

DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 4

ENVIRONMENTAL PROTECTION PERFORMANCE STANDARDS

FOR COAL MINING OPERATIONS

Section 1. **General.**

This Chapter sets forth the environmental protection performance standards applicable to all coal mining operations. No mining operation shall be conducted except in compliance with the requirements hereof.

Section 2. **General Environmental Protection Performance Standards**

(a) Land uses.

(i) Reclamation shall restore the land to a condition equal to or greater than the "highest previous use." The land, after reclamation, must be suitable for the previous use which was of the greatest economic or social value to the community area, or must have a use which is of more economic or social value than all of the other previous uses.

(ii) Operators are required to restore wildlife habitat, whenever the Administrator determines that this restoration is possible, on affected land in a manner commensurate with or superior to habitat conditions which existed before the land became affected, unless the land is private and the proposed use is for a residential or agricultural purpose which may preclude its use as wildlife habitat.

(iii) Water impoundments used for recreational purposes shall be constructed in accordance with the statutes and (g) of this Section. Recreational lands, other than water impoundments, represent changes in the land which may or may not be suitable for wildlife habitat.

(b) Backfilling, grading and contouring.

(i) Rough backfilling and grading shall follow coal removal as contemporaneously as possible based upon the mining conditions. The operator shall include within the application for a permit to mine a proposed schedule for backfilling and grading with supporting analysis.

(ii) Backfilled materials shall be replaced in a manner which

minimizes water pollution on and off the site and supports the approved postmining land use. Preparation of final graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

(iii) All affected lands shall be returned to their approximate original contour, except as authorized by a variance or exemption under Chapter 5, Sections 6 and 7, or Chapter 8, or Chapter 9.

(iv) All spoil shall be transported, backfilled, compacted (where necessary to insure stability or to prevent leaching) and graded to eliminate all highwalls, spoil piles, and depressions, except that:

(A) Soil conservation techniques and or small depressions may be employed to retain moisture, minimize erosion, create and enhance wildlife habitat or assist revegetation.

(B) Incomplete elimination of highwalls may be authorized in accordance with Chapter 5, Section 7.

(C) Retention of selected portions of a highwall or other steep feature created during the mining operation may be approved by the Administrator to remain as replacement for natural features that were mined out or are planned to be mined out under the current Mine Plan if the operator demonstrates that the retained highwall will:

(I) Have a static safety factor of 1.3 or greater and be of similar erosive resistance;

(II) Not pose a hazard to people using the area;

(III) Be backfilled to cover the uppermost mineable coal seam to a minimum depth of 4 feet;

(IV) Not exceed the length and height of the premine feature it is replacing;

(V) Be contoured into the surrounding terrain; and

(VI) Enhance or restore important wildlife habitat or hydrologic conditions.

(D) Spoil may be placed on an area outside the mined-out area to restore the approximate original contour by blending the spoil into the surrounding terrain if the following requirements are met.

(I) All vegetative and organic material shall be

removed from the area.

(II) The topsoil on the area shall be handled in accordance with Section 2(c) of this Chapter.

(III) The spoil shall be backfilled and graded on the area in accordance with the requirements of this subsection 2(b).

(v) Postmining slopes shall not exceed a slope necessary to achieve a minimum long-term static safety factor of 1.3, to prevent slides and restore stable drainages and hillslopes.

(vi) Thin overburden. Where surface coal mining operations are proposed to be carried out continuously in the same limited pit area for more than one year from the day coal removal operations begin and where the volume of all available spoil and suitable waste materials over the life of the mine is demonstrated to be insufficient to achieve the approximate original contour considering bulking factor and coal removal, surface mining activities shall be conducted to use all available spoil and suitable waste materials to attain the lowest practicable stable grade, but not more than the angle of repose, and to meet the requirements of paragraphs (ii) and (iv) above.

(vii) Thick overburden. Where the volume of spoil over the life of the mine is demonstrated to be more than sufficient to achieve the approximate original contours considering bulking factor, coal removal and subsidence of backfilled material, excess spoil may be placed outside the pit area in accordance with the requirements of subsection (c).

(viii) Permanent Impoundments: Where permanent impoundments are authorized in accordance with Chapter 2, Section 6(b)(vi), spoil that may result from the impoundment will be handled in accordance with the requirements of this subsection.

(c) Topsoil, subsoil, overburden, spoil, excess spoil, refuse, coal mine waste, acid-forming materials, toxic materials and other wastes.

(i) Topsoil.

(A) All topsoil or approved surface material shall be removed from all areas to be affected in the permit area prior to these areas being affected unless otherwise authorized by the Administrator. The topsoil may be mixed with the subsoil but shall be segregated so as not to become mixed with spoil or waste material, stockpiled in the most advantageous manner and saved for reclamation purposes. The Administrator may authorize topsoil to remain on areas where minor disturbance will occur such as signs, power poles, light traffic, fence lines, monitoring stations or drilling provided that the minor disturbance will not destroy the protective vegetative cover and will not increase erosion.

(B) When topsoil is not promptly redistributed, the topsoil or approved surface material shall be stockpiled on stable areas within the permit area in such a manner so as to minimize wind and water erosion and unnecessary compaction. In order to accomplish this, the operator shall establish, through planting or other acceptable means, a quick growing cover of vegetation on the topsoil stockpiles. The topsoil shall also be protected from acid or toxic materials, and shall be preserved in a usable condition for sustaining vegetation when placed over affected land. Provided however, where long-term disturbance will occur, the Administrator may authorize the temporary distribution of topsoil to enhance stabilization of affected lands within the permit area. Where this is authorized, the Administrator shall find that the topsoil or subsoil capacity and productive capabilities are not diminished, that the topsoil is protected from erosion, and will be available for reclamation.

(C) Reclamation shall follow mining as soon as is feasible so as to minimize the amount of time topsoil must be stockpiled. Where topsoil has been stockpiled for more than one year, the operator may be required to conduct nutrient analyses to determine if soil amendments are necessary.

(D) Topsoil stockpiles shall be marked with a legible sign containing letters not less than six inches high on all approach roads to such stockpiles. Said signs shall contain the word "Topsoil" and shall be placed not more than 150 feet from any and all stockpiles of topsoil. Such signs must be in place at the time stockpiling is begun.

(E) If abundant topsoil is present, and it is not all needed to accomplish the reclamation required in the approved reclamation plan, the Administrator may approve of use of this topsoil by this or another operator in another area for reclamation purposes.

(F) Trees, large rocks and other waste material which may hinder redistribution of topsoil shall be separated from the topsoil before stockpiling.

(ii) Subsoil.

(A) Except as provided in (B), all subsoil determined by field methods or chemical analysis to be suitable as a plant-growth medium shall be removed from all areas to be affected and handled in accordance with the topsoil requirements of this Section.

(B) Upon an adequate demonstration by the operator that all or a portion of the subsoil material is not needed to meet the revegetation and land use requirements of these regulations, the Administrator may authorize all or a portion of the subsoil to not be used for reclamation. The unused subsoil may then be regarded as overburden material and handled in accordance with the requirements of this Section.

(iii) The topsoil (A and E horizons) shall be segregated from the subsoil (B and C horizons) where the Administrator determines that this practice is necessary to achieve the revegetation requirements of these regulations.

(iv) Before redistribution of topsoil or subsoil the regraded land shall be treated, if necessary, to reduce potential for slippage and encourage root penetration.

(v) Topsoil, subsoil, and/or an approved topsoil substitute shall be redistributed in a manner that:

(A) Achieves an approximate uniform, stable thickness consistent with the approved permit and the approved postmining land uses, contours and surface water drainage system;

(B) Prevents compaction which would inhibit water infiltration and plant growth;

(C) Protects the topsoil from wind and water erosion before and after it is seeded until vegetation has become adequately established; and

(D) Conserves soil moisture and promotes revegetation.

(vi) All rills and gullies which either preclude achievement of the approved postmining land use or the reestablishment of the vegetative cover, or cause or contribute to a violation of water quality standards for the receiving stream, shall be regraded or otherwise stabilized. Topsoil shall be replaced and the areas shall be reseeded or replanted.

(vii) Nutrients and soil amendments in the amounts determined necessary by soil test or field trials shall be applied to the replaced topsoil, subsoil or substitute material so that adequate nutrient levels are available to establish the vegetative cover. Fertilizer shall be applied at appropriate seasons and in amounts that will minimize pollution of surface waters or groundwaters.

(viii) The Administrator may not require topsoil or subsoil replacement on structures or within impoundments where replacement of this material is inconsistent with the intended use and the structures are otherwise stable.

