

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
LAND QUALITY DIVISION**



**Draft Proposed Rules and Statement of Reasons**

**Coal – Chapters 1, 2, 4, 5 and Appendix A**

**Rule Package 1-S: Revegetation Success Performance  
Standards and Miscellaneous Deficiencies**

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**Organization of Rule Package**

The Draft Proposed Rules includes the strike and underline version of portions of Chapters 1, 2, 4, 5 and Appendix A, including the italicized Statement of Reasons following proposed revisions.

Attachment 1 includes complete Chapters 1, 2, 4 and 5 with the proposed rule revisions shown in strike and underline. Attachment 2 includes clean copies of complete Chapters 1, 2, 4 and 5 as they would appear if adopted. The complete Chapters are included in Attachments 1 and 2 to illustrate how the revised text meshes with the entire chapters. Attachment 3 contains Appendix A with deleted text struck out, and an explanation of where retained text was relocated.

## **Purpose And History Of Rule Package**

Appendix A was originally written as a guideline, but was codified as rule in 1986 in response to Office of Surface Mining (OSM) disapprovals. Because it was initially a guideline, some of the language is not written appropriately for rules, and some of the content is more appropriate for guideline than rule. In addition, Appendix A is over twenty years old and much of the technical information was outdated. A working group convened to revise Appendix A in the spring of 2004. These proposed rules are the product of this working group.

Appendix A of the Coal Rules and Regulations (R&R) contains the rules on vegetation sampling methods and reclamation success standards for shrubs on reclaimed lands. This Land Quality Division (LQD) proposed Coal R&R revision package deletes Appendix A entirely from the rules. Portions of Appendix A are relocated into Chapters 1, 2 or 4. Additional revisions were made to Chapters 1, 2, 4 and 5 to address OSM disapprovals, and to improve and clarify rules relating to requirements for vegetation measurements and performance standards.

### *The rule revision process*

A working group began meeting in May of 2004 with the objective of revising the rules on requirements for pre- and postmine vegetation studies and standards for coal operators. The group consisted of members of the LQD staff, members of the Wyoming Mining Association (WMA), consultants for mine operators, a representative from the OSM, and a representative from the Wyoming Game and Fish Department. All members concurred that Appendix A needed revision. This working group, termed the “coal veg rules group”, met for eleven full-day meetings between May 12, 2004 and March 1, 2005 to revise the coal veg rules.

The objectives of the group were to:

- clarify the rules pertaining to vegetation studies and revegetation standards
- eliminate Appendix A from the Coal R&R due to its ambiguous language
- move rules that should be retained from Appendix A to Chapters 1, 2 or 4
- address OSM required program amendments (disapprovals) in the current Wyoming rules
- make the rules technically current

The group also made the following agreements:

- retain the shrub standard from Appendix A with no revision as an Appendix to Chapter 4
- there would be no revision to existing chapter rules without group consensus

The coal veg rules group methodically reviewed all of Appendix A and determined, sentence by sentence, which components should be deleted, converted to guideline, or retained as rule. The group then determined where retained rules should be located in the

Coal R&R (Chapter 1, 2, or 4). In addition to discussions of Appendix A, the group also agreed to revise portions of the current rules in Chapters 2 and 4. Definitions were added or revised in Chapter 1 to support revisions to Chapters 2 and 4. Major changes included:

- Substantial revision to requirements for baseline vegetation measurements

These measurements are collected on plant communities to document pre-mine conditions. Baseline measurement requirements are reduced for plant communities that have already been thoroughly described in previous baseline studies.
- Revision to the definitions of “pastureland” and “eligible land”

These revisions specify when pre-mine plant communities qualify as pastureland, and when pastureland is required (eligible) to meet the shrub density standard.
- Addition of a species diversity and composition standard

This was added to Chapter 4 as Appendix 4A, and is a completely new set of standards. Current rules require that species diversity and composition support the post-mine land use. Exact standards for species diversity are specified in approved permits, and vary widely across mines. This new rule will standardize performance standards and evaluation of species diversity and composition.
- Organization of reclamation performance standards by postmine land uses

Reclamation standards for postmine land uses that are in current rules were collected into a single subsection, and new rules were added to cover postmine land uses that are not included in current rules.
- Addition of Normal Husbandry Practices to Chapter 4

Normal husbandry practices are management practices that are used following permanent seeding to enhance and/or support successful revegetation without restarting the bond clock. The OSM requires these practices be specified by the regulatory authority.

The next phase of the process was to convert the agreements into rule language. Members of the LQD staff composed rule language which was then reviewed by a “review team” comprised of two WMA members, two LQD members, and a representative from Wyoming Game and Fish.

The review team began meeting in May of 2005, and met at least monthly to review draft rule language through February of 2006. The role of the review team was to ensure consistency with coal veg rules group decisions, and to identify any points of disagreement the WMA had with proposed rules. In some instances, new language was

added by LQD or the review team that was not discussed during the coal veg rules group meetings. The reasons for adding new language were to address OSM disapprovals, reconcile conflicts in the rules, or fix gaps or issues identified either by the review team or LQD.

It is important to note that all draft rules were reviewed by the review team, often with several rounds of review before they were accepted. LQD did not add any rules that were not first vetted by the review team.

The coal veg rules group met again in November of 2006 to review draft rules, and again in the spring of 2007 for a final review. This rule package is the result of strong commitment and many hours of hard work and consensus building by the coal veg rules group and the review team. The rules are a significant improvement to the coal program, and represent a major achievement for all involved.

The Land Quality Advisory Board convened on Monday, January 7, 2008 for a hearing on the proposed rules. The board unanimously approved the rules, with revisions as discussed during the hearing. While there were many changes, they were primarily editorial or minor in nature, with only a handful of substantial changes.

A LQD Advisory Board meeting was also held on April 21, 2008 to discuss proposed Rule Package 1-Y. That rule package was intended to address five miscellaneous deficiencies identified by the OSM. The Board recommended that Rule Package 1-Y proceed to formal rulemaking. However, because the package was so limited in scope and received little comment it was decided to include the proposed rule language in Rule Package 1-S in order to more efficiently address the OSM deficiencies.

#### OSM required program amendments

One of the objectives of this rule package is to address program amendments required by OSM (also referred to as disapprovals). The OSM requires program amendments when they find that the rules of the regulatory authority are less stringent than or not as effective as the federal rules. When the revision process began in 2004, there were approximately twelve rule disapprovals from OSM requiring rule revision. Many, but not all, of these disapprovals applied to Appendix A. Below is an excerpt from a table used by OSM to track required Wyoming program amendments. As noted in the right column, many of these required amendments will be addressed through this rule package. Two required amendments were removed because of OSM rule changes. Five additional program amendments were included in the rule package with the incorporation of rule language presented to the LQD Advisory Board as Rule Package 1-Y

<b>LQD Citation</b>	<b>OSM Rule Citation 30 CFR</b>	<b>Descriptor</b>	<b>State Status</b>
Chapter 4. Sec. 2 (d)(x)	816.116(a)(1) & (2)	Revegetation Standards for Success (Vegetative and ground cover)	Rule package 1-S
Chapter 4. Sec. 2 (d)(x)	816.116(a)(1) & (2)	Revegetation Standards for Success (Alternate Success Standards)	Rule package 1-S
Appendix A Part 2. C.1.a.	816.116(a)(1) & (2)	Ocular Quadrat Methods	Removed
Appendix A Part 2.B.	816.116(a)(1) 817.116(a)(1)	Operator Sampling Techniques for Evaluating Ground Cover Parameters	Removed by new OSM rules
Appendix A Part 7.A.	816.111	General Considerations	Rule package 1-S
Appendix A Part 7.E.	816.116(b)(1)	Postmining Grazing Practices	Removed
Appendix A Part 8.D.	816.116(b)(2) 817.116(b)(2)	Cropland Success Standards	Rule package 1-S
Appendix A Sec.2C.3	816.116(b)(3)	Shrub Reclamation Standards (80%/60%) requirement)	Rule package 1-S
Appendix A Sec.7 F.	816.116(b)(3)	Shrub Reclamation Standards (80%/60% requirement)	Rule package 1-S
Appendix A Sec. 8 E.	816.116(b)(3)	Shrub Reclamation Standards (80%/60% requirement)	Rule package 1-S
Chapter 4. Sec. 2(d)(ix)	816.116(c)(4) 817.116(c)(4)	Revegetation (Approval of husbandry practices through the State program amendment process)	Rule package 1-S
Chapter 2. Sec. 2 (b)(vi)(A)	780.16(a)-(c) 780.21(a)-(c) SMCRA Sec. 515(b)(24)	Fish And Wildlife Enhancement Measures	Rule package 1-S
Chapter 2. Sec. 2(a)(vi)(R)	779.12(b)(1) 783.12(b)(1) 779.24(i) 783.24(i) 773.6(d)(3)(iii)	Public Availability of Permit Applications and Confidentiality	Presented to Adv. Board as Rule Package 1-Y

<b>LQD Citation</b>	<b>OSM Rule Citation 30 CFR</b>	<b>Descriptor</b>	<b>State Status</b>
Chapter 5. Sec. 2(b)(iii)	823.11; 785.17(a)	Prime Farmland (Exemption of performance standards)	Presented to Adv. Board as Rule Package 1-Y
Chapter 4. Section 2(g)(v), (vi)	816.46(c)(2) 817.46(c)(2); 816.49(a)(8), (c)(2); 817.49(a)(8), (c)(2)	Siltation Structures and Impoundments (Design precipitation events)	Presented to Adv. Board as Rule Package 1-Y
Chapter 4. Sec. 2(c)(xii)(D) (II)	816.84(b)(2) 817.84(b)(2)	Siltation Structures and Impoundments (Design precipitation events)	Presented to Adv. Board as Rule Package 1-Y
Chapter 2. Sec. 2(a)(i)(B)	778.13(b)	Name, address and telephone number of the operator if different from the applicant	Presented to Adv. Board as Rule Package 1-Y

In August of 2006, the OSM published new rules that no longer required sampling and statistical methods to be included in the rules of the regulatory authority. Instead, the regulatory authority (LQD) is required to select statistically valid sampling techniques, describe them in writing, and make them available to the public. In short, the LQD Administrator must approve and publish sampling and statistical methods, but they do not need to be in rules. This allows more flexibility to revise methods as new approaches become available. As a consequence, much of Appendix A was no longer required to be in rule, and most of Appendix A is now deleted. Before the new OSM rule was finalized, the coal veg rules group had developed rules for sampling and statistical methods that were to be included in Chapter 4. These were removed from Chapter 4, and will be incorporated into the Administrator's Approved Sampling and Statistical Methods document.

### Chapter 1

Revisions to chapter 1 include definitions relocated from Appendix A, plus new definitions intended to clarify current or proposed rules and/or sampling methods. In addition, below is a summary of several new definitions that are of interest because they are significant additions or changes to the rules:

➤ New definitions for “Regulatory categories”,

This rule codifies LQD policy set by the Administrator. These categories reflect different regulatory time periods and their associated performance and reclamation standards. Because regulations have changed through the years,

the standards that mined lands must meet are determined by the rules that were in effect when the lands were disturbed. Older lands are held to different standards than lands that have been disturbed more recently. These rules propose five categories with performance standards reflecting different rules that have been in place in Wyoming, ranging from Category 1 (pre-law, before 1969) to rules based on the Surface Mining Control and Reclamation Act (SMCRA) that apply after May 3, 1978 (Category 5).

➤ New definitions related to normal “Husbandry practices.”

Chapter 4 contains proposed rules on normal husbandry practices, which required supporting definitions. New terms include augmented seeding, establishment practices, husbandry practices, and interseeding. The current definition for “good husbandry practices” was deleted.

➤ Rules on “Reference areas” were combined from Appendix A, and Chapters 1, 2 and 4 and placed in Chapter 1.

