a manner that infiltration of the water into the fill shall be prevented. The drains shall be designed and constructed of

course rock. If no filter is designed for the under drain, sufficient capacity shall be provided to allow for partial plugging of the drain. No rock shall be used in under drains if it tends to disintegrate or if it is acid-forming or toxic-forming.

6D.06. Construction - Construction of the fill shall be as follows:

- a. All areas upon which the fill is to be placed shall first be progressively cleared of all trees, brush, shrubs, and other organic material. This material shall be removed from the fill area;
- b. Depositing and compacting the fill in layers shall begin at the toe of the fill. The layers shall be constructed approximately parallel with proposed finish grade. All material shall be deposited in uniform horizontal layers and compacted with haulage equipment.
- c. The thickness of the layers shall not exceed four feet;
- d. The outer slope shall be no steeper than 2 horizontal to 1 vertical. A 20-foot wide bench shall be installed at a maximum of every 50 feet in vertical height of the fill with a 3% to 5% slope toward the fill area, normal to such, and a 1% slope toward a rock rip-rap channel or natural drainway; and
- e. When construction of each lift (maximum of every 50 feet in vertical height) of the fill is completed, topsoil or other suitable material which will support vegetation shall be spread over the completed slope and bench. The slopes and benches shall then be seeded and mulched immediately in accordance with the approved revegetation plans.

Sec. 6E. Disposal of Spoil Materials in Valley or Head-of-Hollow Fills

6E.01. Applicability - Spoil not required to achieve the approximate original contour or being placed in permanent overburden disposal sites shall be transported to and placed in a controlled manner; spoil to be disposed of in natural valleys must be placed in accordance with the following requirements.

- 6E.02. Location of Spoil Areas - The disposal areas shall be within the permit area and they must be approved by the director as suitable for construction of fills. The disposal area shall be located on the most moderate slopes and naturally stable areas available. Where possible, fill materials suitable for disposal shall be placed upon or above a natural terrace, bench, or berm, if such placement provides additional stability and prevents mass movement.

6E.03. Certification - Certification of the fill shall be as follows:

- a. The fill shall be designed using recognized professional standards and certified by an approved registered professional engineer or other approved professional specialist; and
- b. The fill shall be inspected for stability by an approved registered professional engineer or other approved professional specialist after completion of the first 50-foot lift, to assure removal of all organic material and topsoil, placement of under-drainage systems, and proper construction in accordance with the approved pre-plan. The approved registered professional engineer or other approved professional specialist, shall also provide a certified report upon completion of the fill that the fill has been constructed as designed in the approved pre-plan.

6E.04. Stabilization - Where the slope in the disposal area exceeds 2.8 horizontal to 1 vertical (36 per cent) or where necessary to achieve a static safety factor of 1.5, measures such as keyway cuts, rock toe buttresses or other techniques shall be used. All organic material shall be removed from the disposal area and the topsoil must be removed and segregated before the overburden is placed in the disposal area. Suitable organic material may be used as mulch or may be included in the topsoil. The spoil shall be transported and placed in a controlled manner, concurrently compacted as necessary to insure long-term mass stability and prevent mass movement. The fill shall be drained and graded to allow surface and subsurface drainage to be compatible with the natural surroundings.

6E.05. Drainage - The disposal area shall not contain springs, natural water courses or wet weather seeps unless lateral drains are constructed from the wet areas to the under drains in such a manner that infiltration of the water into the fill shall be prevented. If springs, natural water courses or wet weather seeps are encountered, a system of under drains shall be constructed from each spring or seepage area as lateral drains to the rock core. If no filter is designed for the under drain, sufficient capacity shall be provided to allow for partial plugging of the drain. No rock shall be used in under drains if it tends to disintegrate or if it is acid-forming or toxic-forming.