(ix) If a sufficient volume of suitable topsoil or subsoil is not available for salvage or redistribution, then selected spoil material may be used as a topsoil or subsoil substitute or supplement. The operator shall demonstrate that the resulting plant growth medium is equal to, or more suitable for sustaining vegetation than the existing topsoil or subsoil and that it is the best available in the permit area to support revegetation. A demonstration of the suitability of the substitutes or supplements shall be based upon analysis of the texture, percent coarse fragments and pH. The Administrator

may require other chemical and physical analyses, field site trials, or greenhouse tests if determined to be necessary or desirable to demonstrate the suitability of the topsoil or subsoil substitutes or supplements.

(x) Topsoil and subsoil substitutes.

(A) Topsoil substitute stockpiles shall be segregated from topsoil and overburden piles and shall be identified as substitute material. Identification signs shall be placed not more than 150 feet from all stockpiles of substitute material. Such signs shall be in place at the time stockpiling is begun.

(B) If overburden is to be used in reclamation as a substitute for topsoil, all large rocks and other waste material which may hinder redistribution shall be separated before stockpiling.

(xi) Overburden, spoil, excess spoil, and refuse.

(A) All overburden, spoil material and refuse shall be segregated from the topsoil and subsoil and stockpiled in such a manner to facilitate the earliest reclamation consistent with the approved reclamation plan.

(B) Except where diversions are authorized by these regulations, all overburden, spoil material, and refuse piles must be located to avoid blocking intermittent or perennial drainages and flood plains in order to minimize loss and spread of material due to water erosion. Ephemeral drainages may be blocked if environmentally sound methods for dealing with runoff control and sedimentation are approved by the Administrator.

(I) For temporary stockpiles, material should be replaced in pits as soon as possible consistent with the approved reclamation plan to minimize the amount of time material is stockpiled.

(C) All topsoil shall be removed from areas to be used for piling spoil material prior to the beginning of piling this material.

(D) The operator may be required to have analyses made of spoil material in order to determine if it will be a source of water pollution through reaction with leaching by surface water. If it is determined that this condition may exist, the operator shall describe proposed procedures for eliminating this condition.

(E) All overburden and spoil material that is determined to be toxic, acid-forming or will prevent adequate reestablishment of vegetation on the reclaimed land surface, unless such materials occur naturally on the land surface, must be properly disposed of during the mining operation.

(F) All temporary overburden and spoil piles shall be located, designed and constructed using prudent engineering practices. Slopes shall be stable and temporary piles shall not be located or placed on slopes that exceed 20 degrees unless the Administrator authorizes such placement based upon demonstrations that the pile will have a safety factor of 1.5 or better, and/or other precautionary design factors are provided to mitigate the steepness of the slope.

(G) Excess Spoil. In addition to the requirements provided in subsections (xi)(A) through (xi)(D) above (with the exception of (xi)(B)(I)), excess spoil piles shall be located, designed, constructed and inspected as prescribed below.

(I) Location Requirements:

(1.) All excess spoil shall be placed in approved excess spoil disposal sites located within the permit area. They shall be:

a. Located on moderately sloping and naturally stable areas where placement provides for stability and prevents mass movement.

b. Located in areas which do not contain springs, seeps, natural or man-made drainages (excluding rills and gullies), croplands, or important wildlife habitat.

(2.) Excess spoil may be returned to underground mine workings in accordance with the plan approved by the Administrator and by MSHA.

(II) Design Standards:

(1.) All excess spoil shall be:

a. Designed, graded and contoured so as to blend in with the topography of the surrounding terrain. Excess spoil pile sites shall not be located on an overall slope that exceeds 20 degrees unless keyway cuts (excavations to stable bedrock), rock toe buttresses or other special structural provisions are constructed to ensure fill stability. The operator must demonstrate to the satisfaction of the Administrator that this material will be stable and can be revegetated as required by this Section.

b. Designed so that all slopes will be stabilized against wind and water erosion. After the grading and contouring of these stockpiles, topsoil or approved subsoil must be distributed over them in preparation for the revegetation procedure. Revegetation must be completed in accordance with requirements of this Chapter. A permanent drainage system must be established

consistent with these regulations.

c. Designed using current, prudent professional standards and certified by a qualified registered professional engineer. All piles shall be designed and constructed in accordance with the standards of this subsection. Special structural provisions shall be designed using prudent current engineering practices, in accordance with Chapter 2, Section 5(b)(xv)

(2.) The foundation and abutments of the fill shall be stable under all conditions of construction. Sufficient foundation investigation and any necessary laboratory testing of foundation materials shall be performed in order to determine the design requirements for foundation stability. Analyses of foundation conditions shall include the effect of underground mine workings, if any, upon the stability of the structure.

(3.) The Administrator may specify additional design criteria on a case-by-case basis as necessary to meet the general requirements of this subsection.

(III) Construction Standards:

(1.) Excess spoil shall be placed in a controlled manner to:

a. Prevent pollution from leachate and surface runoff from the fill on surface water or groundwater of the State.

b. Ensure mass stability and prevent mass movement during and after construction and provide for stable drainages and hillslopes.

c. Ensure that the land mass designated as the disposal site is suitable for reclamation and revegetation compatible with the natural surroundings and approved postmining land use.

(2.) The spoil pile shall be transported and placed in horizontal lifts in a controlled manner, concurrently compacted as necessary to ensure mass stability and prevent mass movement, covered, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings and ensure a minimum long-term static safety factor of 1.5. The Administrator may limit the horizontal lifts to four feet or less as necessary to ensure the stability of the fill or to meet other applicable requirements.

(3.) No water impoundments or large depressions shall be constructed on the fill. Soil conservation techniques may be approved if they are needed to minimize erosion, enhance wildlife habitat or assist

revegetation, as long as they are not incompatible with the stability of the fill.

(4.) Slope protection shall be provided to minimize surface erosion at the site. Diversion of surface water runoff shall conform with the requirements of subsection (e) of this Section. All disturbed areas, including diversion ditches that are not ripped, shall be vegetated upon completion of construction.

(5.) Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches shall not be steeper than 2h:lv (50 percent).

(6.) Excess spoil that is toxic, acid-forming or combustible shall be adequately covered with suitable material or treated to prevent pollution of surface and groundwater, to prevent sustained combustion, and to minimize adverse affects on plant growth and the approved postmining land use.

(IV) Inspection of excess spoil piles.

(1.) The fill shall be inspected for stability by a qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer experienced in the construction of earth and rockfill embankments at least quarterly throughout construction and during the following critical construction periods:

- a. foundation preparation, including the removal of all organic material and topsoil;
- b. placement of diversion systems;
- c. installation of final surface drainage systems; and
- d. final grading and revegetation.

(2.) Regular inspections by the engineer or specialist shall be conducted during placement and compaction of the fill materials. The registered professional engineer shall promptly provide certified reports to the Administrator which demonstrate that the fill has been maintained and constructed as specified in the design contained in the approved mining and reclamation plan. The report shall discuss appearances of instability, structural weakness, and other hazardous conditions. A copy of all inspection reports shall be retained at the mine site.

(xii) Coal mine waste.

(A) Coal mine waste shall be disposed only in existing or, if new, in an approved disposal site within a permit area. Coal mine wastes shall not be used in the construction of dams, embankments, or diversion structures. The disposal area shall be designed, constructed and maintained:

(I) In accordance with the excess spoil disposal requirements of (xi)(F)-(I), and (K)-(O) above; and

(II) To prevent combustion and not create a public health hazard.

(B) Disposal of coal mine waste in excess spoil piles may be approved if such waste is:

(I) Placed in accordance with the excess spoil requirements of (xi) above;

(II) Demonstrated to be nontoxic and nonacid-forming (or properly treated); and

(III) Demonstrated to be consistent with the design stability of the fill.

(C) In addition to (A) above, coal mine waste piles shall meet the following requirements:

(I) The disposal facility shall be designed to attain a minimum static safety factor of 1.5. The foundation and abutments must be stable under all conditions of construction.

(II) Following final grading of the waste pile, the site shall be covered with a minimum of four feet of the best available, nontoxic, nonacid-forming and noncombustible material, in a manner that directs runoff away from the waste pile. The site shall be revegetated in accordance with this Chapter. The Administrator may allow less than four feet of cover material based on physical and chemical analyses which show that the revegetation requirements will be met.

(III) Surface drainage from above the pile and from the crest and face of the pile shall be permanently diverted around the waste in accordance with subsection (e) of this Section.