“Reference area” is now defined as a general umbrella term for all types of areas used in evaluation of reclamation success. This includes control areas, comparison areas, limited reference areas (new) and extended reference areas, all of which are defined as subcategories under the reference area category. This allows reference area to serve as a generic term referring to all categories, which will facilitate clarity in rules and communication with the public and operators.

➤ Revision to the “Eligible land” definition

This revision adds pastureland with a full shrub density greater than one shrub per square meter as eligible land. This means that areas defined as pastureland are required to meet the shrub density standard if their pre-mine shrub densities are greater than one full shrub per square meter. Pasturelands with lower pre-mine shrub densities are not required to replace shrubs postmine.

➤ Revision to the “Pastureland” definition

This revision specifies the amount of relative cover required of pastureland species in order for the vegetation community to be considered pastureland.

➤ Addition of the “Species lacking creditable value” definition

This new definition describes which species may not be counted in reference areas and reclaimed areas for evaluation of reclamation success. Current rules exclude listed noxious weeds from evaluation of reclamation success, and exclude annual plants from production measurements. The proposed definition includes restrictions for cover and species diversity measurements, in addition to production. The species list has been expanded to include six

highly invasive species including cheatgrass, medusahead, and Halogeton. These species can prevent reclamation from achieving a land use that is at least equal to pre-mine conditions.

## Chapter 2

The structure of Chapter 2 was reorganized to expand the current two sections to six sections. Section 1 (General Requirements) has one minor revision. Section 2 (Application Content Requirements) is divided into five new sections:

- Adjudication Requirements (Section 2), minor changes
- Vegetation Baseline Requirements (Section 3), major revision, with inclusion of Appendix A rules
- General Baseline Requirements (Section 4), minor changes
- Mine Plan (Section 5), minor changes
- Reclamation Plan (Section 6), major revision, with inclusion of Chapter 4 and Appendix A rules

Section 3, Vegetation Baseline Requirements, is almost entirely new language for Chapter 2. Most of these rules are relocated from Appendix A, and include rules on mapping, sampling, species inventory, and vegetation community descriptions. New rules were added on shrub standard option selection and sample sizes. In addition, the requirement for production measurements were eliminated for baseline sampling, unless the operator is developing a technical standard or the vegetation community has not been described adequately in the past.

Section 6, Reclamation Plan requirements, contains rules currently in Chapter 2, plus revisions and additions to the requirements for the revegetation component of the reclamation plan from Chapter 4 and Appendix A.

## Chapter 4

The structure of Chapter 4, Section 2(d) was reorganized from a single section into two subsections. The first subsection (i) contains general revegetation performance standards, and contains most of the current Section 2(d) rules. Rules on normal husbandry practices are added. A few of the Section 2(d) rules were moved to Chapter 2 so that all rules regarding the reclamation plan were located together. Other rules with performance standards for specific land uses were moved to section 2(d)(ii).

The rules on normal husbandry practices are in response to an OSM required program amendment. The regulatory authority is required to specify acceptable husbandry practices which will not reset the ten-year bond clock. These practices must be normal practices for comparable undisturbed lands in Wyoming, and their use in comparable lands must be thoroughly documented. Examples of normal husbandry practices include transplanting trees and shrubs, spraying for weeds, mowing, fertilization of crops or pastureland, and controlled burning. Practices that are not specified as normal husbandry practices may result in resetting the bond clock. Therefore, the new rules on normal



husbandry practices and their accompanying documentation are quite extensive to ensure that many practices are included and are well-documented.

The second subsection (ii) contains Revegetation Success Standards, listed by postmine land use category. The land uses listed in this section are:

- Grazingland
- Pastureland
- Cropland
- Fish and Wildlife Habitat (new rule)
- Postmining wetlands (new rule)
- Industrial, Commercial and Residential
- Developed Water Resource (new rule)
- Recreational (new rule)
- Forestry
- Special Success Standards (new and existing rule)

#### *Grazingland and Pastureland*

The standards for these two land uses are similar and were combined into a single section. Several changes are worth noting in this section:

- The veg rule group added terms describing standards which require statistical analysis (quantitative), standards which have a numeric comparison but no statistics (semi-quantitative), and standards which have no numeric comparison (qualitative).
- The requirements for the shrub standard were revised to codify current policy (banking of shrub goal lands, Section 2(d)(ii)(A)(II)(1.) (a.)), address OSM disapprovals (80-60 rule, Section 2(d)(ii)(A)(II)(2.) (a.)), clarify questions such as which performance standards apply to shrub mosaics and circumstances where the operator may change their shrub option (Section 2(d)(ii)(A)(II)(2.) (c.)), or improve clarity of rule language.

#### *Appendix 4A Species Diversity and Composition Standard*

This appendix describes what lands are required or eligible to meet the standard, the structure of the standard, and procedures for collecting the data to evaluate the standard. The standard is specified as being semi-quantitative, requiring no statistical analysis. Although the structure of the standard is explained, there are no values included in the standard. These numbers will be published by the Administrator at a later date in a guideline.

#### *Appendix 4B Evaluation of Shrub Density*

This appendix describes the different shrub standard options, and is relocated from Appendix A.

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*The authority to amend these rules is provided by Wyoming Statute (W.S.) §§ 35-11-112(a)(i), 35-11-114(b), 35-11-406(a)(vii), 35-11-406(b)(iii) and 35-11-415(b)(vii).*

DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 1

AUTHORITIES AND DEFINITIONS FOR SURFACE COAL MINING OPERATIONS

Section 1. **Authority.** These rules and regulations are adopted by the Environmental Quality Council and the Administrator of the Land Quality Division pursuant to the authority granted the Council and the Administrator by the Wyoming Environmental Quality Act, Sections 35-11-101 through 35-11-1104, Wyoming Statutes, 1977, as amended. These rules and regulations are effective upon filing with the Secretary of State. They become an official part of Wyoming's coal regulatory program when approved by the U.S. Secretary of the Interior or his designee.

Section 2. **Definitions.** The definitions included in the Wyoming Environmental Quality Act, are hereby adopted by this reference. All references to the "Act" herein refer to the Wyoming Environmental Quality Act, as amended.

(a) "Acid drainage" means water with a pH of less than 6.0 and in which total acidity exceeds total alkalinity, discharged from an active or inactive mine or from an area affected by mining and reclamation operations.

(b) "Acid-forming materials" means earth materials that contain sulfide minerals or other minerals which exist in a natural state or if exposed to air, water or weathering processes, will cause acid conditions that may hinder plant establishment or create acid drainage.

(c) "Adjacent areas" means land located outside the permit area upon which air, surface water, groundwater, fish, wildlife, or other resources protected by the Act may reasonably be expected to be adversely impacted by mining or reclamation operations. Unless otherwise specified by the Administrator, this area shall be presumptively limited to lands within one-half mile of the proposed permit area.

(d) "Administrator" means the Administrator of the Division of Land Quality.

(e) "Amendment" means the addition of new lands to a previously approved permit area, as allowed by W. S. § 35-11-406(a)(xii).

~~(f) "Animal unit" means one mature beef cow of approximately 1,000 pounds and a calf (up to 6 months old).~~

*This definition is deleted because it is not used in the rules.*

(f) “Annual” means a plant which completes its life cycle in 12 months or fewer.

*This term is defined to standardize sampling methodology.*

(g) "Applicant" means any "person" seeking a permit, permit revision, renewal, transfer, or other approval from the Administrator to conduct mining and reclamation operations, or "person" seeking a license to explore, but does not include subsidiaries or parents of the "person," as "person" is defined in W.S. § 35-11-103(a)(vi).

(h) "Approximate original contour" means that surface configuration achieved by backfilling and grading of the mined areas so that the reclaimed land surface closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain.

(i) "Aquifer" is a zone, stratum or group of strata that stores and transmits water in sufficient quantities for a specific use.

(j) “Augmented seeding” means reseeding in response to the unsuccessful germination, establishment or permanence of revegetation efforts. Augmented seeding resets the applicable liability period. A synonym is reseeding.

*This definition was required by OSM to address the difference between interseeding which is a husbandry practice which does not reset the bond clock and augmented seeding which does reset the bond clock. The difference between the two is that augmented seeding is used when the original seeding has been unsuccessful. Interseeding is used to enhance established vegetation in order to improve composition.*

(k) “Barren” means any land unit devoid of vegetation, or practically so.

*This word is defined to standardize sampling methodology and provide consistency in data reporting. .*

(l) “Baseline vegetation inventory” means a vegetation sampling program executed prior to any significant surface disturbance caused by proposed mining activities. The inventory will provide a verbal and mental picture of the prevailing plant communities and will quantitatively and qualitatively classify the different plant communities to the specifications of Wyoming State Law.

*This definition was moved from Appendix A and was revised for clarity.*

(m) “Belt transect” means a rectangular sampling plot used for the estimation of shrub density (premining and postmining) and postmining species diversity and

species composition, each belt transect shall be at least 100 square meters and a minimum of 50 meters in length.

*This term is defined to standardize sampling methodology and provide consistency in data reporting. .*

(n) “Best Practicable technology” means a technology based on methods and processes that are both practicable and reasonably economic and is justifiable in terms of existing performance and achievability in relation to the establishment of shrubs in the required density, aerial extent and species.

*Best Technology Currently Available is an important component of the shrub rules that became effective in 1996. This language enables the Administrator to require an operator to revise the permit to adopt shrub establishment methods that are more likely to result in successful shrub establishment if the Administrator finds the operator is not achieving the required shrub density, aerial extent or species. . However, the term has been changed to Best Practicable Technology to reflect not all technology may be practicable as stated in the definition. The definition of BPT is patterned on the statutory definition of “Best Practicable Technology” for in situ mining. The practicable and economic reasonableness language was borrowed from the LQD Noncoal Chapter 11 In Situ regulations to ensure the division does not enforce methods for shrub establishment that are extreme in their cost or practicability*

(o j) “Best technology currently available” means equipment, devices, systems, methods, or techniques which, as determined by the Administrator, are currently available and practicable, and will:

(i) Prevent, to the extent possible, additional contributions of suspended solids to streamflow or runoff outside the affected land or permit area. But in no case shall contributions exceed requirements set by applicable State or Federal laws, and

(ii) Minimize, to the extent possible, disturbances and adverse impacts on fish, wildlife and related environmental values, and achieve enhancement of those resources where practicable.

(p) “Biennial” means a plant that lives for two years, producing vegetative growth the first year and usually blooming and fruiting and senescing in the second year and then dying.

*This term is defined to standardize sampling methodology and provide consistency in data reporting.*

(g k) "Bond" means a surety or self-bond instrument by which the permit applicant assures faithful performance of all requirements of the Act, all rules and regulations promulgated thereunder, and the provisions of the permit and license to mine. This term shall also include the following, which the operator has deposited with the Department of Environmental Quality in lieu of a Surety Bond or Self-Bond Instrument:

(i) Federal insured certificates of deposit;

(ii) Cash;

(iii) Government securities;

(iv) Irrevocable letters of credit;

(v) An alternative method of financial assurance that is acceptable to the Administrator and provides for a comparable level of assurance for performance of reclamation obligations. The alternative method of financial assurance must first be approved by the Office of Surface Mining; or

(vi) A combination of any of these bonding methods.

(r) "Bond responsibility period" means the minimum 10 year period during which the bond, in part or wholly, remains in effect.

*This term is defined because it is used several times in Chapter 4.*

(s) "Cactus" means any member of the Cactaceae plant family. Members of the Cactaceae plant family are in the lifeform category of succulent.

*This term is defined to standardize sampling methodology and provide consistency in data reporting.*

(t l) "Coal exploration" means either:

(i) The field gathering of surface or subsurface geologic, physical, or chemical data by mapping, trenching, drilling, geophysical or other techniques necessary to determine the quality and quantity of overburden and coal of an area. If this activity results in the extraction of coal, the coal shall not be offered for commercial sale (except for test burns); or

(ii) The gathering of environmental data to establish the conditions of an area before beginning ~~surface~~ coal mining and reclamation operations.