6E.06. Construction - Construction of the fill shall be as follows:

- a. All areas upon which the fill is to be placed shall first be progressively cleared of all trees, brush, shrubs, and other organic material. This material shall be removed from the fill area. No more than 3.0 acres, excluding roadway for construction of fill, shall be cleared in the valley fill site until the first lift is completed;

- b. A rock core shall be progressively constructed as the layers are brought up through the valley fill. The rock core shall be a minimum of 16 feet in width and composed of rock with a minimum dimension of 12 inches. The rock core shall consist of no more than 10% fines as determined by visual inspection (fines being a material with a dimension of less than 12 inches);
- c. Depositing and compacting the fill in layers shall begin at the toe of the fill. The layers shall be constructed approximately parallel with proposed finish grade. All material shall be deposited in uniform horizontal layers and compacted with haulage equipment.
- d. The thickness of the layers shall not exceed four feet;
- e. During and after construction, the top of the fill shall be graded to drain back to the head of the fill on a slope no greater than 3%. A drainage pocket shall be maintained at the head of the fill at all times to intercept surface runoff. Maximum size of the drainage pocket shall be 10,000 cubic feet;
- f. The outer slope shall be no steeper than 2 horizontal to 1 vertical. A 20-foot wide bench shall be installed at a maximum of every 50 feet in vertical height of the fill with a 3% to 5% slope toward the fill area, normal to such, and a 1% slope toward a rock rip-rap channel or natural drainway; and
- g. When construction of each lift (maximum of every 50 feet in vertical height) of the valley fill is completed, topsoil or other suitable material which will support vegetation shall be spread over the completed slope and bench excluding the rock core. The completed slope and bench shall then be seeded and mulched immediately in accordance with the approved revegetation plans.

6E.07. Variance - Where it can be demonstrated that other design criteria are justified, certain requirements of this section may be waived. The basis for justification are, but not limited to, land use potential, inavailability of durable rock, and site stability.

6E.08. Limestone, sandstone and sand mining operations unless otherwise specified in the Act or these rules and regulations shall be exempt from bonding and reclamation requirements.

SECTION 7. REVEGETATION AND STANDARDS FOR EVALUATING VEGETATIVE COVER.

7.01. Approval of Private Revegetation Contractor - In the event the operator contracts with a private contractor to carry out the planting, the private revegetation contractor 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. Should experience warrant, a private revegetation contractor may be adjudged disqualified and so notified by the director in writing.

7.02. Objective in Revegetation - The objective in revegetation is to quickly establish a vegetative cover on all disturbed areas to minimize erosion, provide economic benefits, and restore aesthetic appeal. Plants that will give a quick permanent cover and enrich the soil shall be given priority. A temporary or permanent cover should be established by the end of the first growing season and a permanent cover by the end of the second growing season. All plants shall be considered a tool in achieving stabilization and an appropriate land use objective. Provided that limestone, sandstone, and sand mining operations shall be exempt from revegetation requirements unless otherwise specified.

7.03. Reference Areas - Success of revegetation shall be measured on the basis of reference areas approved by the director.

Section
7A. Seeding and Planting

7A.01. Seasonal Feasibility - Appropriate vegetation shall be planted, seeded, aerial-seeded, or hydro-seeded in accordance with accepted agricultural and reforestation practices when the season is favorable for seed germination and plant survival except as otherwise specified in these regulations.

7A.02. Minesoil Characteristics - Surface mining of minerals and removal of overburden results in minesoil which varies greatly in fertility, acidity and stoniness. These three characteristics, together with steepness of slope, shall be used in determining characterization for the purpose of establishing vegetation. Premining overburden sampling and analysis or previous experience and correlation data, shall be submitted with the pre-plan for all acid-producing seams. The plan shall identify toxic strata and provide planned handling and final placement for acid strata. Overburden analysis to be in accordance with standard procedures outlined in Environmental Protection Agency Manual No. 600/2-78-054 (Field & Laboratory Methods Applicable to Overburdens and Minesoils) or other approved methods by the Department of Natural Resources. Minesoil classification shall be in accordance with Table 6.

7A.03. Minesoil Analysis - Tests for minesoil acidity, expressed as pH, shall be taken at points distributed uniformly over the disturbed area. Minesoil tests may be made with accepted field indicators or other approved techniques. Minesoils with chemical characteristics that could restrict vegetation establishment and growth shall be analyzed by an approved soils laboratory. The results of these tests shall be filed with the final planting plan.

7A.04. Function of Annual and Biennial Cover Crops - On areas where excessive erosion is likely to occur, rapid establishment of vegetative cover shall be required. Seeding of annuals and biennials on such areas shall be considered as a means for achieving temporary vegetative cover only and not acceptable in the achievement of permanent cover. See Table 5.