(IV) All coal mine waste piles shall be inspected in accordance with the excess spoil requirements of (xi) above. More frequent inspections shall be conducted if a danger or harm exists to the public health and safety or the environment. Inspections shall continue until the waste pile has been finally graded and

revegetated or until later time as required by the Administrator. If any inspection discloses that a potential hazard exists, the Administrator shall be notified immediately, including notification of any emergency protection and remedial procedures which will be implemented. If adequate procedures cannot be formulated or implemented, the Administrator shall inform the appropriate emergency agencies of the hazard to protect the public from the area.

(V) All coal mine waste piles shall meet the requirements of 30 CFR §§ 77.214 and 77.215.

(D) Dams and embankments constructed to impound coal mine waste shall comply with the following:

(I) Each impounding structure shall be designed, constructed and maintained in accordance with the requirements applicable to temporary impoundments. Such structures may not be retained permanently as part of the approved postmining land use. Approval by the State Engineer's Office is not required.

(II) If the impounding structure meets the criteria of 30 CFR § 77.216 (a), the combination of principal and emergency spillways shall be able to safely pass the 100-year, 6-hour design precipitation event or a storm duration having a greater peak flow.

(III) Spillways and outlet structures shall be designed to provide adequate protection against erosion and corrosion. Inlets shall be protected against blockage.

(IV) Be designed so that 90 percent or more of the water stored during the design precipitation event can be removed within ten days and at least 90 percent of the water stored during the design precipitation event shall be removed within the ten day period following the design precipitation event.

(V) Runoff from areas above the disposal facility or runoff from the surface of the facility that may cause instability or erosion of the impounding structure shall be diverted into stabilized diversion channels designed to meet the requirements for diversions, and designed to safely pass the runoff from a 100-year, 6-hour design precipitation event or a storm duration having a greater peak flow.

(E) The Administrator may specify additional design criteria for waste piles or impounding structures on a case-by-case basis as necessary to meet the general performance standards of this subsection.

(F) Coal mine waste fires shall be extinguished by the operator in accordance with a plan approved by the Administrator and the Mine Safety and Health Administration. The plan shall contain, at a minimum, provisions to ensure that only

those persons authorized by the operator, and who have an understanding of the procedures to be used, shall be involved in the extinguishing operations. No burning or burned coal mine waste may be removed from a permitted disposal area without a removal plan approved by the Administrator. Consideration shall be given to persons working or living in the vicinity of the structure.

(G) Coal preparation plants shall be included within a permit area. Refer to Chapter 3, Section 6 for requirements applicable to coal preparation plants.

(xiii) Acid-forming and toxic materials, and other waste.

(A) All exposed coal seams remaining after mining and any acid-forming, toxic, and combustible materials, or any waste materials that are exposed, used or produced during mining shall be adequately covered, within 30 days of its exposure with nontoxic, nonacid-forming and noncombustible material, or treated. Compaction followed by burial or treatment shall be provided to prevent pollution of surface and groundwater quality, prevent sustained combustion and to minimize adverse effects on plant growth and postmining land uses. Such materials may be stored in a controlled manner until final burial and/or treatment first becomes feasible as long as storage will not result in any risk of water pollution or other environmental or public health and safety damage. Storage, final burial and treatment shall be done in accordance with all local, State and Federal requirements.

(B) Acid-forming or toxic material, or any other waste material capable of polluting water, shall not be buried or stored in the proximity of a drainage channel or its flood plain so as to cause or pose a threat of water pollution.

(C) Final burial of noncoal mine waste materials (such as grease, lubricants, paints, flammable liquids, garbage, trash, abandoned mining machinery, lumber and other combustible materials) and any wastes classified as hazardous shall be in a designated disposal site authorized by the Solid Waste Management Section of the Department.

(D) Management and final burial on the permit area of solid wastes generated by a mine mouth power plant or mine mouth coal drier shall be in accordance with this Section and with provisions of the Solid Waste Management Rules and Regulations deemed appropriate by the Administrator.

(d) Revegetation.

(i) General Revegetation Performance Standards

(A) The operator shall establish on all affected lands a diverse, permanent vegetative cover of the same seasonal variety native to the area or a mixture of species that will support the approved postmining land use in a manner consistent with

the approved reclamation plan. This cover shall be self-renewing, and capable of stabilizing the soil.

(B) Land which did not support vegetation prior to becoming affected because of natural soil conditions need not be revegetated unless subsoil from such affected land will support vegetation. The operator shall demonstrate to the Administrator's satisfaction that revegetation or reforestation is not possible if he seeks to proceed under the provisions of the subsection.

(C) After backfilling, grading, contouring, and the replacement of topsoil and/or approved substitutes, revegetation shall be commenced in such a manner so as to most efficiently retain moisture and control erosion on all affected lands to be revegetated. In addition, any fertilizer requirements based on previous analysis must be fulfilled.

(D) Mulch or other equivalent procedures which will control erosion and enhance soil moisture conditions shall be used on all retopsoiled areas.

(E) Any tillage and/or drill seeding shall be on the topographic contour, unless for safety reasons it is not practicable, or perpendicular to the prevailing wind on flat areas. Seeding of affected lands shall be conducted during the first normal period for favorable planting conditions after final preparation unless an alternative plan is approved.

(F) Any rills or gullies that would preclude successful establishment of vegetation or achievement of postmining land use shall be removed or stabilized.

(G) The bond for revegetation shall be retained for not less than ten years after the operator has completed seeding, fertilizing, irrigation, or other work to ensure revegetation. The bond responsibility period shall not be affected where normal husbandry practices are being followed as described in Chapter 4, Section 2(d)(i)(M). The success of revegetation shall be determined in accordance with Chapter 4, Section 2(d)(ii).

(H) The Administrator shall not release the entire bond of any operator until such time as revegetation is completed, if revegetation is the method of reclamation as specified in the operator's approved reclamation plan.

(I) Trees shall be returned to a number equal to the premining number. On affected lands, the total number of postmining trees shall be at least equal to the premining total number on those lands. The Reclamation Plan shall specify the tree species, the number per species and the location of tree plantings. The operator may also receive credit for tree species which invade the reclaimed lands if those tree species support the postmining land use and are approved by the Administrator. Planted trees

counted to meet the approved stocking rate shall be healthy, and at least 80 percent shall have been planted for at least eight years. All planted trees must have been in place at least two growing seasons. Invaded trees that are counted to meet the approved stocking rate shall be healthy and may be of any age.

(J) Monitoring of permanent revegetation on reclaimed areas before and after grazing shall be conducted at intervals throughout the bond responsibility period in accordance with the plan required by Chapter 2, Section 6(b)(iv). Monitoring results shall be presented in the annual report.

(K) The operator must protect young vegetative growth from being destroyed by livestock by fencing or other approved techniques for a period of at least two years, or until the vegetation is capable of renewing itself with properly managed grazing and without supplemental irrigation or fertilization. The Administrator, operator, and the landowner or land managing agency shall determine when the revegetated area is ready for livestock grazing.

(L) The operator must control and minimize the introduction and/or spread of noxious weeds on all affected lands in accordance with Federal and State requirements throughout the entire bond responsibility period.

(M) The following is a list of normal husbandry practices which, if conducted in a prudent manner, will not restart the minimum ten-year bond responsibility period for re-establishing vegetation.

(I) The operator may interseed species contained in the approved seed mix over established revegetation, but not within 6 years before the end of the bond responsibility period. The operator may add mulch to an interseeded area to facilitate plant establishment. Augmented seeding (reseeding) is not considered normal husbandry practice.

(II) Using approved species, the operator may transplant tree and shrub stock and/or plant containerized or bare root tree or shrub stock into reclamation provided the performance standards of Chapter 4 Section 2(d)(i)(H) for trees, and Chapter 4 Section 2(d)(ii)(A)(II)(2) for shrubs are not compromised.

(III) Grazing of reclamation is a normal husbandry practice.

(IV) For trees and shrubs planted in an approved shelterbelt, the practices of fertilization, irrigation and rototilling may be used as normal husbandry/nursery practices in accordance with standard practices.

(V) Beyond establishment, fertilization is a normal husbandry practice for cropland and pastureland throughout the bond responsibility

period. Irrigation is a normal husbandry practice beyond establishment for cropland and pastureland, provided the approved postmine land use is irrigated cropland or irrigated pastureland.