*The word "surface" has been removed because it was a holdover from when the coal and noncoal rules were combined.*

- (u m) "Coal mine waste" means ...
- (v n) "Coal preparation plant" means ...
- (w o) "Coal-processing waste" means ...
- (x p) "Combustible material" means ...
- (y q) "Compaction" means ....

*The definitions above were not revised and the only change to these sections was the updating of subsection headers to reflect proposed revisions made throughout the Chapter.*

(r) ~~"Comparison area" means a land unit which is representative, in terms of physiography, soils, vegetation and land use history, or a premining plant community from which no or insufficient vegetation data were collected prior to disturbance.~~

*This definition is revised and moved to a subcategory under "Reference area".*

(s) ~~"Complete application" means, for purposes of W.S. § 35-11-406(n)(i) and (m) and to indicate the Administrator's assessment of completeness and suitability for publication under W.S. § 35-11-406(h) and (j), an application for a permit which contains all information required by the Act and the Land Quality Division regulations that is necessary to make a decision on permit issuance.~~

*The term "complete application" is defined by statute (W.S. § 35-11-103(xxii)) and for the sake of consistency was removed from Chapter 1 of the LQD Rules and Regulations.*

(t) ~~"Control area" means a land unit which is representative, in terms of physiography, soils, vegetation and land use history, of a plant community to be affected by mining activities as verified by a comparison of its quantitative and qualitative characteristics to similar information from the plant community it typifies and where a mathematical climatic adjustment is made.~~

*Definition was revised and included under reference area.*

(z) "Cool season" plant means a plant which generally makes the major portion of its growth during late fall, winter and early spring. Cool season species generally exhibit the C3 photosynthetic pathway. ~~is a species which grows and flowers during the spring. Its growth usually slows or becomes dormant during the hotter, drier~~

portions of the summer, but the species may resume growth in the fall with the advent of cooler temperatures and available soil moisture.

*This definition was moved from Appendix A and revised. This term is defined to standardize sampling methodology and provide consistency in data reporting.*

(aa u) “Cover” means ~~vegetation, litter, and rock over the soil which intercept rainfall.~~ the percent of the ground surface which is covered by the vertical projection of objects on or above that ground surface. The objects may include standing plant material and cryptogams, litter or rock. “Absolute cover” means the percent cover of a given category independent of other cover categories. The following cover categories or descriptions used are:

(i) “Absolute cover of litter” means the percent of the ground surface which is overlain by litter;

(ii) “Absolute cover of rock” means the percent of the ground surface which is covered by rock;

(iii) “Absolute cover of vegetation” means the percent of the ground surface which is covered by the vertical projection of all live vascular plants;

(iv) “Absolute cover of vegetation by species” means the percent of the ground surface covered by individual live vascular plants;

(v) “Absolute cover of cryptogams” means the percent of the ground surface which is covered by cryptogams;

(vi) “Absolute cover of total ground cover” means the sum of vegetation, cryptogams, litter, and rock cover;

(vii) “Absolute cover of bare ground” means the percent of the ground surface which is not covered by the vertical projection of vascular plants and cryptogams, litter or rock; and

(viii) “Relative cover” means the expression of any number of cover categories in relation to each other such that the sum of the chosen relative cover values totals 100 percent.

*The above definition is a combination of existing definitions for “cover” in Chapter 1 and the Glossary in Appendix A. The proposed revisions and reformatting of this definition makes strike-and-underline too extensive to show so the entire definition has been underlined except to indicate current language which was not included in the proposed definition. All*



*cover definitions are now in one location. These definitions are necessary to support sampling methodology and provide consistency in data presentation.*

(ab) "Cover crop" means a preparatory crop of one or more species seeded and grown prior to the seeding of the permanent seed mixture, for the chief purpose of protecting the soil from erosion and also for improving the soil fertility and structure. The term is synonymous with "stubble crop" and is considered a type of mulch.

*This definition is required to explain one of the acceptable types of mulch.*

(ac ✕) "Critical habitat" means those areas essential to the survival and recovery of species listed by the Secretary of the Interior as threatened or endangered under the authority of 50 CFR, Part 17.

(ad ♣) "Crucial habitat" means those areas, designated as such by the Wyoming Game and Fish Department, which determine a population's ability to maintain and reproduce itself at a certain level over the long term.

(ae) "Cryptogam" means a plant (vascular or non-vascular) that reproduces by spores rather than seeds. A plant in any of these groups: Lichens, Bryophytes (mosses, liverworts, hornworts), Pteridophytes (ferns, moonworts, horsetail, club mosses, spike mosses, quillworts, pepperwort) will be considered cryptogams.

*This term is defined to standardize sampling methodology and provide consistency in data reporting.*

(af) "Density" means the number of individuals per unit area.

*This definition was in Appendix A Glossary and is necessary to support sampling methodology.*

(ag ✕) "Designated authorized representative" means ...

(ah ♣) "Developmental drilling" means ...

(ai ♣) "Discoverer" means ...

(~~aj~~) "Diversion" means ...

*No changes were made to the four subsections above other than the renumbering of the subsections.*

(ak) "Dominant" means for the purpose of calculating Chapter 4 shrub restoration performance standard, the full shrub or subshrub species with the greatest

relative density.

*This definition was revised and moved from Appendix A Glossary and is necessary to support sampling methodology and performance standards.*

(a**b**) "Drill site" means all areas of land that are or will be disturbed or utilized by exploration drilling. This area includes drill holes or other drilled excavations, drilling pads, and areas disturbed by mud pits, and any land over which drilling mud mixtures overflow or may disturb.

(a**e**m) "Eligible land" means all ~~affected~~ land to be affected by a mining operation after August 6, 1996. ~~Cropland, pastureland or treated grazingland approved by the Administrator which is to be affected by a mining operation after August 6, 1996 is not "eligible land" which carries the grazingland land use designation and all affected pastureland land use units which have a full shrub density greater than one full shrub per square meter. Pastureland is eligible only if the land units are included in a new permit or permit amendment application which is submitted to the Administrator after approval of this rule by the Office of Surface Mining.~~

*Grazingland, including land with pre-mining shrub densities of less than one shrub per square meter, functions as wildlife habitat and is eligible for shrub reclamation. Shrub reclamation is necessary to re-establish pre-mining native plant communities and functional wildlife habitat. Pastureland, with its primary use as domestic livestock grazing and haying, often has a significant enough shrub component that it also functions as wildlife habitat. Re-establishment of shrubs from Pastureland with a pre-mining shrub density of at least one shrub per square meter is considered necessary to meet the intent of reclaiming the pre-mining land use. The Pastureland shrubs may be replaced on other reclaimed land, such as grazingland.*

(a**d**n) "Embankment" means an artificial deposit of material that is raised above the natural surface of the land and used to contain, divert, or store water, support roads or railways, or other similar purposes.

(a**o**) "Endangered species" means any species which is in danger of extinction throughout all or a significant portion of its range and which has been listed under the Federal Endangered Species Act.

*This definition was in Appendix A and is necessary to support Chapter 2 and Chapter 4 baseline sampling methodology and performance standards.*

(a**p**) "Enhancement wetland" means a reclaimed postmining wetland which exceeds the minimum required mitigation wetlands acreage required by the Army Corps

of Engineers under Section 404 of the Federal Clean Water Act.

*This new definition is required to support performance standards in Chapter 4.*

(aeq) "Ephemeral stream" means ...

(afr) "Essential hydrologic functions" means ...

*The two definitions above were only renumbered to reflect the proposed revisions made throughout the Chapter.*

(as) "Establishment practices" means practices used to facilitate actual establishment of targeted plants and are not intended to continue throughout the bond responsibility period. These practices are acceptable practices, but delay the start of the bond responsibility period until they are discontinued.

*"Establishment practices" was defined to more clearly differentiate those practices which delay the start of the bond responsibility period and those which do not impact the bond responsibility period. See also the discussion of "husbandry" practices.*

(agt) "Excess spoil" means spoil material disposed in a location other than the mined-out area, except that spoil material used to achieve the approximate original contour or to blend the mined-out area with the surrounding terrain.

(ahu) "Existing structure" means a structure or facility used in connection with or to facilitate surface coal mining and reclamation operations for which construction begins prior to the approval of a State program pursuant to Section 503 of P.L. 95-87.

(aiv) "Exploration area" means, for bonding purposes, one or more drill sites, comprising an integrated project conducted by a discoverer within one of the three districts presently established by the Land Quality Division of the Department of Environmental Quality.

(ajw) "Exploration by drilling" means any exploration drilling for the purpose of gathering subsurface geologic, physical or chemical data to determine the location, quantity or quality of the natural mineral deposit of an area, excluding holes drilled for use as water wells.

(akx) "Farm" means, with respect to alluvial valley floors, one or more land units on which agricultural activities are conducted. A farm is generally considered to be the combination of land units with acreage and boundaries in existence prior to August 3, 1977, or, if established after August 3, 1977, with those boundaries based on

enhancement of the farm's agricultural productivity and not related to ~~surface~~ coal mining operations.

(~~ay~~) "Flood irrigation" means, with respect to alluvial valley floors, supplying water to plants by natural overflow or the diversion of flows, so that the irrigated surface is largely covered by a sheet of water.

(~~az~~) "Forb" means any herbaceous plant species other than the members of the grass (Poaceae [Gramineae]), sedge (Cyperaceae) or rush (Juncaceae) plant families.

*This word is defined to standardize sampling methodology and provide consistency in data presentation.*

(~~ba~~) "Full Shrub" means a perennial woody plant which differs from a tree by normally being shorter in height and by often having several stems arising near the base.

*This definition was in Appendix A Glossary and is defined to standardize sampling methodology, data presentation as required, and performance standards.*

(~~bb am~~) "Gel strength" means the minimum shear stress which results in permanent deformation of a gel.

(~~bc an~~) "General area" means, with respect to hydrology, the topographic and groundwater basin surrounding a permit area which is of sufficient size, including areal extent and depth, to allow assessment of the impacts resulting from the mining operation on the quality and quantity of surface water and groundwater systems in the basins, including consideration of the interaction of the impacts with adjacent mines.

~~(ao) "Good husbandry practices" means sound land management techniques which are commonly practiced in the area of the mine considering the postmining land use and, if discontinued after the bond period ends, shall not reduce the probability of permanent vegetation success.~~

*The definition for "good husbandry practice" has been deleted because the proposed addition of the term "normal" husbandry has been included in Chapter 1 and therefore becomes unnecessary and redundant.*

(~~bd~~) "Graminoid" means a plant species of the grass (Poaceae [Gramineae]), sedge (Cyperaceae) or rush (Juncaceae) plant families.

*This word is defined to standardize sampling methodology and data presentation.*

(~~be~~) "Grass" means a plant species of the Poaceae (Gramineae) plant family.

*This word is defined to standardize sampling methodology and data presentation.*

(bf) "Grass-like" means a plant species of the sedge (Cyperaceae) or rush (Juncaceae) plant families that vegetatively resemble members of the grass family Poaceae (Gramineae).

*This word is defined to standardize sampling methodology and data presentation.*

(bg) "Grazing enclosure" is a fence or other device utilized to prevent grazing by large herbivores in order to more accurately estimate production of a land unit. means a land unit surrounded and/or covered by fencing or other materials which prevents livestock grazing in order to more accurately estimate the current year's herbaceous production on the land unit.

*A definition for this term was in Appendix A Glossary and has been revised and edited for clarity. It is needed to support sampling methodology.*

(bh aq) "Groundwater" is means subsurface water that fills available openings in rock or soil materials such that they may be considered water-saturated.

(bi aq) "Hazardous materials" means ...

(bj aq) "Highest previous use" means ...

(bk as) "Highwall" means ...