7A.05. Development of Planting Plan - Planting plans will be a part of the premining and reclamation plan. The mining plan and the projected configuration after mining will be the basis for classifying the area as follows:

- a. A prediction of the minesoil class and the basis for the same;
- b. Treatment to neutralize acidity;
- c. Mechanical seed bed preparation;
- d. Rate and analysis of fertilization;
- e. Rates and types of mulch;
- f. Perennial vegetation including herbaceous and woody plants where appropriate, rate and species;
- g. Areas to be planted or seeded to trees and shrubs;
- h. Land use objective;
- i. Maintenance schedule if appropriate; and
- j. Identify who will complete revegetation treatments.

Seeding will be concurrent with the operation as mining and backfilling progresses.

7A.06. Development of Final Planting Plan - A final planting plan shall be prepared and submitted to the director for his approval within thirty (30) days after the grading and backfilling of the operation have been approved.

Section 7B. Plant Material Selection and Treatment

7B.01. Specifications - All planting plans for woody vegetation will include provisions for herbaceous cover using a suitable mixture from Table One. The following specifications should govern the selection and establishment of seeds and plants used in the revegetation of surface minesoil and based upon the following capability class:

a. On favorable minesoil material, prepared for perennial cover crop use, non-stony and with pH 5.5 or higher, one of the following mixtures should be used:

1. Seed mixtures #1, 2, 3, 4, or 5 from Table One, of these regulations should be applied where annual maintenance treatment is assured. Mixture #4 should be applied where the graded portion of minesoil 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) Triple inoculation rate if hydro-seeded;
 - (iii) Protection of seeded minesoil area from grazing livestock;
 - (iv) Application of lime to pH 6.0 for mixture #4, to pH 6.5 to 7.0 for all other mixtures.
 - (v) Application of fertilizer will be based on a minesoil test for lime, phosphorus, and potash from a soils lab or will be a minimum of 200 lbs., ammonium nitrate and 200 lbs. triple super phosphate or equivalent;
 - (vi) Preparation of seed bed by harrowing, discing or other approved methods; and
 - (vii) Completion of fall seeding for legumes should be completed by *September first.*

3. Maintenance of cover crop should be carried out by the operator or his assignee 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 Mixture 2, 3, 4 and 6;
 - (iii) Maintain pH 5.5 - 6.0 for Mixture 4;
 - (iv) Topdress every two years with 400 lbs. per acre 0-20-20 for Mixture 5.
- b. On favorable minesoil material prepared for woodland and wildlife use, any one mixture from Table Two 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 and seedlings.
 1. Establishment of plant growth for woodland cover should require:
 - (i) Spring planting of seedlings not later than May 1st and preferably before April 15th; and
 - (ii) Spacing of shrubs and all trees in a pattern eight feet by eight feet apart of 680 trees per acre.
 2. Establishment of crown vetch-rye grass or Seresia-tall Fescue mixtures for wildlife cover may be done in accordance with section 7B.01 (a)(2) of this regulation.
- c. On moderately favorable minesoil material, prepared for woodland and wildlife use, with pH 5.5 and above, graded but stony, on moderate to steep slopes, non-stony and stony, one of the mixtures with specified proportion and treatment from Table Three, of this regulation should be used.

1. Overseeding on moderate to steep slopes on tree planting sites shall be carried out on minesoil in order to prevent siltation, establish ground cover and minimize erosion. Seed one of the mixtures from Table One.
 2. Establishment of plant growth shall require inoculation of legume seed with proper strain, and shall be protected from grazing by livestock. Triple inoculation rate if hydroseeding.
- d. On favorable minesoil material prepared for woodland and wildlife use, which includes all extremely steep and/or stony minesoil, one of the mixtures with specified proportions and treatment from Table Three of this regulation should be used.
1. Establishment of plant growth should require:
 - (i) Broadcasting Mixture 1 and 3 before May 1st and frost seeding mixture 2 by early March.
 - (ii) Black locust seed must be seventy percent (70%) or more viable. All legumes must be inoculated and must be protected from grazing by livestock. Triple inoculation rate if hydroseeding. Mixture No. 1 of Table Three, should be used for extremely stony areas when tested acidity indicated a pH of 4.0 or better.
- e. Other species of trees, shrubs, grasses, legumes or vines may be approved by the director.