(VI) Mechanical husbandry practices such as selective cutting, mowing, combining, aerating, land imprinting, raking, or harrowing to stimulate permanent vegetation establishment, increase decomposition of organic matter, control weeds, harvest hay, and/or reduce standing dead vegetation and litter are considered normal husbandry practices. Other mechanical practices may be used if approved by the Administrator prior to their application.

(VII) Tillage and replanting are considered normal husbandry practices for croplands.

(VIII) Acceptable weed and pest control techniques representing normal husbandry practices include manual or mechanical removal, controlled burning, biological controls, and herbicide/pesticide applications. The operator may reseed treated areas of less than five acres per year as a component of this husbandry practice without restarting the bond responsibility period.

(IX) Controlled burning may be used to reduce the buildup of litter, weed seeds, and to control undesirable species. The operator may interseed any portion of the treated area, or reseed up to five acres, as a component of this husbandry practice without restarting the bond responsibility period.

(X) Subsidence, settling, and erosional features, such as rills, gullies, or headcuts less than five acres in size may be repaired as a normal husbandry practice. Repairs considered to be normal husbandry practices include hand work, mechanical manipulation, installation of erosion-control matting, silt fences, straw bales, or other similar work. The operator may reseed treated areas of less than five acres as a component of this husbandry practice without restarting the bond responsibility period.

(XI) Removal of pipelines, small culverts, and small sediment control measures, such as traps, riprap, rock or straw bale check dams, small sediment ponds, and silt fences are considered normal husbandry practices. The operator may reseed treated areas of less than five acres as a component of this husbandry practice without restarting the bond responsibility period, provided the structures are reclaimed at least two years prior to the end of the bond responsibility period.

(N) The following actions have been administratively identified as those which qualify as routine land management activities; implementing these actions will not restart the bonding liability period:

(I) Installation and/or removal of power lines and

substations;

(II) Installation and/or removal of fences;

(III) Installation and/or removal of any monitoring equipment or features;

(IV) Establishment and/or reclamation of two-track trails; and

(V) Emplacement and/or removal of above-ground pipelines.

(ii) Revegetation Success Standards

(A) Success standards vary by land use. Where standards for cover, production, and shrub density apply, they are quantitative and must be demonstrated to equal or exceed the success standards using methods and statistical analyses approved and published by the Administrator as required by OSM rules (CFR §816.116 (a)(1), August 30, 2006). Statistical analyses must use a 90-percent statistical confidence interval.

(B) Grazingland and Pastureland

(I) Revegetation shall be deemed to be complete when: (1) the vegetation cover of the affected land is shown to be capable of renewing itself under natural conditions prevailing at the site, and the absolute total vegetative cover is at least equal to the cover on the reference area or technical standard, (2) the annual herbaceous production is at least equal to the annual herbaceous production on the reference area or technical standard, (3) the species diversity and composition are suitable for the approved postmining land use, and (4) the requirements in (1), (2) and (3) are met for two out of four years beginning no sooner than year eight of the bond responsibility period. The species diversity and composition standard must be demonstrated using the semi-quantitative standards defined in Appendix 4A of Chapter 4 which do not require statistical analysis, or demonstrated using other alternative methods as approved by the Administrator. The following reference area type options are available:

(1.) The operator may choose to use control areas for lands where control areas were originally selected for revegetation success evaluation. Control areas will not be approved for new amendments or permits, after (date of rule approval

(2.) The operator shall choose one type of “Reference area” as defined in Chapter 1, Section 2(dl). The “Reference area” shall be approved by the Administrator.

(3.) The Administrator may set or approve quantitative technical success standards for cover and/or production based on data collected from undisturbed portions of the permit area or adjacent areas during a minimum of five independent sampling programs over a minimum of five years. The technical success standards may be approved for a single mine or a group of mines in the same geographical area.

(II) The shrub standard for grazingland shall include the postmining density, composition, and distribution of shrubs, and shall be based upon site-specific evaluation of premining vegetation and wildlife use. Shrub reclamation procedures shall be conducted through the application of best technology currently available as approved in the permit.

(1.) For lands affected between May 3, 1978 and August 6, 1996, a goal of a minimum of one shrub (full shrubs plus subshrubs) per square meter within a mosaic of shrub patches shall be restored using the best practicable technology. These shrub patches shall: cover a minimum of 10 percent of the postmining (affected area) landscape; be no smaller than 0.05 acres; and be arranged in a mosaic that will optimize interspersions and edge effect.

a. Acreage from permit-wide shrub goal mosaics that is in excess of the required acreage may be banked for credit toward shrub standard lands provided (1) the shrub goal requirement for all shrub goal lands is met, and (2) the methods used to evaluate the shrub goal lands meet the methods and statistical analyses required to achieve the shrub standard.

(2.) Except where a lesser density is justified from premining conditions in accordance with Appendix 4B of Chapter 4, at least 20 percent of the eligible lands shall be restored to shrub patches supporting an average density of one shrub per square meter. Patches shall be no less than 0.05 acres each and shall be arranged in a mosaic that will optimize habitat interspersions and edge effect. Criteria and procedures for establishing the standard are specified in Appendix 4B of Chapter 4. This standard shall apply to all lands affected after August 6, 1996. For bond release purposes, the average postmine total density and species specific density(ies) shall be at least 90 percent of the calculated criteria for the applicable standard.

a. The shrub density standard requires a statistical test using a 90% confidence interval to demonstrate achievement of the standard. The standard must be demonstrated for one year, the last year of the bond responsibility period. At least 80% of the shrubs shall have been planted for at least 60% of the ten-year bond responsibility period, and all planted shrubs shall have been in place for at least two years.

b. Approved shrub species and seeding techniques shall be applied to all remaining grazingland.

c. Shrub mosaic patches must pass the standard for shrub density, based on the shrub option chosen from Appendix 4B of Chapter 4. Shrub patches must also be included in the Sample Unit for evaluation of the standards for total absolute vegetative cover and species diversity and composition. Shrub patches are exempt from the production standard. The operator may change the selected shrub option during the bond responsibility period, if baseline data support the new shrub option, and subject to Administrator approval.

d. For areas designated as crucial or critical habitat, consultation and approval by the Wyoming Game and Fish Department shall be required for minimum stocking rates and planting arrangements of shrubs, including species composition. The approved shrub success standards shall be specified in the Reclamation Plan. Habitat shall be designated as crucial prior to the submittal of a permit application or any subsequent amendment. For areas determined to be important habitat, the Wyoming Game and Fish Department shall be consulted for recommended minimum stocking and planting arrangements of shrubs, including species composition, that may exceed the programmatic standard discussed above. Approval of shrub stocking plans by the Wyoming Game and Fish Department is not required for areas designated as important habitat.

(C) Cropland

(I) When the approved postmining land use is cropland, the reclaimed area shall be stabilized and revegetated to control erosion unless cropping shall immediately occur. The bond responsibility period shall begin the first season a crop is planted.

(II) Reclamation shall be deemed complete when productive capability is equivalent to an approved reference area (Chapter 1 Section 2(d1)) or published county production data collected the same years the crops are harvested. This standard shall be demonstrated for the two out of four years of the bond responsibility period, starting no sooner than year seven.

(1.) When using a reference area comparison, the operator may choose a reference area under operator control or on a nearby property. The comparison may be made using production quadrats or total field harvest. Appropriate statistical tests will be used for quantitative production quadrat comparisons. Total field harvest comparisons do not require a statistical test. The Administrator shall approve the reference area.

(2.) When using county production data, the total field harvest will be used for a comparison. No statistical test will be required for this comparison.

(D) Fish and Wildlife Habitat. The operator shall gain approval from the Administrator and Wyoming Game and Fish for development of permit-specific performance standards for fish and/or wildlife habitat. These standards shall be stated in the reclamation plan. Specific information shall include:

(I) Which vegetation parameters are used in the standard (e.g. cover, shrubstocking, species diversity and composition);

(II) If shrub stocking is required, then the standards Section 2(d)(ii)(A)(II)(2.) (a.) of this chapter apply; and

(III) Indicate if the standards require a statistical test, a numerical comparison with no statistical test, or a qualitative comparison.

(E) Postmining Wetlands

(I) Reclamation plans for postmining mitigation wetlands shall be reviewed and approved by the Army Corps of Engineers and the Administrator and incorporated into the Land Quality Division permit. Wetland mitigation shall be considered successful when the Army Corps of Engineers determines that mitigation was successful.

(1.) The operator may create and receive success credit for up to 25 percent additional acreage over the Army Corps of Engineers' required mitigation acreage for each mitigation wetland type.