(bl aq) "History of intensive agricultural use" means ...

*No changes to the four definitions above are proposed. The sections were only renumbered to reflect the proposed revisions throughout the Chapter.*

(bm) "Husbandry practice" means, when preceded by the word "normal", those management practices that may be used to achieve revegetation success without restarting the bond responsibility period.

*To make the definition easier to find this term was placed under husbandry practice even though normal husbandry practice is used in Chapter 4.*

(bn aq) "Hydrologic balance" means the relationship between the quality and quantity of inflow to, outflow from, and storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake or reservoir. It encompasses the quantity and quality

relationships between precipitation, runoff, evaporation, and the change in ground and surface water storage.

(~~bo av~~) "Hydrologic regime" means the entire state of water movement in a given area. It is a function of the climate and includes the phenomena by which water first occurs as atmospheric water vapor, passes into a liquid or solid form and falls as precipitation, moves thence along or into the ground surface, and returns to the atmosphere as vapor by means of evaporation and transpiration.

(~~bp aw~~) "Imminent danger to the public" means the existence of any condition or practice, or any violation of a permit or other requirements of the Act in a ~~surface~~ coal mining and reclamation operation, which could reasonably be expected to cause substantial physical harm to persons outside the permit area before the condition, practice, or violation can be abated. A reasonable expectation of death or serious injury before abatement exists if a rational person, subjected to the same condition or practice giving rise to the peril, would avoid exposure to the danger during the time necessary for abatement.

(~~bq ax~~) "Important habitat" means that habitat which, in limited availability, supports or encourages a maximum diversity of wildlife species or fulfills one or more living requirements of a wildlife species. Examples of important habitat include, but are not limited to, wetlands, riparian areas, rimrocks, areas offering special shelter or protection, reproduction and nursery areas, and wintering areas.

(~~br ay~~) "Impoundment" means a closed basin formed naturally or artificially built which is dammed or excavated for the retention of water, slurry or other liquid or semi-liquid material. A permanent impoundment is a structure that will remain after final bond release.

(bs) "Inclusion" means, with respect to vegetation, an area no more than two acres in size, which is distinctly different from the surrounding vegetation community due to substantial, visible differences in species composition, cover, or production.

*This word is defined to standardize sampling methodology.*

(~~bt az~~) "Intermittent stream" means a stream or part of a stream that is below the local water table for some part of the year, but is not a perennial stream.

(bu) "Interseed" means a secondary seeding into established vegetation in order to improve composition, diversity or seasonality. Interseeding is done to enhance revegetation rather than to augment the revegetation that is unsuccessful in terms of germination, establishment, or permanence.

*A definition for interseed is required to distinguish it from augmented seeding which restarts the bond responsibility period.*

(bv) "Introduced" means a plant species that is not a component of the original flora of North America.

*A definition for introduced is needed to explain the requirements of seed mixes.*

(bwa) "Irreparable harm to the environment" means, for the purpose of W.S. § 35-11-406(o), any damage to the environment in violation of the Act or regulations, that cannot be corrected by actions of the applicant.

(bx~~b~~) "Joint agency approval" means, for ~~surface~~ coal mining operations, the approval of mining or reclamation plans that would adversely affect any publicly owned park or any place included in the National Register of Historic Places by the federal, state, or local agency with jurisdiction over the park or place.

(bye) "Land use" means for ~~surface~~ coal mining operations, specific uses or management-related activities, rather than the vegetation or cover of the land. Land uses may be identified in combination when joint or seasonal uses occur. Changes of land use or uses from one of the following categories to another shall be considered as a change to an alternative land use which is subject to approval by the Administrator. Land used for mine facilities in support of the operations which are adjacent to or an integral part of these operations are also included. Support facilities include, but are not limited to, parking, storage or shipping facilities.

(i) "Cropland" means land used for the production of adapted crops for harvest, alone or in a rotation with grasses and legumes, and includes row crops, small-grain crops, hay crops, nursery crops, orchard crops, and other similar specialty crops.

(ii) "Pastureland" ~~is~~ means land used primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or occasionally cut and cured for livestock feed. In addition, for the purpose of determining premining land use, the relative cover of introduced perennial forage species must be greater than 40% of the relative cover of total vegetation in order for the land to be pastureland. If the full shrub density is greater than one shrub per square meter on those lands, the land use is still pastureland but the land is also "eligible land" in terms of shrub reclamation.

*The definition of Pastureland is intended to identify land that has been altered in the past to better suit domestic grazing and haying purposes. It is recognized that many Pasturelands have, since initial treatment, reverted back to a more native vegetation composition, including shrubs, which now also provide functional wildlife habitat as a pre-mining land use. Thus, the distinction between Pastureland and Grazingland needs to*

*be clear. This rule identifies the vegetative composition, including native forage and shrubs, that would distinguish treated lands as either Pastureland or Grazingland. Since it is possible for land to be defined as Pastureland and still have a functional shrub habitat component, the definitions also identifies when Pastureland is eligible for shrub reclamation.*

(iii) “Grazingland” ~~includes~~ means rangelands and forest lands where the indigenous native vegetation is actively managed for grazing, browsing, and occasional hay production, and occasional use by wildlife.

(iv) “Forestry” means land used or managed for the long-term production of wood, wood fiber, or wood-derived products.

(v) “Residential” ~~includes~~ means land used for single and multiple-family housing, mobile-home parks, and other residential lodgings.

(vi) “Industrial commercial” ~~is~~ means land used for: -

(A) Extraction or transformation of materials for fabrication of products, wholesaling of products or for long-term storage of products. This includes all heavy and light manufacturing facilities and such short-term uses as petroleum refining and oil and gas production.

(B) Retail or trade of goods or services, including hotels, motels, stores, restaurants, and other commercial establishments.

(vii) “Recreational” ~~is~~ means land used for public or private leisure activities, including developed recreation facilities such as parks, camps, and amusement areas, as well as areas for less intensive uses such as hiking, canoeing, and other undeveloped recreational uses.

(viii) “Fish and wildlife habitat” means land dedicated wholly or partially to the production, protection or management of species of fish or wildlife.

(ix) “Developed water resources” ~~includes~~ means land used for storing water for beneficial uses such as stockponds, irrigation, fire protection, flood control, and water supply.

(x) “Undeveloped land of no current use or land management” is means land that is undeveloped or, if previously developed, land that has been allowed to return naturally to an undeveloped state or has been allowed to return to forest through natural succession.

(xi) “Treated grazingland” means grazingland which has been altered



to reduce or eliminate shrubs provided such treatment was applied at least five years prior to submission of the state program permit application. However, grazing land altered more than five years prior to submission of the state program permit application on which full shrubs have reestablished to a density of at least one per nine square meters does not qualify as treated grazing land.

(bz) "Lichen" means those organisms formed by the symbiotic relationship between fungal and algal species. For the purpose of estimating ground cover lichens are cryptogams.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(ca) "Life form" is a category of growth morphology which appears to have some adaptive significance. Examples of life forms include trees, full shrubs, sub-shrubs, perennial grasses, annual forbs, succulents, cushion plants, etc. means the structure, form, habit, life history and physiology of an organism that display an obvious relationship to important environmental factors in its native or current habitat. For data presentation the preferred life form categories are: annual/biennial forb, annual grass, cryptogam, grass-like, native cool season perennial grass, native warm season perennial grass, introduced perennial grass, perennial forb, shrub, subshrub, succulent and tree.

*This definition with some revision was moved from Appendix A Glossary. The life forms were listed to help promote consistency in data presentation.*

(cb) "Litter" means, means any recognizable plant parts or structures which are lying on the ground surface. for the purposes of estimating ground cover, the uppermost layer of organic debris, usually considered to be the standing dead, freshly fallen or slightly decomposed vegetal material on the soil surface. Decomposing plant material which has lost its structural integrity or which is no longer recognizable as plant tissue is not litter.

*This word was defined in Appendix A and has been revised to standardize sampling methodology and data presentation.*

(cc) "Major species" means a plant species whose relative cover value equals or exceeds two percent as estimated by a quantitative sampling program.

*A definition for major species was required to distinguish it from dominant species which is used for shrub density.*

(cd ~~bd~~) "Material damage to the hydrologic balance" means a significant long-term or permanent adverse change to the hydrologic regime.

(~~ce~~ ~~be~~) "Materially damage the quantity or quality of water" means, with respect to alluvial valley floors, changes in the quality or quantity of the water supply to any portion of an alluvial valley floor where such changes are caused by ~~surface~~ coal mining and reclamation operations and result in changes that significantly decrease the capability of the alluvial valley floor to support subirrigation or flood irrigation agricultural activities.

(~~cf~~ ~~bf~~) "Mine facilities" means those structures and areas incidental to the operation of the mine, including mine offices, processing facilities, mineral stockpiles, storage facilities, shipping, loadout and repair facilities, and utility corridors.

(~~cg~~) "Mitigation wetland" means a type of reclaimed, postmining wetland authorized and approved by the Army Corps of Engineers as replacement for jurisdictional wetlands whose disturbance was authorized by the Army Corps of Engineers under Section 404 of the Federal Clean Water Act.

*Mitigation wetland was added to distinguish it from enhancement wetland.*

(~~ch~~ ~~bg~~) "Monitor well" means a well constructed or utilized to measure static water levels or to obtain liquid, solid, or gaseous analytical samples or other physical data that would be used for controlling the operations or to indicate potential circumstances that could affect the environment.

(~~ci~~ ~~bh~~) "Monitoring" means the collection of environmental and hydrological data by either continuous or periodic sampling methods.

(~~cj~~) "Moss" means, a member of the Bryophyte plant group, including liverworts and hornworts, which have a comparatively small, simple growth form and which lack true xylem and phloem tissue. For the purposes of estimating ground cover, mosses are cryptogams.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(~~ck~~ ~~bi~~) "Mulch" means plant residue or other suitable materials placed upon the soil surface to aid in soil stabilization and soil moisture conservation.

(~~cl~~) "Native" means a plant species which is a component of the original flora of North America.

*A definition for this word is required to explain the requirements of seed mixes.*

(~~cm~~) "Noxious weed" means ~~are agriculturally unuseful or troublesome plants whose seeds are totally prohibited from or severely limited in any amounts in commercial crop seed offered for sale. These designations are made by State law. an undesirable,~~

troublesome, aggressive or difficult to control plant species whose seeds are severely limited in or totally excluded from commercial seed sales. The Wyoming Department of Agriculture exclusively makes the noxious weed designation, which includes both "designated" and "prohibited" noxious weeds, under the Wyoming Weed and Pest Control Act. This definition does not include "declared weeds" published by individual Wyoming counties.

*Noxious weed was defined in Appendix A Glossary and was revised for clarity in the Chapter 1 definition proposed above.*

(~~cn~~ ~~bj~~) "Outslope" means the face of the spoil or embankment sloping downward from the highest elevation to the toe.

(~~co~~) "Perennial" means a plant which takes at least three years to complete its life cycle and usually persists after flowering and producing seed.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(~~cp~~ ~~bk~~) "Perennial stream" means a stream or part of a stream that flows continuously during all of the calendar year as a result of groundwater discharge or surface runoff.

(~~cq~~ ~~bl~~) "Permit area" means the area of land and water within the boundaries of the approved permit or permits during the entire life of the operation and includes all affected lands and water.

(~~cr~~ ~~bm~~) "Permit transfer" means a change in ownership or control over the right to conduct mining operations under a permit or license to mine.

(~~cs~~) "Plant species inventory" means a list of plant species, organized by life form and scientific binomial, obtained by conducting a field reconnaissance of a specific land unit.

*This term is defined here so that it does not have to be defined each time the term is used in Chapters 2 and 4.*

(~~ct~~) "Plotless sampling" means estimation of vegetation without the use of two-dimensional areal reference units.