Section 7C. Mulch

7C.01. Mulch Specifications - Mulch shall be used on all disturbed areas. Annual grains such as oats, rye, wheat, etc. may be used instead of mulch when it is shown to the satisfaction of the director that the substituted grains will provide adequate stability and that they will be replaced by species approved

for the post mining use

Approved materials and minimum rates to be applied are as follows:

<u>Material</u>	<u>Rate/Acre</u>
Straw or Hay	1 - 2 tons - material may be anchored with asphalt emulsion or other techniques approved by the director
Wood fiber or wood cellulose products	1,000 lbs.
Shredded bark	50 cubic yards

Left out

The following materials may be used with wood fiber or wood cellulose on a limited basis upon approval by the director or his duly authorized agent.

<u>Material</u>	<u>Rate/Acre</u>	<u>Minimum Rate/Acre for Wood Fiber or Wood Cellulose</u>
Genaqua 743	25 gallons	500 lbs.
Curason AK or HA	25 gallons	500 lbs.
Aerospray 70	25 gallons	500 lbs.

Left out

Any other suitable materials including latex or plastic compounds may be approved by the director.

Section 7D. Standards for Evaluating Vegetative Cover

7D.01. Final Planting Report - A planting report shall be prepared by the operator and filed with the director on the prescribed form 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.

7D.02. Time for Inspection - The operator shall review all areas he has under bond prior to the recognized spring and fall planting seasons. The operator shall cause those areas deficient of vegetative cover to be retreated, graded, seeded, planted, mulched, limed, or whatever, to establish a satisfactory

stand of vegs for bond.

7D.03. Standards for Perennials - Standards for legumes and perennial grasses shall require at least an eighty percent (80%) ground cover. Substandard areas shall not exceed one-fourth (1/4) acre (100' X 100') in size nor total more than twenty percent (20%) of the area seeded. The ground cover of living plants on the revegetated area shall be equal to the ground cover of living plants of the approved reference area for a minimum of two growing seasons. The ground cover shall not be considered equal if it is less than ninety percent (90%) of the ground cover of the reference area for any significant portion of the mined area.

7D.04. Standards for Woody Plants with Perennials - Standards for woody plants with legumes and perennial grasses overseeded shall require a sixty percent (60%) establishment of ground cover of legumes and perennial grasses, and 400 trees (included volunteer tree species) and/or planted shrubs per acre, comprising a satisfactory vegetative ground cover as determined by the director. Substandard areas shall not exceed one-fourth (1/4) acre (100' X 100') in size not total more than twenty percent (20%) of the area seeded or planted. The ground cover of living plants on the revegetated area shall be equal to the ground cover of living plants of the approved reference area for a minimum of two growing seasons. The ground cover shall not be considered equal if it is less than ninety percent (90%) of the ground cover of the reference area for any significant portion of the mined area.

7D.05. Final Inspection Report - In no instance shall the official vegetative cover evaluation be carried out until the planting and seeding concerned has survived two growing seasons or a minimum of 18 months. A final inspection report shall be prepared and filed following inspection to determine that the above evaluative standards have been complied with. If acceptable, the director may then cause the remainder of the bonds to be released.

TABLE ONE

USE: HAY, PASTURE OR OTHER WHERE HERBACAOUS COVER IS DESIRED

1. Alfalfa	20 lbs.	5. Crown Vetch	15 lbs.
Orchardgrass	10 lbs.	Tall Fescue	20 lbs.
		**Weeping Lovegrass	3 lbs.
2. Birdsfoot Trefoil	10 lbs.	6. Crown Vetch	15 lbs.
Tall Fescue	15 lbs.	Rye Grass	15 lbs.
		**Weeping Lovegrass	3 lbs.
3. Birdsfoot Trefoil	10 lbs.		
Orchardgrass	10 lbs.		
4. Sericea (Hulled)	20 lbs.		
Red Top	3 lbs.		
Tall Fescue	15 lbs.		