(2.) The minimum bond responsibility period for areas containing mitigation wetlands is ten years and no request for Phase 3 Incremental Bond release shall be made earlier than the last year of the bond responsibility period. A statement of successful mitigation from the Army Corps of Engineers shall be submitted by the operator to the Administrator as demonstration of successful mitigation. If successful mitigation is approved by the Army Corps of Engineers prior to the last year of the bond responsibility period, then the wetland will be evaluated as part of the surrounding area using the standards applied to that area.

(II) Reclamation plans and success standards for postmining enhancement wetlands shall be reviewed and approved by the Administrator and the Game and Fish Department as a type of wildlife habitat and incorporated into the Land Quality Division permit. The reclamation plan and success standards shall be determined by the postmining land use, and fish and wildlife habitat standards in Section 2(d)(ii)(C) of this chapter apply. The minimum bond liability period for enhancement wetlands is ten years and no demonstration of successful reclamation shall be made earlier than the last year of the bond responsibility period.

(F) Industrial, Commercial, and Residential. When the

approved postmining land use is residential or industrial/commercial, the reclaimed area shall be stabilized and revegetated to control erosion unless development shall immediately occur.

(I) Industrial, commercial and residential areas may be released from area and all incremental bond costs as soon as the area is reclaimed to a condition that is ready for the approved land use. The exact criteria will vary with the postmine land use, and shall be specified in the approved Reclamation Plan.

(G) Developed water resource. For lands within the high water line of a developed water resource there are no revegetation reclamation standards.

(H) Recreational. The operator shall gain approval from the Administrator and the appropriate agency for development of permit-specific performance standards. The standards and the reclamation plan shall be included in the permit. If the reclamation plan includes stocking of trees or shrubs approved by Wyoming Game and Fish, then successful tree/shrub establishment must be demonstrated for one year, the last year of the bond responsibility period. At least 80% of the trees/shrubs shall have been planted for at least 60% of the last ten years of the bond responsibility period, and all planted trees/shrubs shall have been in place for at least two years.

(I) Forestry. Standards for the success of reforestation for commercial harvest shall be established in consultation with and approval from forest management agencies, prior to approval of any mining and reclamation plan that proposes reforestation. The quality and quantity of trees, and the cover of the understory vegetation community shall be not less than that required to achieve the postmining land use and shall be determined in accordance with scientifically acceptable sampling procedures approved by the Administrator. Successful tree establishment must be demonstrated for one year, the last year of the bond responsibility period. At least 80% of the trees shall have been planted for at least 60% of the last ten years of the bond responsibility period, and all planted trees shall have been in place for at least two years.

(J) Special Success Standards.

(I) For areas previously disturbed by mining and not reclaimed to the requirements of these regulations, the areas shall, at a minimum, be revegetated to a ground cover and productivity level existing before redisturbance and shall be adequate to control erosion.

(II) For lands and facilities that were affected prior to May 3, 1978, and continuously used by the mining operation since that date, the areas shall be reclaimed to the performance standards that were in effect in Rule and Regulation at the time of initial disturbance. At a minimum, the area must be revegetated to a ground cover adequate to control erosion.

(e) Diversion systems and drainage control.

(i) Diversion of streams.

(A) All diversions shall be designed to assure public safety, prevent material damage outside the permit area, and minimize adverse impacts to the hydrologic balance.

(B) All diversions and associated structures shall be designed, constructed, maintained and used to ensure stability, prevent, to the extent possible using best technology currently available, additional contribution of suspended solids to streamflow outside the permit area, and comply with all applicable local, State and Federal rules.

(C) Permanent diversions of intermittent and perennial streams shall be designed and constructed so as to be erosionally and geomorphically compatible with the natural drainage system.

(D) The design and construction of all diversions for perennial or intermittent streams shall be certified by a qualified registered professional engineer as meeting the diversion standards of these regulations and the approved permit.

(E) When permanent diversions are constructed or stream channels restored after temporary diversions, the operator shall:

(I) Restore, enhance where practicable, or maintain natural riparian vegetation on the banks and flood plain of the stream;

(II) Establish or restore the stream characteristics, including aquatic habitats to approximate premining stream channel characteristics; and

(III) Establish and restore erosionally stable stream channels and flood plains.

(F) The operator shall renovate all permanent diversions in accordance with the approved reclamation plan prior to abandonment of the permit area.

(G) When no longer needed to achieve the purpose for which they were authorized, all temporary diversions shall be removed and the affected land regraded and revegetated, in accordance with this Chapter. Before diversions are removed, downstream water treatment facilities previously protected by the diversion shall be modified or removed, as necessary, to prevent overtopping or failure of the facilities. This requirement shall not relieve the operator from maintaining water treatment facilities as otherwise required.

(ii) Control of discharge or drainage.

(A) Discharge from sedimentation ponds, permanent and temporary impoundments, coal-processing waste dams and embankments, and diversions shall be controlled, by energy dissipators, riprap channels, and other devices, where necessary, to reduce erosion, to prevent deepening or enlargement of stream channels, and to minimize disturbance of the hydrologic balance. Discharge structures shall be designed according to standard engineering design procedures.

(B) Drainage from acid-forming and toxic-forming material into ground and surface water shall be avoided by:

(I) Identifying, burying, and treating where necessary, material which, in the judgment of the Administrator may adversely affect water quality if not treated or buried;

(II) Preventing water from coming into contact with acid-forming and toxic-forming material and other measures as required by the Administrator; and

(III) Complying with the requirements of subsection (c)(xiii) of this Section and such other measures deemed necessary by the Administrator to protect surface water and groundwater.

(C) Surface water shall not be diverted or otherwise discharged into underground mine workings unless specifically authorized by the Administrator per the requirements of Chapter 19, Section 2(a) of these regulations.

(iii) In addition to meeting the standards of this Section, all diversions of groundwater discharge flows shall meet the standards of Section 2(e).

(iv) Diversion systems - Unchannelized surface water and ephemeral streams.

(A) Surface water shall be diverted around the operation for the following purposes:

(I) To control water pollution.

(II) To control unnecessary erosion.

(III) To protect the on-going operation.

(IV) To protect the water rights of downstream users.

(B) Temporary diversion of surface runoff or diversions used for erosion control shall meet the following standards:

(I) In soils or other unconsolidated material, the sides of diversion ditches shall be no steeper than 1½:1.

(II) In rock, the sides of diversion ditches shall not overhang.

(III) In soils or unconsolidated materials, the sides and, in ditches carrying intermittent discharges, the bottom shall be seeded with approved grasses so as to take advantage of the next growing season.

(IV) Rock riprap, concrete, soil cement or other methods shall be used where necessary to prevent unnecessary erosion.

(V) Culverts or bridges shall be installed where necessary to allow access by the surface owner for fire control and other purposes.

(VI) Diversion ditches shall in a nonerosive manner pass the peak runoff from a 2-year, 6-hour precipitation event, or a storm duration that produces the largest peak flow, as specified by the Administrator.

(C) In no case shall diversion ditches discharge upon topsoil storage areas, spoil or other unconsolidated material such as newly reclaimed areas.

(D) Permanent diversion structures shall be designed to be erosionally stable during the passage of the peak runoff from a 100-year, 6-hour precipitation event, or a storm duration that produces the largest peak flow, as specified by the Administrator.

(v) Diversion of intermittent and perennial streams.

(A) In no case shall spoil, topsoil, or other unconsolidated material be pushed into, or placed below the flood level of a perennial or intermittent stream except during the approved construction of the diversion of said stream.

(B) The Wyoming Game and Fish Department shall be consulted prior to the approval of a diversion of a perennial or intermittent stream.

(C) The banks of a diverted perennial or intermittent stream shall be protected by vegetation by planting approved species to take advantage of the next growing season.

(D) The banks and channel of a diverted perennial or intermittent stream shall be protected where necessary by rock, riprap or similar measures to minimize erosion and degradation of water quality. Permanent diversions shall be designed and constructed to be erosionally stable. The design of the permanent diversion shall also be consistent with the role of the fluvial system.

(E) Mining on the flood plain of a perennial or intermittent stream shall not be permitted if it would cause the uncontrolled diversion of the stream during periods of high water.

(F) Waters flowing through or by the mining operation shall meet the standards set by the U.S. Environmental Protection Agency and the Wyoming Water Quality Division in regard to the effect of the operation upon such waters.

(G) If temporary, the channel and flood plain shall be designed to pass, in a nonerosive manner, the 10-year, 6-hour precipitation event, or the capacity of the unmodified stream channel immediately above and below the diversion, whichever capacity is greater, or a duration having a greater peak flow, as specified by the Administrator. Cross-sections of the existing stream above, below and within the disturbed area may be used to determine the flow capacities, channel configuration and shape.