*This term relates to measuring trees and was moved from the Appendix A Glossary without revision.*

(~~cu~~) "Point intercept" means a cover estimation method based upon the vertical projection of a point through the vegetation. The point may be an ocular sighting device, a sharpened rod or a series of sharpened rods on a point frame or a handheld sharpened

rod. The ocular sighting devices may be either crosshairs or a laser source and shall be mounted on a frame which ensures that each estimation point is projected from above the canopy (maximum of one meter) to the ground surface without bias. Each pin shall be a rod with a sufficiently small or sharpened point which ensures unbiased visual determination of each object intercepted by the pin's vertical movement from above the canopy to the ground surface. Under the point intercept method, absolute cover at each sample point is determined as follows:

$$\% \text{ absolute cover of A} = \frac{\text{number of hits on A}}{\text{total number of hits}} \times 100$$

*Appendix A Glossary contained a definition for "point intercept". That definition was revised to define the acceptable methodology for using point intercepts.*

(~~cy bn~~) "Potentiometric surface" means the surface that coincides with the static level of water in an aquifer. The surface is represented by the levels to which water from a given aquifer will rise under its full head.

(~~cw bo~~) "Precipitation event" means a quantity of water resulting from drizzle, rain, snow, sleet, or hail in a limited period of time. It may be expressed in terms of recurrence interval and duration.

(~~cx~~) "Primary shrub species" means, in relation to the shrub standard Option IV, each full shrub and each subshrub species which has a relative density equal to or greater than 0.1 (10 percent). Furthermore, under Option IV, the relative density of fringed sagewort (*Artemisia frigida*) must equal or exceed 0.2 (20 percent) of the relative density to qualify as a primary shrub species. Under shrub standard Options I, II and III, a primary shrub species means each full shrub species which has a relative density equal to or greater than 0.1 (10 percent).

*Primary shrub species was defined in Appendix A Glossary. The definition has been revised to better explain the use of primary shrub species in the shrub standard.*

(~~cy bp~~) "Principal shareholder" means any person who is the owner of record of ten percent or more of any class of voting stock.

(~~cz bq~~) "Probable hydrologic consequences" means the projected impacts or changes to the hydrologic regime caused by the proposed surface coal mining and reclamation operation including the effects of adjacent mining operations.

(~~da~~) "Production" ~~is an estimate of the total standing crop biomass of herbaceous species (grass, grass like, forb and some subshrub species). The estimate is made at a time near the expected peak of the current year's growth and is reported on a per unit area basis.~~ means an estimate of the total quantity of herbaceous matter

produced within a growing season. The estimate includes all plant parts which remain attached to the current growing season plant and includes only above ground herbaceous material.

*This term was in Appendix A Glossary and is used throughout Chapters 2 and 4. A definition is required to provide a common understanding of the term.*

(db ~~bf~~) "Property to be mined" means, for ~~surface~~ coal mining operations, both the surface estates and mineral estates within the area covered under the term of the permit and the area covered by underground workings.

(dc ~~bs~~) "Public building" means ...

(dd ~~bt~~) "Public Parks" means ...

(de ~~bu~~) "Public road" means ...

*No changes were made to the three definitions above. Only the section numbering was changed to account for the proposed changes to Chapter 1.*

(df) "Quadrat" means a two-dimensional, areal unit which is superimposed on the ground surface for the purposes of estimating one or more vegetation parameters. rectangular, square or circular unit which is superimposed on the ground surface for the purpose of estimating cover or production. The quadrat shall be sized appropriately for the sampled vegetation community and shall be at least one half square meter but no larger than one square meter.

*This term was defined in the Appendix A Glossary and is used throughout Chapters 2 and 4. The proposed revision above reflects the current common understanding of the term.*

(dg) "Qualitative" means, in the context of a vegetation sampling program and/or evaluation of sampling data, that the program and/or evaluation process are conducted using non-numerical information derived from defined sources and/or defined field reconnaissance regimes.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(dh) "Quantitative" means, in the context of a vegetation sampling program and/or evaluation of sampling data, that the program and/or evaluation processes are conducted using statistical analyses of numerical data derived from defined sampling regimes.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(di) "Random" means every point or location in an area has an equal chance of being chosen for sampling as any other point in that area.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(dj) "Recharge capacity" means the ability of the soils and underlying materials to allow precipitation and runoff to infiltrate and reach the zone of saturation.

(dk) "Reclaimed land surface" means affected land which has been backfilled, graded, contoured, and revegetated in accordance with an approved reclamation plan.

(dl) "Reference area" means a land unit ~~which is representative, in terms of physiography, soils, vegetation and land use history, of a plant community to be affected by mining activities as verified by a statistical comparison of absolute values of percent cover and total herbaceous productivity between affected area and reference area data and no mathematical climatic adjustment is made.~~ established to evaluate revegetation success. A "Reference area" is representative of a vegetation community or communities that will be affected by mining activities, in terms of physiography, soils, vegetation and land use history. The "Reference area" and its corresponding postmine vegetation community (or communities) must be approved by LQD and shall be defined in the approved Reclamation Plan. All "Reference areas" shall be managed to not cause significant changes in the vegetation parameters which will be used to evaluate Chapter 4 revegetation success performance standards. A "Reference area" can be a "Comparison area", "Control area", "Extended reference area", or "Limited reference area", depending on how it is established and used, in accordance with the following provisions:

*"Reference area" will be the umbrella for the different methods of using land units for measuring revegetation success. "Reference area" was agreed upon by the large group to be used as the generic term for all of the land units used for revegetation success. It is shorter and more commonly understood than Revegetation Success Evaluation Area. For "Reference area" to be used as the umbrella, the current definition of "Reference area" was changed to "Limited reference area". The different types of "Reference areas" were placed in one location to make it easier to compare them. The management of "Reference areas" is under this definition and not repeated under each type of "Reference area". Rules in Chapter's 2 and 4 on the "Reference areas" are not repeated in these definitions.*

(i) "Comparison area" ~~a land unit which is representative, in terms of~~

physiography, soils, vegetation and land use history, or a premining plant community from which no or insufficient vegetation data were collected prior to disturbance. means a type of "Reference area" that is established after a vegetation community has been affected. A qualitative determination shall be used to evaluate if the proposed "Comparison area" adequately represents the affected vegetation community. A "Comparison area" may be used when other types of "Reference areas" are not available for measuring revegetation success or when other types of "Reference areas" will not be representative of revegetation success. "Comparison areas" shall be approved by the Administrator prior to their establishment. When evaluating Chapter 4 revegetation success performance standards, data from the "Comparison areas" are directly compared by statistical procedures to data from the reclaimed area.

*Since the Administrator is responsible for approving a "Comparison area", stating a required size of the "Comparison area" is unnecessary.*

(ii) "Control area" means a land unit which is representative, in terms of physiography, soils, vegetation and land use history, of a plant community to be affected by mining activities as verified by a comparison of its quantitative and qualitative characteristics to similar information from the plant community it typifies and where a mathematical climatic adjustment is made. means a type of "Reference area" that is established during baseline sampling. Quantitative comparisons of vegetation cover, total ground cover, and production between the proposed "Control area" and the vegetation community to be affected are used to demonstrate the representative nature of the "Control area". When evaluating revegetation success, baseline data are climatically adjusted using equations. These adjusted data are directly compared by statistical procedures to vegetation data from the reclaimed area. The Administrator may determine to make a direct comparison without the climatic adjustment between the "Control area" and the reclaimed area. Each "Control area" shall be at least two acres.

*"Control areas" have been deemed not the best technology because of their small size and will not be allowed for new permitted lands. However, mines that have "Control areas" currently approved will be allowed to continue to use them on currently permitted lands but will not be allowed to use "Control areas" on lands amended into the permit after the effective date of these rules as per new Rule Chapter 4, Sec.2 (d)(ii)(A)(I)(1). The two acre size remains because these areas were selected under the current rules and the current rules require two acres.*

(iii) "Extended reference area" means all the undisturbed portion of a vegetation type which has experienced disturbance by mining activities. The representative nature of the Extended Reference Area is verified by evaluation of vegetation mapping procedures, the adequacy of premining quantitative and qualitative vegetation data, soils data, physiography and land use history information. Postmining quantitative vegetation data from the Extended Reference Area are directly compared by standard statistical procedures (confidence level of 80%,  $\alpha = 0.2$ ) to data from a reclaimed

~~vegetation type when evaluating revegetation success for full bond release. No mathematical adjustment for climatic change is made. Qualitative data are compared by standard procedures agreed to between the permittee and LQD. An Extended Reference Area should be managed in a fashion which will not cause significant changes in vegetation parameters used to evaluate revegetation success means a type of a "Reference area" that includes a major portion of one or more premine vegetation communities within the permit area. During baseline sampling, the "Extended reference area" includes areas proposed to be affected and areas that will be unaffected. Postmine, the unaffected areas constitute the "Reference area" for revegetation success evaluation. "Extended reference areas" should be established during baseline sampling, but in some circumstances, may be established after mining begins. The representative nature of the vegetation community within the "Extended reference area" is demonstrated by vegetation community mapping procedures, sampling data, soil data, physiography and land use history. To evaluate revegetation success, data from the "Extended reference area" are directly compared by the statistical procedures to data from the reclaimed area. Each "Extended reference area" will be as large as possible.~~

(iv) "Limited reference area" means a land unit which is representative, in terms of physiography, soils, vegetation and land use history, of a plant community to be affected by mining activities as verified by a statistical comparison of absolute values of percent cover and total herbaceous productivity between affected area and reference area data and no mathematical climatic adjustment is made. is one type of a "Reference area" that is established during baseline sampling to represent one vegetation community to be reestablished. The representative nature of the "Limited reference area" is determined by quantitative comparisons of vegetation cover, and production between the "Limited reference area" and proposed affected areas at the 90 percent confidence level. To evaluate revegetation success, data from the "Limited reference area" are directly compared by statistical procedures to data from the reclaimed area. Each "Limited reference area" shall be at least five acres.

*"Reference area" was revised to "Limited reference area" so that "Reference area" could be used for Revegetation Success Evaluation Area.*

(dm) "Regulatory categories" means the following time frames that encompass the major regulatory periods from which the different performance and reclamation standards for specified lands within the permit area are established:

(i) "Category 1" means those lands which were affected to conduct and/or support mining operations and were completed or substantially completed prior to May 24, 1969 (the implementation date of the Open Cut Land Reclamation Act).

(ii) "Category 2" means those lands which were affected on or after May 24, 1969 (the implementation date of the Open Cut Land Reclamation Act) in order to conduct and/or support mining operations and were completed or substantially



completed prior to or on June 30, 1973 (day prior to the effective date of the Wyoming Environmental Quality Act).

(iii) "Category 3" means those affected lands and support facilities if those lands supported operations which were not completed or substantially completed prior to July 1, 1973 (the effective date of the Wyoming Environmental Quality Act) and any affected lands or support facilities taken out of use on or after July 1, 1973 and before May 25, 1975 (the effective date of the Division's 1975 Rules and Regulations).

(iv) "Category 4" means those affected lands if coal was removed from those lands prior to May 3, 1978 and which do not qualify for any of the previous categories. It also means those affected lands and support facilities if they were taken out of use on or after May 25, 1975 (the effective date of the Division's 1975 rules and Regulations) and before May 3, 1978 (the effective date of the Office of Surface Mining's (OSM) Initial Regulatory Program).

(v) "Category 5" means those affected lands and support facilities if coal was not removed from those lands prior to May 3, 1978 (the effective date of OSM's Initial Regulatory Program) or those lands were used on or after May 3, 1978 to facilitate mining (including support facilities and associated lands constructed before May 3, 1978 but still in use on or after May 3, 1978.)

*The proposed regulatory categories have been defined to provide consistency in the administration of the applicable reclamation performance standards. The categories described above reflect changes which have been made to Federal and State statutes and regulations.*

(dn bz) "Revised mining or reclamation operations" means mining and/or reclamation operations conducted during the term of a permit which differ from those operations described in the original mine permit application and approved under the original permit.