* APPROVED SEED MIXTURES FOR OVERSEEDING TREE AND SHRUB SEEDLINGS

7. Tall Fescue	30 lbs.	FOR ELEVATIONS ABOVE 2500'	
Sericea	15 lbs.	10. Tall Fescue	20 lbs.
8. Tall Fescue	20 lbs.	Red Top	4 lbs.
Rye Grass	10 lbs.	11. Tall Fescue	20 lbs.
Sericea	15 lbs.	**Weeping Lovegrass	3 lbs.
9. Tall Fescue	20 lbs.	12. Tall Fescue	20 lbs.
**Weeping Lovegrass	3 lbs.	Sweet Clover	10 lbs.
Sericea	15 lbs.		

* Establishment of vegetation includes liming to pH range 5.5 - 7.0. Application of fertilizer shall be based on soil test results from a soils laboratory. Without a soil test, apply 600 lbs. 10-20-10 or equivalent, and protection from grazing during the seedling state.

** Red Top may be substituted for Weeping Lovegrass for late summer and fall seedings at a rate of 3 lbs. per acre.

TABLE TWO

APPROVED WOODLAND PLANT MIXTURES (Nursery Grown Seedlings)	
1. Black Locust (3000') White Pine	Plant in bands 6 rows or more in width Black Locust not to exceed 50%
2. Black Locust (3000') Virginia Pine	Plant in bands 6 rows or more wide Black Locust not to exceed more than 50%
3. Scotch Pine White Pine Red Pine (above 2000') Virginia Pine (below 2500')	Use mixture of two or more if available Plant in bands 6 rows or more
4. Black Locust (below 3000') Tulip Poplar (below 3000') Sycamore (below 2500') Red Oak	Use up to one-half locust with one or more of hardwood species. Plant in bands 6 or more rows in each species
5. Autumn Olive and adapted pine or hardwoods	Where owner's interest is wildlife im- provement, plant in bands of 3 to 6 rows preferable with pines or in blocks of one-fourth acre spaced 600' apart
6. European Black Alder (below 2500') Sycamore Indigo Bush Autumn Olive	Use these plants where protection from grazing is impractical or protection will not be maintained. For wildlife habitat improvement use 3 to 6 row bands where two or more species are planted.
7. European Black Alder	Use European Black Alder where pH is near 5.5
8. Black Locust	Use only on steep erodible outcrops.
9. Sweet Crab Apple* Washington Hawthorne*	On bench of areas where owners primary interest is wildlife habitat improve- ment, plant in clumps of 12 spaced 10' to 12' apart. Clumps should be spaced 200' to 300' apart, planted in between with pine, Indigo Bush or Autumn Olive.
10. Blackberry*	Plant on bench spaced 6 x 6 in blocks 100 plants per block.
11. Grey Dogwood* Silky Cornell*	On bench near water impoundments spaced 8 x 8.

*Should be planted only on the more favorable sites. Preferably a north or northeastern aspect with a pH of 5.5 or above.

TABLE THREE

* APPROVED MIXTURES
HERBACEOUS AND WOODY SPECIES FOR DIRECT SEEDING

1.	Tall Fescue	30 lbs.	
	Sericea	15 lbs.	
	Black Locust**	3 lbs.	
2.	Tall Fescue	20 lbs.	
	Rye Grass	10 lbs.	
	Sericea	15 lbs.	
	Black Locust**	3 lbs.	
3.	Tall Fescue	20 lbs.	
	Weeping Lovegrass	3 lbs.	
	Sericea	15 lbs.	
	Black Locust**	3 lbs.	
4.	Tall Fescue	30 lbs.	Better suited to higher
	Birdsfoot Trefoil	10 lbs.	elevations above 2500'
	Black Locust**	3 lbs.	
5.	Tall Fescue	20 lbs.	Better suited to higher
	Red Top	3 lbs.	elevations to 2500'
	Birdsfoot Trefoil	10 lbs.	
	Black Locust**	3 lbs.	

* Application of fertilizer shall be based on soil test results from a soils laboratory. Without a soil test, apply a minimum of 200 lbs. ammonium nitrate and 200 lbs. triple super phosphate. Equivalent amounts of nitrogen and phosphorus is acceptable.