(H) If permanent, the channel and flood plain shall be designed to pass, in a nonerosive manner, the 100-year, 6-hour precipitation event, or a duration having a greater peak flow, as specified by the Administrator. Cross-sections of the existing stream above, below and within the disturbed area may be used to determine the flow capacities, channel configuration and shape.

(f) Sedimentation ponds.

(i) All surface drainage from affected lands excluding sedimentation ponds, diversion ditches, and road disturbances, shall pass through a sedimentation pond(s) before leaving the permit area. Sedimentation control devices shall be constructed prior to disturbance. The Administrator may grant exemptions to the use of sedimentation ponds where, by the use of alternative sediment control measures, the drainage will meet effluent limitation standards or will not degrade receiving waters.

(ii) Where the sedimentation pond(s) results in the mixing of drainage from affected lands with the drainage from undisturbed areas, the permittee shall comply with the applicable effluent limitation standards for all of the mixed drainage where it leaves the permit area.

(iii) Sedimentation ponds shall be designed and constructed to comply with the applicable requirements of subsection (g)(iv-vii) of this Chapter. They shall be located as near as possible to the affected lands and out of intermittent or perennial streams; unless approved by the Administrator.

(iv) Sedimentation ponds shall be operated and maintained to comply with the requirements of the Water Quality Division and the State Engineer's Office and satisfy the following requirements:

(A) Chemicals that will harm fish, wildlife, and related environmental values shall not be used for flocculation or other water treatments or if used these ponds will be protected.

(B) Sedimentation ponds shall be designed and maintained to contain adequate sediment storage as determined by acceptable empirical methods.

(C) Sluicing of collected sediments shall be prevented for the design precipitation event.

(D) All areas disturbed by the construction of the sedimentation pond shall be revegetated as soon as practicable to reduce erosion.

(v) The design, construction, and maintenance of a sedimentation pond or other sediment control measures in accordance with this subsection shall not relieve the operator from compliance with applicable effluent limitation standards of the Water Quality Division.

(vi) Sediment ponds shall be maintained until removal is authorized by the Division and the affected lands have been stabilized and initial vegetation established in accordance with the approved reclamation plan and the requirements of this Chapter. In no case shall sediment ponds treating reclaimed lands be removed sooner than two years after the last augmented seeding.

(vii) Sediment control measures for affected lands. Appropriate sediment control measures shall be designed, constructed, and maintained using the best technology currently available to prevent additional contributions of sediment to streamflow or to runoff outside the affected land. Such measures may consist of limiting the extent of disturbed land and stabilizing, diverting, treating or otherwise controlling runoff.

(g) Permanent and temporary water impoundments.

(i) Permanent water impoundments are prohibited unless authorized by the Administrator on the basis that:

(A) The impoundment and its water quality and quantity will support or constitute a postmining use equal to or greater than the highest previous use of the land.

(B) Discharge of water, if any, from the impoundment shall not

degrade the quality of receiving waters.

(C) The surface landowner, if different from the mineral owner, has consented to the impoundment.

(ii) Permanent water impoundments. Permanent water impoundments shall be constructed in accordance with the following requirements:

(A) Dams must contain an overflow notch and spillway so as to prevent failure by overfilling and washing. Overflow notches and spillways must be riprapped with rock or concrete to prevent erosion.

(B) The slopes around all water impoundments must be gentle enough so as not to present a safety hazard to humans or livestock and so as to accommodate revegetation. Variations from this procedure may be approved by the Administrator based on the conditions present at the individual locality.

(C) Mineral seams and other sources of possible water contamination within the impoundment area must be covered with overburden or stabilized in such a manner to prevent contamination of the impounded water.

(D) Bentonite or other mire-producing material within the impoundment basin shall be removed or covered with materials which will prevent hazards to man or beast.

(iii) The phrase "major impoundment" shall mean any structure impounding water, sediment or slurry:

(A) To an elevation of 20 feet or more above the upstream toe to the crest of the emergency spillway; or

(B) To an elevation of five feet above the upstream toe of the structure and has a storage volume of 20 acre-feet or more; or

(C) Which will be retained as part of the postmining land use, and:

(I) Has an embankment height greater than 20 feet as measured from the downstream toe of the embankment to the top of the embankment; or

(II) Has an impounding capacity of 20 acre-feet or greater.

(iv) The design, construction and maintenance of permanent and temporary impoundments shall be approved by the State Engineer's Office. In addition,

the following design and construction requirements shall be applicable:

(A) The design of impoundments shall be certified by a qualified registered professional engineer as designed to meet the requirements of this part and the applicable requirements of the State Engineer, using current, prudent engineering practices. For major impoundments, the certification also shall be filed with the State Engineer.

(B) The vertical portion of any remaining highwall shall be located far enough below the low water line along the full extent of highwall to provide adequate safety and access for the proposed water users.

(C) Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices, or where appropriate, Water Quality Division rules and regulations.

(D) The embankment, foundation, and abutments for all impoundments shall be designed and constructed to be stable. For any major impoundment or any impoundment which may present a danger to life, property or the environment, the Administrator shall require sufficient foundation investigations and laboratory testing to demonstrate foundation stability, and shall require a minimum static safety factor of 1.5 for the normal pool with steady seepage saturation conditions, and a seismic safety factor of at least 1.2.

(E) All vegetative and organic materials shall be removed and foundations excavated and prepared to resist failure. Cutoff trenches shall be installed if necessary to ensure stability.

(F) All impoundments shall be inspected regularly during construction and immediately after construction by a qualified registered professional engineer or qualified professional specialist under the direction of a qualified professional engineer. These individuals shall be experienced in impoundment construction. Immediately following each inspection a report shall be prepared and certified by the engineer describing the construction work observed and its conformance with the approved designs. All inspection reports shall be retained at the mine site and submitted in the annual report to the Administrator.

(G) After completion of construction and until final bond release or removal, all impoundments shall be inspected annually by a qualified registered professional engineer, or by a qualified professional specialist under the direction of the qualified professional engineer. These individuals shall be experienced in impoundment construction. Immediately following each inspection a report shall be prepared and certified by the engineer describing:

(I) Existing and required monitoring procedures and instrumentation;

(II) Depth and elevation of any impounded water;

(III) Existing storage capacity;

(IV) Aspects of the dam that may affect its stability or present any other hazardous condition; and

(V) If the impoundment is being maintained in accordance with the approved design and this Chapter. All annual inspection reports shall be retained at the mine site and annually submitted to the Administrator.

(H) In addition to the post-construction annual inspection requirements contained in paragraph (G) immediately above, all impoundments must be inspected during each of the intervening calendar quarters by a qualified individual designated by the operator. These inspections shall look for appearances of structural weakness and other hazardous conditions.

(I) Those impoundments subject to 30 CFR § 77.216 shall also be inspected in accordance with 30 CFR § 77.216-3.

(J) If any examination of inspection discloses that a potential hazard exists, the operator shall promptly inform the Administrator of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented the Administrator shall be notified immediately. The Administrator shall then notify the appropriate agencies that other emergency procedures are required to protect the public.

(K) Impoundments meeting the criteria of 30 CFR § 77.216(a) shall comply with the requirements of 30 CFR § 77.216. The plan required to be submitted to the District Manager of MSHA under 30 CFR § 77.216 shall also be submitted to the Administrator as part of the permit application.

(L) Impoundments shall include either a combination of principal and emergency spillways or a single open channel spillway designed to pass the design precipitation events discussed in subsection (v) below at non-erosive velocities.

(M) In lieu of meeting the requirements in section (L) above, the Administrator may approve a temporary impoundment that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or qualified registered professional land surveyor that the impoundment will safely control the design precipitation event, the water from which could be safely removed in accordance with

current, prudent, engineering practices. Such an impoundment shall be located where failure would not be expected to cause loss of life or serious property damage.

(v) The design precipitation event for the spillways for temporary water impoundments shall be a 25-year, 6-hour precipitation event, or a storm duration having a greater peak flow, as may be required by the Administrator or as specified below:

(A) The design precipitation event for spillways on temporary impoundments which meet the criteria of 30 CFR § 77.216(a) shall be a 100-year, 6-hour precipitation event, or a storm duration having a greater peak flow, as may be required by the Administrator; and

(B) Temporary impoundments which meet the criteria of 30 CFR § 77.216(a) and that are intended to impound coal mine waste shall have sufficient spillway and/or storage capacity to safely pass or control runoff from the probable maximum precipitation of a 6-hour precipitation event, or a storm duration having a greater flow, as may be required by the Administrator.