(do bz) "Road(s)" means a surface corridor of affected land associated with travel by land vehicles used in ~~surface~~ coal mining and reclamation operations or coal exploration. A road consists of the roadbed, shoulders, parking and side areas, approaches, structures, ditches, and surface. The term includes access and haulroads constructed, used, reconstructed, improved, or maintained for use in ~~surface~~ coal mining and reclamation operations or coal exploration, including use by coal hauling vehicles to and from transfer, processing, or storage areas. The term does not include ramps and routes of travel within the immediate mining area or within spoil or coal mine waste disposal areas. Immediate mining area refers to areas subject to frequent surface changes. This includes areas where topsoil and overburden are being moved and areas undergoing active reclamation.

(dp) "Rock" means, for purposes of estimating ground cover, mineral or rock

fragments which are one square centimeter in size or larger and occur on or in the soil. A synonym is coarse fragments.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(dq ea) "Rough Backfilling" means ...

(dr eb) "Safety factor" means ...

*No changes are proposed to the two definitions above. Only section numbers have been revised to reflect the proposed revision to Chapter 1.*

(ds) "Sample unit" means, for the purposes of verifying certain Chapter 4 performance standards and applying for Chapter 15 incremental bond release, a permanently reclaimed land unit established by mutual agreement between the permittee and the Administrator. The unit constitutes the fundamental unit for revegetation success verification. The unit may contain portions of one or more vegetation communities.

*A definition for "Sample unit" is required to support Chapter 4 rules on Revegetation Success.*

(dt) "Seasonal variety" means the characteristic or normal season of growth of a plant species where season of growth is described as cool-season or warm-season.

*A definition for "Seasonal variety" is required to support Chapter 4 on seed mixes.*

(du ee) "Sedimentation pond" means a sediment control structure designed, constructed, and maintained to slow down or impound precipitation runoff to reduce sediment concentrations in a point source discharge, including dams or excavated depressions. The term does not include straw dikes, riprap, check dams, mulches, collection ditches, toe ditches, vegetative buffers, gabions, contour furrows and other traditional soil conservation techniques and non-point source runoff controls.

(dv) "Self-renewing" means a plant species which has a demonstrated capacity to germinate, establish, grow, flower and produce viable seed and/or mature and produce vegetative reproductive structures under the climatic regime which prevails on the reclaimed lands.

*A definition for "Self-renewing" is required to support Chapter 4 on seed mixes.*

(dw) "Semi-quantitative" means, in the context of a vegetation sampling program and/or evaluation of sampling data that the program and/or evaluation process

is/are conducted using a non-statistical assessment of numerical data derived from a defined field reconnaissance regime.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(dx) “Shrub” means a perennial plant with persistent, woody stems and which produces several basal shoots instead of a single main stem. Shrubs have a relatively low growth form and differ from trees by their low stature and lack of arborescent form. A synonym is full shrub.

*A definition for “Shrub” is required to support Chapter 2 and Chapter 4 rules.*

~~(dy) “Shrub mosaic” is a pattern of shrub patches designed to achieve maximum habitat interspersion and edge effect. The boundary of a mosaic encompasses the areal extent of shrub patches and other vegetation types occupying the area between the patches.~~ means a pattern of shrub patches. The boundary of a mosaic unit encompasses the areal extent of the individual shrub patches and the reclaimed community occupying the land among the shrub patches.

*A definition for “Shrub mosaic” was in Appendix A and has been revised to support the proposed Chapter 4 rules.*

~~(dz) “Shrub patch” refers to a continuous surface of varying shape and size (no less than 0.05 acres) that is intensively managed to support a high density of shrubs.~~ means a mapable concentration of postmining shrubs which is at least 0.05 acres in extent and which intends to fulfill the shrub density and shrub composition required by Chapter 4 shrub restoration performance standard.

*A definition for “Shrub patch” was in Appendix A and has been revised to support the proposed Chapter 4 rules.*

~~(ea ed)~~ "Significant, imminent environmental harm to land, air or water resources" means:

(i) An environmental harm is an adverse impact on land, air, or water resources which resources include, but are not limited to, plant and animal life.

(ii) An environmental harm is imminent, if a condition, practice, or violation exists which:

(A) Is causing such harm; or

(B) May reasonably be expected to cause such harm at any time

before the end of the reasonable abatement time.

(iii) An environmental harm is significant if the harm is appreciable, not contemplated in the approved permit application, and not immediately repairable.

~~(ee) "Soft rock surface mining" means surface mining of materials deposited within or as sedimentary rock formations which include: coal, uranium, sand and gravel, jade, bentonite, hot springs deposit, placer mining, clay, gypsum, oil shale, and scoria.~~

*The definition for "Soft rock surface mining" is being deleted from the Chapter because it is no longer relevant. The definition was originally placed here to differentiate hard rock and surface rock mining which had different applicable standards.*

(eb ef) "Soil Horizons" means contrasting layers of soil material approximately parallel to the land surface and differing from adjacent layers in physical, chemical and biological properties or characteristics.

(i) "A Horizon": means ~~T~~the uppermost mineral or organic layer, often referred to as the surface soil. It is the part of the soil in which organic matter is most abundant and leaching of soluble or suspended particles is typically the greatest.

(ii) "E Horizon": means ~~T~~the layer commonly near the surface below the A Horizon and above the B Horizon. An E Horizon is the most commonly differentiated from an overlying A Horizon by lighter color and generally, has measurably less organic matter, and from the underlying B Horizon in the same sequum by color of higher value or lower chroma, by coarser texture, or by a combination of these properties.

(iii) "B Horizon": means ~~T~~the layer that typically is immediately beneath the E Horizon and often called the subsoil. This middle layer commonly contains more clay, iron, and aluminum than the A, E or C Horizons.

(iv) "C Horizon": means ~~T~~the deepest layer of soil profile. It consists of loose material or weathered rock that is relatively unaffected by biological activity, and is often called the subsoil.

*The definition for "Soil horizon" was reformatted to reflect current format practices. No substantive changes are proposed.*

(ec eg) "Soil survey" means a field and other investigation which results in a map showing the geographic distribution of different kinds of soils based on taxonomic characteristics and includes a report that describes, classifies and interprets such soils for use in reclamation.

(~~ed eh~~) "Species composition" means number, kinds, and amount, ~~and quality~~ of species.

*The proposed definition for "Species composition" has been revised and edited for clarity and consistency.*

(~~ee ei~~) "Species diversity" means number of species per unit area.

(~~ef~~) "Species lacking creditable value" means the cover and production of these species will be estimated but will not be credited or counted towards meeting the revegetation success standards for cover, production or species diversity and composition. Species lacking creditable value include noxious weeds listed under the Wyoming Weed and Pest Control Act, Bromus japonicus, Bromus tectorum, Taeniatherum caput-medusae, Halogeton glomeratus, Kochia scoparia and Salsola tragus and all synonyms for these species as listed in the Natural Resources Conservation Service's Plants Database.

*The definition of species lacking creditable value is required to not credit for revegetation success those species that have limited or no value in support of the land uses and thus are not assigned value in quantitative estimates of percent absolute vegetation cover nor annual herbaceous production nor semi-quantitative descriptions of species diversity and species composition.*

(~~eg~~) "Species of Special Concern" means those plant species required to be surveyed by the U.S. Fish and Wildlife Service, U.S. Forest Service, and Bureau of Land Management.

*This definition was added to explain Chapter 2 baseline requirements. The Federal agencies listed above use different terms to describe species that those agencies have determined require monitoring. This term will be used as an umbrella term for those species which must be surveyed for the agencies above.*

(~~eh ej~~) "Spoil" means ...

(~~ei ek~~) "Stabilize" means ...

(~~ej el~~) "Stagnant water" means ...

(~~ek em~~) "Steep slope" means ...

*The four definitions above were renumbered only. This was necessary to reflect the proposed revisions to Chapter 1.*

(el) "Study area" means the land surface area which was mapped and quantitatively sampled during the baseline vegetation inventory. The study area generally coincides with the permit area (or amendment area) but may exceed those boundaries with prior approval from the Administrator.

*A definition for "Study area" is required because it is a term used in Chapters 2 and 4.*

(em en) "Subirrigation" means, with respect to alluvial valley floors, the supplying of water to plants from underneath or from a semi-saturated or saturated subsurface zone where water is available for use by vegetation.

(en eo) "Subirrigation or flood irrigation agricultural activities" means the past and present use of any tract of land for the successful production of animal or vegetable life, based on regional agricultural practices, where the use is enhanced or facilitated by subirrigation or flood irrigation. These uses include, but are not limited to, the pasturing, grazing, and the cropping, cultivation, or harvesting of agriculturally useful plants whose production is enhanced or facilitated by the availability of water from subirrigation or flood irrigation. These uses do not include agricultural practices which do not benefit from the availability of water from subirrigation or flood irrigation.

(eo) "Subshrub" is a perennial plant which is partly woody, usually at the base, but also partly herbaceous. The individual plant generally dies back to the woody tissue after each year's growth. means a perennial plant with a persistent, woody base and which produces several basal shoots or stems. The upper stems die back at the end of each growing season. Half-shrub is a synonym.

*This definition was moved from Appendix A and revised to include the proposed revisions above. The term is used throughout Chapters 2 and 4. The list of accepted subshrubs for the shrub density standard is in Appendix 4B*

(ep ep) "Subsidence" means the measurable lowering of a portion of the earth's surface or substrata.

(eq eq) "Subsoil" means the B and C Horizons excluding consolidated bedrock material.

(er er) "Substantially affect" means to conduct activity which, in the determination of the Administrator will significantly impact land, air or water resources so as to disturb the natural land surface.

(es) "Substantially complete" means, for purposes of determining the appropriate regulatory category of affected lands, the overburden was removed above the coal and some recoverable tons were removed from those lands.

*The proposed definition has been included to support the “Regulatory categories” definition.*

(~~et es~~) "Substantially disturb" means, for purposes of coal exploration, to significantly impact land or water resources by blasting; by destruction of the vegetative cover or removal of topsoil, subsoil or overburden; by drilling coal exploratory holes; by digging pits; by construction of roads or other access routes; by placement of excavated earthen or waste material on the natural land surface or by other such activities; or to remove more than 250 tons of coal.

(~~eu~~) “Succulent” means a life form consisting of species with one or more of its morphological parts exhibiting fleshy or juicy characteristics.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(~~et~~) ~~“Surface coal mining and reclamation operations” means surface coal mining operations and all activities necessary or incidental to the reclamation of such operations.~~

*The definition above was removed as it was an artifact from when coal and noncoal rules were combined.*

(~~ev eu~~) "Surface water" means water, either flowing or standing, on the surface of the earth.

(~~ew ev~~) "Suspended solids" means organic or inorganic material carried or held in suspension in water which are retained by a standard glass fiber filter in the procedure outlined by Environmental Protection Agency's regulations for waste water analyses (40 CFR 136).

(~~ex~~) “Systematic sampling” means a sampling design where sample locations are selected using a uniform spatial pattern, such as a grid, that covers the entire sample population area, and where all locations are sampled. The first sample point is randomly selected, and the locations of all other sample points are determined by the initial location. Calculations for systematic sampling may be done by assuming the sample is random.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(~~ey~~) “Technical revegetation success standard” means a set of quantitative data which are representative of the absolute cover of total vegetation and annual herbaceous production of one or more premining vegetation communities affected by the mining

operation. Each technical standard shall be assembled from quantitative data collected from vegetation communities within a permit area and/or from adjacent lands and shall be based upon a minimum of five independent sampling programs executed over a minimum of five years. The Administrator shall approve the specific data sets and the quantitative treatment of the data sets used to establish each technical standard.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(ez) "Threatened species" means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been listed under the Federal Endangered Species Act.