** Black Locust seed may be omitted on the bench areas or where erosion is not a serious problem, or at elevations above 2000', 1/4 lb./acre Virginia Pine; 1/4 lb/acre White Pine, and 3 lbs./acre Japonica Intermedia may be substituted for Black Locust.

TABLE FOUR

* APPROVED MIXTURES FOR WATERWAYS, DIVERSIONS
DRAINAGE STRUCTURES, HAULAGEWAYS, HIGHWALL ACCESS, ETC.

1.	Tall Fescue	50 lbs.
	Birdsfoot Trefoil	10 lbs.
	Red Top	3 lbs.
2.	Perennial Rye Grass	20 lbs.
	Tall Fescue	30 lbs.
	Birdsfoot Trefoil	10 lbs.
	Red Top	3 lbs.
3.	Tall Fescue	40 lbs.
	Crown Vetch	15 lbs.
	Red Top	3 lbs.
4.	Tall Fescue	50 lbs.
	Crown Vetch	15 lbs.
5.	Tall Fescue	30 lbs.
	Reed Canarygrass	20 lbs.
	Red Top	3 lbs.

NOTE: Weeping lovegrass at 3 lbs. per acre may be substituted for Red Top for spring and early summer seedlings on well drained areas.

* Application of fertilizer shall be based on soil test results from a soils laboratory. Without a soil test, apply a minimum of 200 lbs. ammonium nitrate and 200 lbs. triple super phosphate. Equivalent amounts of nitrogen and phosphorus fertilizer is acceptable.

TABLE FIVE

* ANNUAL AND BIENNIAL COVER CROPS FOR TEMPORARY COVER

	<u>Suggested Rates of Application - Pounds in Acres</u>	<u>Seeding Season</u>
<u>- Grasses -</u>		
Balbo Rye	30 - 60	Fall
Abruzzi Rye	30 - 60	Fall
Wheat	30 - 60	Fall
Oats	30 - 60	Fall
Japanese Millet	10 - 15	Summer
Milletts - German, Foxtail	10 - 15	Summer
Sudan Grass - Sorghum Hybrid	10 - 20	Summer
Pearl Millet	10 - 20	Summer
Sudan Grass	10 - 20	Summer
Annual Rye Grass	10 - 15	Spring or Fall
<u>- Legumes -</u>		
Kobe Lespedeza	5 - 10	Summer
Korean Lespedeza	5 - 10	Summer
Hairy Vetch	20 - 40	Fall
Sweet Clover	10 - 20	Summer
<u>- Forbs -</u>		
Buckwheat	30 - 60	Summer

* Application of fertilizer shall be based on soil test results from a soils laboratory. Without a soil test, apply a minimum of 200 lbs. ammonium nitrate and 200 lbs. triple super phosphate. Equivalent amounts of nitrogen and phosphorus fertilizer is acceptable.

TABLE SIX

CLASSIFICATION OF MINESOILS WITHIN SOIL TAXONOMY

Minesoils of all ages are now being grouped under the category called spolents. This means recognition that these highly disturbed or manmade soils deserve the same attention, classification and management as other soils.

1. Fieldcrest is a family of minesoils containing a mixture of rock types. It has an acid but not extremely acid profile. Texture is loamy; mineralogy is mixed and fertility is medium. These are probably the most widespread minesoils in West Virginia.
2. Postoak is a minesoil family containing a dominance of mudstone material. It is near neutral in profile reaction; fine loamy textures and relatively fertile.
3. Widen minesoils are dominated by carbon rich coarse fragments or mine waste. They are acid in reaction but respond well to liming and revegetation.
4. Brandonville minesoils are dominated by shaly (fissile) coarse fragments. They are loamy in texture, have mixed mineralogy, are moderately acid and moderately fertile.
5. *Valley Point minesoils are dominated by sandstone coarse fragments. They are coarse loamy in texture, have siliceous mineralogy, low fertility and are extremely acid. These minesoils provide stable roadways and building sites.
6. *Birdcreek minesoils are similar to Valley Point soils but are acid instead of extremely acid.
7. Killarm minesoils contain a mixture of rock types. The profile is neutral in reaction. Texture is medium loamy. Mineralogy is mixed and fertility (except nitrogen) is relatively high.
8. Overfield minesoils contain a mixture of rock types. The profile is extremely acid (pH is below 4 at 10 inches). Texture is medium loamy. Mineralogy is mixed. Fertility is medium but acid related toxicity must be remedied by topsoiling or massive liming in order to get desirable plant growth.
9. Shawneetown minesoils have less than 10% rock fragments in the profile. The reaction is neutral; texture is fine loamy; mineralogy is mixed and fertility is relatively high except for nitrogen. These minesoils are suitable for cultivated cropping, but may not be present in mappable units in West Virginia.
10. Pursglove minesoils are like Widen except that they are extremely acid and require covering with favorable material or massive liming for satisfactory revegetation.