(vi) The design precipitation event for the spillways for a permanent impoundment shall be a 100-year, 6-hour precipitation event, or a storm duration having a greater peak flow, as may be required by the Administrator.

(vii) Before abandoning an area or seeking bond release, the operator shall ensure that all temporary structures are removed and reclaimed, and that all permanent structures are renovated, if necessary to meet the requirements of this subsection and to conform to the approved reclamation plan.

(viii) Tailings impoundments.

(A) Impoundments to contain mill tailings or slurry tailings shall be constructed in accordance with established engineering principles and shall be approved by the Wyoming State Engineer's Office. A copy of the State Engineer's approval shall be attached to the application.

(B) Reclamation of tailings impoundments shall be accomplished by removal and storage of all topsoil present within the tailings basin. After termination of operations, the topsoil shall be replaced and revegetated in accordance with these rules and regulations. If other methods of reclamation and stabilization against wind and water erosion are found to be necessary because of natural conditions, this must be stated and described subject to the Administrator's approval.

(h) Protection of Groundwater Recharge Capacity - The recharge capacity of the reclaimed lands shall be restored to a condition which:

- (i) Supports the approved postmining land use;
- (ii) Minimizes disturbances to the prevailing hydrologic balance in the permit area and in adjacent areas; and
- (iii) Provides a rate of recharge that approximates the premining recharge rate.

(i) Surface water and groundwater quality and quantity shall be monitored until final bond release to determine the extent of the disturbance to the hydrologic balance. Monitoring shall be adequate to plan for modification of surface mining activities, if necessary, to minimize adverse affects on the water of the State. The operator is responsible for properly installing, operating, maintaining and removing all necessary monitoring equipment. In addition, the operator is responsible for conducting monitoring in accordance with the requirements of Chapter 2, Section 5(a)(xv) and the approved monitoring plan. Noncompliance results for NPDES discharges shall be promptly reported by the operator to the Water Quality Division Administrator. The operator shall promptly report all other noncompliance results to the Land Quality Division Administrator and shall, after consultation with the Administrator, implement appropriate and prompt mitigative measures for those noncompliance situations determined to be mining caused. The monitoring system shall be based on the results of the probable hydrologic consequences assessment and shall include:

- (i) A groundwater monitoring program to determine:
  - (A) Infiltration rates, subsurface flows, and storage characteristics of the reclaimed land and adjacent areas; and
  - (B) The effects of reclamation on the recharge capacity of the reclaimed lands.

(ii) A surface water monitoring program which includes monitoring of surface water flow and quality from affected lands including those that have been graded and stabilized. Results of the monitoring will be used to demonstrate that the quality and quantity of runoff from affected lands with or without treatment will minimize disturbance to the hydrologic balance. Water quality monitoring results for discharges other than those authorized by Water Quality Division shall be reported whenever results indicate noncompliance with effluent limitation standards or degradation of the quality of receiving water shall be reported immediately. Monitoring results shall be available for inspection at the mine site.

(j) Roads.

- (i) Road classification system.

(A) Each road, as defined in Chapter 1, shall be classified as either a primary road or an ancillary road.

(B) A primary road is any road which is:

(I) Used for transporting mineral or spoil;

(II) Frequently used for access or other purposes for a period in excess of six months; or

(III) To be retained for an approved postmining land use.

(C) An ancillary road is any road not classified as a primary road.

(ii) General performance standards. Each road shall be located, designed, constructed, reconstructed, used, maintained and reclaimed so as to:

(A) Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust as well as dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;

(B) Control or prevent damage to fish, wildlife, or their habitat and related environmental values;

(C) Control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area;

(D) Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standards applicable to receiving waters;

(E) The normal flow of water in streambeds and drainage channels shall not be seriously altered;

(F) Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands listed in Chapter 12, Section 1(a)(v)(A); and

(G) Use nonacid- and nontoxic-forming substances in road surfacing.

(iii) Design and construction limits and establishment of design criteria. To ensure environmental protection appropriate for their planned duration and use,

including consideration of the type and size of equipment used, the design and construction or reconstruction of roads shall incorporate appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, and culvert size, in accordance with current, prudent engineering practices.

(iv) Location.

(A) No part of any road shall be located in the channel of an ephemeral stream that has the potential for sufficient flow to cause substantial environmental harm unless a downstream sediment control structure exists within the permit boundaries, any intermittent stream channel or any perennial stream channel unless specifically approved by the Administrator in accordance with subsections 2(c), 2(e), 2(f), 2(h), 2(i), 2(r)(ii) and 2(w) of this Chapter and Section 2(a)(i) of Chapter 19.

(B) Roads shall be located to minimize downstream sedimentation and flooding.

(v) Maintenance.

(A) A road shall be maintained to meet the performance standards of this Chapter.

(B) A road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as is practicable after the damage has occurred.

(vi) Reclamation. A road not to be retained under an approved postmining land use shall be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. This reclamation shall include:

(A) Closing the road to traffic;

(B) Removing all bridges unless approved as part of the postmining land use and removing all culverts unless approved as part of the postmining land use or approved for burial in place;

(C) Removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements;

(D) Reshaping cut-and-fill slopes as necessary to be compatible with the postmining land use and to complement the natural drainage pattern of the surrounding terrain;

(E) Protecting the natural drainage patterns by installing dikes

or cross drains as necessary to control surface runoff and erosion; and

(F) Scarifying or ripping the roadbed, replacing topsoil, subsoil or substitute material and revegetating disturbed surfaces in accordance with subsections 2(c)(i) through 2(c)(x) and 2(d) of this Chapter.

(vii) Primary roads.

(A) Certification. The construction or reconstruction of primary roads shall be certified in a report to the Administrator by a registered professional engineer. The report shall indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan. The report shall be available for review at the mine site within 30 days following the completion of construction of each primary road.

(B) Each primary road embankment shall have a minimum static safety factor of 1.3 or meet the requirements established under Chapter 2, Section 5(a)(xvi)(B).

(C) Location.

(I) To minimize erosion, a primary road shall be located, insofar as is practicable, on the most stable available surface.

(II) Fords of intermittent or perennial streams by primary roads are prohibited unless they are specifically approved by the Administrator as temporary routes during periods of road construction.

(D) Drainage control. In accordance with the approved plan:

(I) Each primary road shall be constructed or reconstructed and maintained to have adequate drainage control, using structures such as, but not limited to, bridges, ditches, cross drains, and ditch relief drains. The drainage control system shall be designed to safely pass the peak runoff from a 10-year, 6-hour precipitation event, or greater event as specified by the Administrator;

(II) Drainage pipes and culverts shall be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets;

(III) Drainage ditches shall be constructed and maintained to prevent uncontrolled drainage over the road surface and embankment;

(IV) Culverts shall be installed, and maintained to sustain the vertical soil pressure, passive resistance of the foundation, and the weight of

vehicles using the road;

(V) Natural stream channels shall not be altered or relocated without the prior approval of the Administrator in accordance with applicable Sections 2(c), 2(e), 2(f), 2(h), 2(i), 2(r)(ii) and 2(w) of this Chapter and Section 2(a)(i) of Chapter 19; and

(VI) Except as provided in (vii)(C)(II) of this section, structures for channel crossings of ephemeral streams that have the potential for sufficient flow to cause substantial environmental harm unless a downstream sediment control structure exists within the permit boundaries, any intermittent stream or any perennial stream shall be made using bridges, culverts, low-water crossings or other structures designed, constructed, and maintained using current, prudent engineering practices. The Administrator shall ensure that low-water crossings are designed, constructed and maintained to prevent erosion of the structure or streambed and additional contributions of suspended solids to streamflow.

(E) Surfacing: Primary roads shall be surfaced with material approved by the Administrator as being sufficiently durable for the anticipated volume of traffic and weight and speed of vehicles using the road.

(viii) Exemptions concerning roads.

(A) If approval is obtained from the surface landowner to leave a road unreclaimed, an operator may request in writing to the Land Quality Division that a road be permitted to remain unreclaimed. The operator must furnish proof of the surface landowner's approval. Final decision of road reclamation will be made by the Land Quality Division Administrator.

(B) In the event that the surface landowner, a city or town, another agency of the State of Wyoming or an agency of the United States government has requested that a road not be reclaimed, no bond shall be required of the applicant for the reclamation of the road and reclamation of the road shall not be required; provided, however, that the Administrator receives a copy of the written request from the surface owner, city or town, or agency of the State or Federal Government, for retention of the road.