*This term is defined to standardize sampling methodology and promote consistency in data presentation.*

(fa ew) "Topsoil" means the A and E Horizons or any combination thereof.

(fb ex) "Toxic materials" means earthen materials or refuse which, if acted upon by air, water, weather, or microbiological processes, are likely to produce chemical or physical conditions in soils or water that are detrimental to biota or would restrict the common uses of water.

(fc ey) "Toxic mine drainage" means water that is discharged from active or abandoned mines and other areas affected by coal mining operations and which contains a substance which through chemical action or physical effects is likely to kill, injure, or impair biota commonly present in the area that might be exposed to it.

(fd ez) "Trade secret" means, for purposes of ~~surface~~ coal mining or exploration operations:

(i) Information pertaining to the analyses of the chemical and physical properties of the coal (excepting information regarding such mineral or elemental content which is potentially toxic in the environment) may be kept confidential in accordance with W.S. § 35-11-1101(a);

(ii) Information pertaining to the coal seam itself, except as to any person who demonstrates to the satisfaction of the Director an interest which is or may be adversely affected by the decision to hold such information confidential; and

(iii) Information relating to coal exploration operations which concerns privileged commercial or financial information relating to the competitive rights of the person intending to conduct the coal exploration operations.

(fe) "Transect" is means a sampling method which involves the establishment



of a long, continuous line or strip. The starting point and orientation of the line should be randomly established.

*This definition was moved from Appendix A. The word "is" was replaced with was to better reflect Chapter 1 formatting.*

(ff) "Tree" means a woody, perennial plant which usually has a single trunk or stem and a defined crown shape and which has the potential to reach a mature height of at least four meters in optimal conditions.

*A definition for this word is required to standardize sampling methodology and data presentation.*

(fg ~~da~~) "Unconsolidated streamlaid deposits" means ...

(fh ~~db~~) "Underground development waste" means ...

(fi ~~de~~) "Underground mining activities" means ...

(fj ~~dd~~) "Undeveloped rangeland" means ...

(fk ~~de~~) "Upland areas" ...

*No changes are proposed to the five definitions above. The section numbering was revised to reflect proposed changes to Chapter 1.*

(fl ~~df~~) "Valid existing rights" means:

(i) Except for haul roads, that a person possesses valid existing rights on August 3, 1977, if the application of any of the prohibitions contained in Chapter 12, Section 1(a)(v) to the property interest that existed on that date would effect a taking of the person's property which would entitle the person to just compensation under the fifth and fourteenth amendments to the United States Constitution;

(ii) For haul roads, valid existing rights means:

(A) A recorded right-of-way, recorded easement or a permit for a coal haul road recorded as of August 3, 1977, or

(B) Any other road in existence as of August 3, 1977.

(iii) A person possesses valid existing rights if the person proposing to conduct ~~surface~~ coal mining operations can demonstrate that the coal is both needed for, and immediately adjacent to, an ongoing ~~surface~~ coal mining operation which existed on August 3, 1977. A determination that coal is "needed for" will be based on a finding that

the extension of mining is essential to make the ~~surface~~ coal mining operation as a whole economically viable;

(iv) Where an area comes under the protection of Chapter 12, Section 1(a)(v) after August 3, 1977, valid existing rights shall be found if:

(A) On the date the protection comes into existence, a validly authorized ~~surface~~ coal mining operation exists on that area; or

(B) The prohibition, if applied to the property interest that exists on the date the protection comes into existence would effect a taking of the person's property which would entitle the person to just compensation under the fifth and fourteenth amendments to the United States Constitution.

(v) Interpretation of the terms of the document relied upon to establish valid existing rights shall be based either upon applicable Wyoming case law concerning interpretation of documents conveying mineral rights or, where no applicable case law exists, upon the usage and custom at the time and place where it came into existence.

~~(fm dg)~~ "Vegetation community type" means a recognizable group of species growing together ~~due to similar requirements and tolerances.~~

*"Vegetation type" was revised for consistency with other proposed changes in this rule package.*

~~(fn) "Warm season plant" means a plant, which makes most or all its growth during the spring, summer, or fall and is usually dormant during the winter. Warm season plants usually exhibit the C-4 photosynthetic pathway is a species which produces most or all of its growth during the late spring and summer, subsequently flowering in the late summer or autumn.~~

*A definition for "Warm season" was in Appendix A. The revisions proposed above were made to promote consistency in sampling methodology and data reporting.*

~~(fo dh)~~ "Water table" means the upper surface of a zone of saturation, where the body of groundwater is not confined by an overlying impermeable zone.

### Section 3. **Applicability.**

(a) All mining operations or operations by which solid minerals are intended to be extracted from the earth, which are commenced or conducted after the effective date of these rules and regulations, shall comply with the requirements hereof, except as specific exemptions are allowed by the Act.

(b) The discretionary exemptions shall be limited as follows:

(i) W.S. § 35-11-401(g), (h) and (j) shall not apply to ~~surface~~ coal mining operations.

(ii) In order to qualify for the exemption provided for in W.S. § 35-11-401(e)(ii), approval must be obtained from the Administrator for the extraction of any coal after a finding that:

(A) The extraction is necessary to enable the construction to be accomplished and occurs within the right-of-way or boundary of the area directly affected by the construction;

(B) The construction is funded 50 percent or more by funds appropriated or obtained from a government financing agency's budget or general revenue bonds; and

(C) The person agrees to possess on-site documents which show a description of the project, its exact location, and information showing the source, kind and amount of public financing, including the percentage of the entire construction costs represented by the government financing.

(c) If any provision of these regulations or the applicability thereof to any person or circumstances related to ~~surface~~ coal mining operations is held invalid, the provision or its applicability to other mining operations or circumstances shall not be affected thereby.

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*Chapter 2 has been reorganized to facilitate the incorporation of material from Appendix A. The major headings now include: General Requirements; Adjudication Requirements; Vegetation Baseline Requirements; General Baseline Requirements; Mine Plan; and Reclamation Plan.*

DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 2

PERMIT APPLICATION REQUIREMENTS

~~FOR SURFACE COAL MINING OPERATIONS~~

Section 1. **General Requirements.**

(a) All applications shall be filed in a format required by the Administrator and shall include, at a minimum, all information required by the Act and, for ~~surface~~ coal mining operations, all the applicable information required under Sections 2 through 5 of this Chapter.

(b) Information set forth in the application shall be current, presented clearly and concisely, and supported or authenticated, when appropriate, by references to technical material, persons, or public or private organizations which were used, consulted, or were responsible for collecting and analyzing the data.

(c) Maps submitted with the application shall be, or be the equivalent of a U.S. Geological Survey topographic map at a scale determined by the Administrator, ~~but in no event smaller than 1:24,000. For surface coal mining operations, the scale shall be that specified in Part III of Division Guideline 6A.~~ All maps shall contain a title relative to the subject matter of the map, a map number, legend, and show the limits of the permit area. ~~For surface coal mining applications, T~~he maps shall distinguish among the following phases of the operation:

*The phrase "For Surface Coal Mining operations" has been deleted from the title and the word "surface" in the first paragraph since it was a hold over when the coal and non-coal rules were combined. It also eliminates potential confusion for underground coal operations since the same requirements apply for both surface and underground mines. The reference to a particular scale has been removed from rule and will be placed in a guideline. This will allow maximum flexibility to allow the scale be appropriate for the size of the mine or item depicted. The scale*

*will still have to be acceptable to the Administrator to ensure its usefulness to the division.*

- (i) Prior to August 3, 1977;
- (ii) After August 3, 1977 and prior to May 3, 1978;
- (iii) After May 3, 1978 and prior to approval of the State Program; ~~and~~
- (iv) After the estimated date of issuance of the permit; and
- (v) The five regulatory periods as defined in Chapter 1, Section 2(dm).

*Subsection (c)(v) has been added to document what part of the operation falls within the different time frames and bond release standards as defined in the new rule at the applicable section of Chapter 1.*

(d) Applicants may reference materials. If used in the application, referenced materials shall either be provided to the Division or be readily available to the Division. Relevant portions of referenced materials shall be presented briefly and concisely in the application by photocopying or abstracting and with explicit citations.

(e) The applicant may consult with the local conservation district during preparation of the reclamation plan for conformance with technical standards.

**Section 2. Adjudication Requirements ~~Application Content Requirements for Surface Coal Mining Operations.~~**

*The title has been changed to reflect the reorganization of the chapter and Section 2 is now limited to the adjudication portion of the application. The phrase "surface coal mining operations" has been deleted as explained above.*

(a) In addition to that information required by W.S. § 35-11-406(a), each application for a ~~surface~~ coal mining permit shall contain:

(i) A complete identification of interests, which shall include:

(A) All owners of record of the property to be mined including legal and equitable owners, holders of record of any leasehold interest, and any purchaser of record under a real estate contract for the property to be mined;

(B) The names, addresses and telephone numbers of any operators, if different from the applicant. If the applicant is a business entity other than a single proprietorship, then the names, ~~and~~ addresses and telephone numbers of all limited

and general partners, or if a corporation then the names, ~~and~~ addresses and telephone numbers of principal shareholder, officers and director or other person performing a function similar to a director, and resident agent(s) of the applicant. This shall also include the names under which the applicant, partner or principal shareholder operates or previously operated a ~~surface~~ coal mining operation in the United States within the five years preceding the date of application;

*This proposed rule amendment is intended to address a deficiency that was noted by the OSM on November 24, 1986 (51 FR 42209, 42211) and published at 30 CFR 950.16(f). Wyoming revised "its regulations to more clearly define, by type of business enterprise, which individuals affiliated with the permit applicant must be identified in the application" (51 FR 42211). In the process of reviewing the amended rules the OSM noted that Wyoming did not "contain a provision comparable to ... 30 CFR 778.13(b)".*

*The reference to 30 CFR 778.13(b) at 30 CFR 950.16(f) should read "30 CFR 778.11(b)(3)" to account for revision to the federal regulations since this deficiency was originally noted. The OSM "moved those portions of previous and proposed Sec. 778.13 that pertain to the identity of the applicant, operator, owners, controllers, and other persons with a role in the proposed surface coal mining operation to new Sec. 778.11" (65 FR 79582). 30 CFR 778.11(b)(3) requires the applicant to provide the name, address and telephone number of "[a]ny operator, if different from the applicant." The proposed amendment above requires similar information.*

*Chapter 2, Section 2(a)(i)(B) was also revised to require the phone numbers for the other business interests which may be involved with the mining operation. The proposed revisions are intended to be as effective as 30 CFR 778.11 and address the deficiency noted in 30 CFR 950.16(f).*

(C) A statement and identification of any pending, current or previous ~~surface~~ coal mining permit in the United States held by the applicant, partner or principal shareholder during the five years preceding the date of the application. This shall also identify the regulatory authority with jurisdiction over the operation; ~~and~~

(D) A statement of all lands, interests in lands, options, or pending bids on interests held or made by the applicant for lands which are contiguous to the proposed permit area; and

(E) Legal ownership - if the operator includes roads or spur lines within the permit area but does not possess the mineral rights or the right-to-mine for these lands, the legal land description shall then be listed in the application as a separate subsection in Appendix "C: ". The heading of the subsection shall make it clear that the right-to-mine is not claimed on the described lands. Surface owners shall be listed for all lands crossed by spur lines and roads.

*The word “surface” was removed from Section 2(a) above for clarity and was revised to make several grammatical corrections.*

(ii) A complete statement of compliance which shall include:

(A) A brief statement, including identification and current status of the interest, identification of the regulatory authority, and description of any proceedings and their current status, of whether the applicant or entities controlled by or under common control with the applicant has:

(I) Had any Federal or State coal mining permit suspended or revoked in the five years preceding the date of application; or

(II) Forfeited a Federal or State coal mining performance bond or similar security deposited in lieu of bond.