*Soils 5 and 6 frequently occur together in complex patterns. These ten spolents cover most but not all minesoils in West Virginia. Other named minesoils have been identified and described and can be classified on request.

SECTION 8. BOND AND PERMIT REQUIREMENTS

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

- a. Scale of U.S. geological survey topographic 15-minute quadrangle shall be enlarged to approximately 660 feet to the inch;
- b. Scale on a U.S. geological survey topographic 7.5-minute quadrangle shall be enlarged to 500 feet or less to the inch;
- c. Scale on aerial photograph shall be 660 feet or less to the inch;
- d. Scale on the Progress, Alternative Plan and Final Maps shall be of the same scale of the approved Pre-Plan Map.

8.02. 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.

8.03. Scale Approval - Written permission from the director shall be required prior to the submission of maps drawn to any scale other than set forth by regulation.

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

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

- a. Red shall indicate mineral to be removed;
- b. Yellow shall indicate the total disturbed land;
- c. Blue shall indicate water and drainage;
- d. Brown shall indicate special uses;
- e. Green shall indicate regrading.

8.06. Approval of Person to Prepare a Complete Reclamation and Mining Plan - Any person preparing a complete reclamation and mining plan for the area of land to be disturbed as required by the provisions of Article 6D, Chapter 20, Section 9, Code of West Virginia, as amended, or by the regulations, shall first submit to the director a written resume of his past experience and training. A written test may also be administered. On the basis of such resume and written test, he shall be adjudged qualified or not as the case may be, and so notified by the director in writing.

8.07. Approval of Private Contractor - In the event the operator contracts with a private contractor to carry out the planting, the private contractor 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.

8.08. Permit or End of Strip Marker - A two-inch (2') pipe shall be driven into the earth with a minimum of three feet (3') 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. The assigned permit number shall be permanently affixed to the permit marker or end of strip marker.

SECTION 9. OTHER MINING OPERATIONS ON SURFACE MINED AREAS.

9.01. 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.

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

- a. Application form to be prescribed by the director;

- b. A map of the surface mining permit area, showing the portion of land to be disturbed by the other mining operations, including haulageways;
- c. A performance bond or equivalent as provided in Section 16, Article 6D, Chapter 20, Code of West Virginia, as amended, the requirement for the first acre or fraction thereof of disturbed lands being one thousand dollars (\$1,000) and for each additional acre or fraction thereof of disturbed land an additional one thousand dollars (\$1,000);
- d. Written permission for other mining operations from the owner of the surface rights and/or the owner of the mineral rights of the controlling parts of the same.

9.03. Applicability of Code and Regulations - All requirements for backfilling, regrading, revegetation and bond release procedures as set forth in Article 6D, Chapter 20, Code of West Virginia, as amended, and in Sections 8 and 9 of the regulations of the Reclamation Commission shall apply with equal force to the reclamation of disturbed areas from other mining operations.

SECTION 10. MODIFICATIONS

Should the director determine that modifications are necessary because of geologic structure, topography, particular watershed or permit conditions, the director may at his discretion with the approval of the commission, make such modifications if the same are in conformity with Article 6D, Chapter 20, Code of West Virginia, as amended.

SECTION 11. STATE AND FEDERAL COMPLIANCE

The issuance of ~~[a prospecting or]~~ surface mining permit pursuant to Article 6D, Chapter 20, Code of West Virginia, ~~delete within brackets~~ as amended, and any rules and regulations promulgated thereunder authorizes the operations covered by said permit, but does not release the permit holder from any other legal duties imposed by the laws of this State or these United States.