(k) Time schedule.

(i) Reclamation must begin as soon as possible after mining commences and must continue concurrently until such time that the mining operation is terminated and all of the affected land is reclaimed. If conditions are such that final reclamation procedures cannot begin until the mining operation is completed, this must be explained in the reclamation plan. A detailed time schedule for the mining and reclamation progression must be included in the reclamation plan. This time schedule shall:

(A) Apply to reclamation of all lands to be affected in the permit area;

(B) Designate times for backfilling, grading, contouring and reseeded;

(C) Be coordinated with a map indicating the areas of progressive mining and reclamation;

(D) Establish reclamation concurrently with mining operations, whenever possible. If not possible, the schedule shall provide for the earliest possible reclamation consistent with the orderly and economic development of the property; and

(E) If the Administrator approves a schedule where reclamation follows the completion of mining, describe the conditions which will constitute completion or termination of mineral production.

(l) Unanticipated conditions.

(i) An operator encountering unanticipated conditions shall notify the Administrator as soon as possible and in no event more than five days after making the discovery.

(ii) An unanticipated condition is any condition encountered in a mining operation and not mentioned by the operator in his mining or reclamation plan which may seriously affect the procedures, timing, or outcome of mining or reclamation. Such unanticipated conditions include but are not limited to the following:

(A) The uncovering during mining operations of any acid-forming, radioactive, inflammable, or toxic materials which must be burned, impounded, or otherwise disposed of in order to eliminate pollution or safety hazards.

(B) The discovery during mining operations of a significant flow of groundwater in any stratigraphic horizon.

(C) The occurrence of slides, faults, or unstable soil and overburden materials which may cause sliding or caving in a pit which could cause problems or delays with mining or reclamation.

(D) The occurrence of uncontrolled underground caving or subsidence which reaches the surface, causing problems with reclamation and safety hazards.

(E) A discovery of significant archaeological or paleontological

importance.

(iii) In the case of the uncovering of hazardous materials, the operator shall take immediate steps to notify the Administrator and comply with any required measures to eliminate the pollution or safety hazard. Under all conditions the operator must take appropriate measures to correct, eliminate, or adapt to an unanticipated condition before mining resumes in the immediate vicinity of that condition.

(m) Disposal of mine facilities.

(i) All mine facilities constructed, used or improved by the operator must be removed or dismantled and shall be reclaimed in accordance with the requirements of this Chapter when no longer needed for the operation unless it can be demonstrated to the Administrator's satisfaction that the buildings or structures will be of beneficial use in accomplishing the proposed use of the land after reclamation or for environmental monitoring.

(ii) If the operator does not wish to remove certain mine facilities, the operator must obtain the written consent of the surface landowner to leave the mine facilities intact. The operator must make a request in writing, providing written proof of the above to the Land Quality Division, that the mine facilities be permitted to remain intact.

(n) Mine Facilities.

(i) Mine facilities shall be operated in accordance with the permit issued for the mine or coal preparation operation to which it is incident or from which its operation results.

(ii) In addition to the other provisions of this Chapter, mine facilities shall be located, maintained, and used in a manner that:

(A) Prevents or controls erosion and siltation, water pollution, and damage to public or private property;

(B) To the extent possible using the best technology currently available;

(1.) Minimizes damage to fish, wildlife, and related environmental values; and

(2.) Minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

(o) Signs and markers. Uniform and durable signs and markers of an

adequate size shall be posted by the operator at those points applicable to the areas or activities to which they pertain. Such signs and markers shall include mine and permit identification signs, perimeter markers, buffer zone markers, blasting signs and soil markers. The operator shall place and maintain all signs and markers prior to commencement and until the completion of the activities to which they pertain, which, for mine and permit identification signs, shall be at the time the bond is released.

(p) Drilled holes and other exposed underground openings: Plugging, sealing and capping of all drilled holes except those used solely for blasting or developmental drill holes which will be mined through within one year shall meet the requirements of Chapter 14. Developmental drilling shall meet the plugging and sealing requirements of W.S. § 35-11-404, where necessary. Temporary sealing and use of protective devices may be approved by the Administrator if the hole will be used for returning coal-processing waste or water to underground workings or monitoring groundwater conditions, and shall be used, at a minimum, for developmental drilling. Other exposed underground openings shall be properly managed as required by the Administrator to prevent access to mine workings and to keep acid or other toxic drainage from entering ground or surface water.

(i) With the prior approval of the Administrator and the State Engineer, wells may be transferred to another party for further use. The permittee shall remain responsible for the proper management of the well until final bond release.

(q) Air resources protection. All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion.

(r) Fish and wildlife performance standards.

(i) An operator shall, to the extent possible using the best technology currently available and consistent with the approved postmining land use, minimize disturbance and adverse impacts on fish, wildlife, and related environmental values, and achieve enhancement of such resources where practicable, which activities shall include:

(A) Properly construct, locate and operate roads and powerlines, including proper design of powerlines to avoid electrocution of raptors.

(B) Prevent access to areas such as roadways or ponds with hazardous materials, to avoid damage to wildlife without limiting access to known important routes.

(C) Afford protection, restore and enhance where practicable important habitats to fish and wildlife. This shall include, but is not limited to, wetlands and riparian vegetation along rivers and streams and bordering ponds and lakes.

(D) Select plant species with shrubs well represented, which

will enhance the nutritional and cover aspects of fish and wildlife habitat, where such habitat is identified as part of the postmining use, and distribute the reestablished habitat in a manner which includes a diversity and interspersion of habitats, optimizes edge effect, cover and other benefits for fish and wildlife, and is consistent with Section 2(d)(x)(E).

(E) Promptly report to the regulatory authority any species or critical habitat of such species listed as threatened or endangered, or any golden or bald eagle nest in or adjacent to the permit area, which was not reported or investigated in the permit application. Upon notification the Administrator shall consult with the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service and, after consultation, shall identify whether and under what conditions the operator may proceed.

(F) Where the postmining land use is for cropland, to the extent not inconsistent with this intended use, operators shall restore habitat types to break up large blocks of monocultures.

(ii) Stream buffer zone.

(A) No land within 100 feet of a perennial or intermittent stream shall be affected unless the Administrator specifically authorizes such activities closer to or through such a stream upon a finding that:

(I) Surface mining activities will not cause or contribute to the violation of applicable state or federal water quality standards, and will not adversely affect the water quantity and quality or other environmental resources of the stream; and

(II) If there will be a temporary or permanent stream-channel diversion, it will comply with all stream diversion requirements.

(B) The area not to be affected shall be designated a buffer zone, marked in the field and on the mine plan map.

(iii) No surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the State or the Secretary of the Interior or which will result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act (16 U.S.C. 1531 et seq.). No surface mining activity shall be conducted in a manner which would result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs. The Administrator shall consult with the State and Federal Fish and Wildlife Agencies to identify whether and under what conditions the operation may continue under this provision.

(iv) The operator shall perform periodic surveys, in the level of detail

and for those areas as determined by the Administrator, in accordance with Appendix B of these rules and regulations.

(s) Slides and other damage. Where instability may exist in backfill materials, an undisturbed natural barrier shall be provided to prevent slides and erosion, beginning at the elevation of the lowest coal seam to be mined and extending from the outslope for such distance as may be determined by the Administrator.

(t) Only those operations designed to protect disturbed surface areas and which result in improved resource recovery, abatement of water pollution, or elimination of hazards to the public shall be conducted within 500 feet of an active or abandoned underground mine. Approval for such operation shall be obtained from MSHA for operations proposed to be conducted within 500 feet of an active underground mine. The Administrator shall specifically approve operations proposed to be conducted within 500 feet of an abandoned underground mine.

(u) Cessation of operations. When it is known that a temporary cessation of operations will extend beyond 30 days, the operator shall submit to the Administrator that information required in an annual report.

(v) The operator shall conduct operations so as to maximize the utilization and conservation of the solid fuel resource being recovered so that re-affecting the land in the future can be minimized.

(w) The operator shall conduct all operations in such a manner as to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, to assure the protection or replacement of water rights, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this Chapter. The Administrator may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Mining and reclamation practices that minimize water pollution and changes in flow shall be used in preference to water treatment.

(x) Utility installations which are not part of the surface coal mining operation. All operations shall be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads; electric and telephone lines; and water and sewage lines which pass over, under or through the permit area, unless otherwise approved by the Administrator or owner of the utility installation.