(B) The listing of notices of violation required by W. S. § 35-11-406(a)(xiv) shall describe or identify the violation, when it occurred, any abatement action taken, the issuing regulatory authority, and any proceedings initiated concerning the violation. This listing shall include only notices issued to the applicant and any subsidiaries, affiliates, or persons controlled by or under common control with the applicant.

(iii) The right of entry statements and documents required by W.S. § 35-11-406(a)(ii) and (b)(xi) shall clearly explain and support the legal rights claimed by the applicant and shall also include whether that right is the subject of pending litigation;

(iv) A statement on whether the proposed area to be mined during the term of the permit is within an area designated unsuitable for ~~surface~~ coal mining operations pursuant to W.S. § 35-11-425, under study for any designation, or within an area where mining is prohibited pursuant to Chapter 12, Section 1(a)(v), Land Quality Rules and Regulations. This shall also include the basis on which the applicant claims any available exemption so as to obtain the permit to mine;

(v) A list identifying the Mine Safety and Health Administration identification number for all mine facilities that require MSHA approval and licenses, permits or approvals needed by the applicant to conduct the proposed operation, whether and when they have been issued, the issuing authority, and the steps to be taken to comply with the requirements. To the extent possible, the Administrator and Director shall advise, consult and cooperate with the identified authorities so as to provide for the coordination of review and issuance of these licenses, permits or approvals with the permit to mine. This list shall contain:

(A) Copies or identifying numbers of all permits obtained from



the State Engineer or from any other division of the Department, including Solid Waste Management, together with the following:

(I) Water Quality Information. The information from the application for the approved Water Quality permit which affirmatively demonstrates:

(1.) There is a detailed plan, with appropriate maps and cross-sections, for the construction and operation of any mine facility capable of causing or contributing to pollution of surface and groundwater. The plan shall be in accordance with Chapters III and XI, and as applicable Chapter X, of the Water Quality Division Rules and Regulations. As applicable, any plans shall include a copy of the NPDES permit granted by the Water Quality Division and quantitative limits on pollutants in discharges of water from all point sources.

(2.) There is a plan for the collection, recording, and reporting of groundwater quality and surface water quality according to Chapter II, Section 12, Water Quality Rules and Regulations. This plan shall, at a minimum, be adequate to measure accurately and record water quantity and quality of the discharges from the permit area in order to plan for modification of ~~surface~~ mining activities, if necessary, to minimize adverse effects on the water of the State.

(II) Solid Waste Information. The information from the application for the approved permit(s) for any Solid Waste Management Facility(ies) located within the proposed permit area. Note that a Solid Waste Management Facility, as defined by W.S. § 35-11-103(d)(ii), is a facility that receives solid waste which is generated outside the proposed permit area by any activity other than a mine mouth power plant or mine mouth coal drier. Solid Waste Management Facilities are subject to the permitting, bonding and performance standards of Article 5 of the Environmental Quality Act.

(III) State Engineer Information. The information from the application for the approved permit to construct a reservoir to store or impound water which affirmatively demonstrates that the reservoirs will be constructed and maintained in accordance with the requirements set out in Chapter V, Section 8, State Engineer Rules and Regulations. In addition, if the application includes a proposed transfer of a well for use as a water well, the application shall contain information from the approved application for a permit to appropriate groundwater which affirmatively demonstrates a plan for construction, completion and removal of wells in accordance with requirements which are at least as stringent as those governing wells drilled in conjunction with ~~surface~~ coal mining or exploration operations.

(B) For any permits or approvals which have not been obtained, the information required by (A) above which has been or will be submitted to the agencies involved, including a description of the steps to be taken to comply with the relevant requirements.

### Section 3 Vegetation Baseline Requirements.

(a) The plan for a baseline vegetation study to establish baseline conditions shall be submitted to the Administrator prior to the field sampling season for review and approval, prior to implementation, unless otherwise approved by the Administrator.

*Appendix A of the current Coal Rules and Regulations strongly encourages cooperation between the applicant and the division in coordinating the baseline sampling. This has been modified to make the cooperation mandatory since some applicants do not discuss the baseline sampling plan with the division in advance of the sampling. There are cases where the applicant and the division have worked out previous sampling plans and there is no need to submit a new plan. In these instances, the Administrator may waive the requirement of submitting a new baseline sampling plan. In addition, applicants will need the Administrator's prior approval in order to take advantage of semi-quantitative baseline methods outlined in (d) below.*

(b) If baseline information was previously collected in the area for a different permit or project, then the Administrator may require resampling. The Administrator's determination as to whether resampling is required, and to what extent, will be based upon:

- (i) Differences in scope between the permits or project;
- (ii) Differences in existing and historic conditions;
- (iii) Improvements in sample collection techniques;
- (iv) The elapsed time since the last evaluation of the presence of threatened and endangered species; or
- (v) Concerns with sampling methodology.

*The introduction to Appendix A discusses when modifications to the baseline sampling may occur but does not discuss the use of baseline information that may have been collected years before and never submitted for approval to the division. The new rule above gives criteria when this "old" baseline information may be used for a new application.*

(c) The applicant shall map the vegetation communities within the permit area and adjacent area and shall sample and describe the characteristics of vegetation communities within the permit area, to include:

*Subsection (c) above and continued below assimilates and clarifies requirements applicable to the mapping of vegetation communities. The concepts contained in the current Appendix A and elsewhere in Chapters 2 and 4 were combined and presented in a single location to provide clarity and consistency to maps provided to the LQD for review. Control areas have been deemed not the best technology because of their small size and will not be allowed for new permitted lands. However, mines that have control areas currently approved will be allowed to continue to use them on currently permitted lands but will not be allowed to use control areas on lands amended into the permit after the effective date of these rules.*

(i) The map shall show the vegetation communities in the permit and adjacent lands. Communities that are 2 acres and larger shall be mapped. Inclusions within larger communities do not need to be mapped as separate vegetation communities. The applicant may use the terminology used by the NRCS in naming vegetation communities;

(ii) The map shall be of a scale approved by the Administrator and use an aerial mosaic or USGS topographic , or equivalent, map as a base;

(iii) The vegetation community map shall identify:

(A) Sample locations for cover and shrub density;

(B) Reference Areas unless a technical success standard is proposed for evaluation of revegetation;

(C) Areas to be affected by mining and associated activities;

(D) The locations and orientations of all photographs provided with the descriptions of the vegetation communities and Reference Areas, as required in Chapter 2, Section 3(j);

(E) The general location of trees;

(F) The location and extent of designated and/or prohibited noxious weeds per Chapter 2, Section 3(k); and

(G) Extent of existing disturbance.

(iv) The vegetation communities in the study area may be mapped any time the ground is clear of snow, but must be field checked and verified prior to the sampling.

*The rules in proposed subsection (c) have been clarified that terminology*

*used by the Natural Resources Conservation Service may be used to describe the vegetation communities. The rules also contain a requirement that locations of certain weeds be shown on the map. This has been the normal practice but it is now clarified in the rules.*

(d) Percent cover, by vegetation community, shall be estimated using either:

(i) Quantitative methods, as approved by the Administrator, when the applicant intends to develop a technical standard or when the Administrator determines the study area is in a location that baseline vegetation has not been adequately described.

(ii) With approval of the Administrator, semi-quantitative methods as outlined below shall be used when the applicant does not intend to use a technical standard or those areas where the Administrator determines there is sufficient quantitative vegetation baseline in the general areas.

*The semi-quantitative methods described in (d) are new and are based on the fact LQD has numerous data sets that describe in detail the vegetation communities in existing mining areas. In most cases, the vegetation communities surrounding existing mines are the same or very similar to the communities already described. Sufficient information is collected to show the communities within the new mining areas are the same or similar, and are representative of the vegetative community. With the exception of shrubs which have special rules (see Chapter 2, Section 3(g) and Chapter 4, Section 2(d)(ii)(A)), the baseline data collected by quantitative methods are not used to develop bond release standards unless a technical standard is being developed.*

*The development of technical standards requires the use of data that are collected by specified methods that ensures the data is representative of the vegetation community. Quantitative methods are also appropriate for those mining areas that have vegetation communities that have not been fully described by previous baseline studies.*

(A) The quadrat or point intercept method shall be used except there is not a sample adequacy requirement. The number of samples per vegetation community and reference area shall be:

<u>Vegetation Community size</u>	<u>No. of samples</u>
<u>0 to 5 acres</u>	<u>3</u>
<u>&gt;5 to 50 acres</u>	<u>5</u>
<u>&gt;50 acres</u>	<u>10</u>

(e) If the applicant intends to propose a technical success standard, annual herbaceous production, by community, shall be estimated using quantitative methods.

Annual herbaceous production shall also be quantitatively estimated when the Administrator determines that previously collected baseline vegetation data inadequately describes the proposed permit area. If semi-quantitative methods are approved for baseline, no production for baseline is necessary.

(f) A “Reference area”, as defined in Chapter 1, Section 2(dl), shall be established for each vegetation community which will be disturbed unless a technical success standard is proposed for evaluation of revegetation.

(g) Shrub density sampling shall use the quantitative methods as approved by the Administrator unless the applicant commits to the maximum shrub reestablishment performance standard of one full shrub per square meter within shrub patches distributed over 20 percent of the eligible land for Option II. If the applicant accepts this maximum shrub reestablishment performance standard, the applicant shall use the following provisions to complete the calculations in Appendix 4B, Tables 1 and 2.

(i) For Option II, the full shrub with the highest baseline relative cover value across all premining vegetation communities shall be listed as the dominant premine full shrub species and the target postmine species. No calculations for Appendix 4B, Table 1 or Table 2, shall be performed. In Table 2, the Density of the Dominant Postmining (Full) Shrub shall be 0.5 per square meter, and the Density of Residual (Full) Shrubs shall be 0.25 per square meter and the Density of Approved Subshrubs shall be 0.25 per square meter.

*As explained above, a semi-quantitative method is appropriate for areas where the division has numerous data sets that adequately describe the premine vegetation communities. The number of samples to be taken was suggested by a consultant who has many years of sampling in the state. The semi-quantitative method can be also be used for describing the shrubs in these areas if the operator commits to the maximum shrub standard. In many cases, it is fairly obvious the premine shrub density is more than the minimum required to invoke the maximum shrub standard. If there is any doubt, the operator may use the quantitative method to demonstrate that a lesser shrub standard may apply.*

(h) Section 2(a)(vi)(C)(I) If trees are present within the proposed permit area, then the description shall include the number, general distribution, and species ~~an~~ estimate of the range of their heights and diameters.

*Proposed subsection (h) above was taken from Section 2(a)(vi)(C)(I) of the current rules. “General distribution” was used because there is no requirement to replace trees in the exact location in the reclamation. The heights and diameters are also deleted because regardless of size the trees must be replaced. Also, given the slow growth of trees there is no*

*requirement that the replaced trees in the reclaimed areas have to be the same height or diameter.*

(i) The applicant shall compile an inventory, by vegetation community, of all plants species observed within the study area and corresponding "Reference areas", in accordance with the following requirements:

*With the reduced number of cover transects collected and no production samples collected for baseline, a species list by community will provide additional information for description of the vegetation. Since species are recorded by community during field visits, this requirement would not require the mine to collect any additional data.*

(i) The plant species shall be listed:

(A) By life forms as described in Chapter 1, Section 2(ca).

(B) By scientific binomial (with reference to the botanic key used);

(C) By common name; and

(D) Identified as a native (native to North America) or introduced species.

*The plant species list is taken in part from the current Appendix A, I.E. and Chapter 2, Section 2(a)(vi)(C). Items (A) and (D) have been added to the list to provide consistency and clarity.*

(ii) The plant inventory shall be field checked and updated at least three times from April through September during the baseline sampling year to capture the phenological expression of species that do not express themselves every month. The plant inventory shall not be compared to any qualitative, semi-quantitative or quantitative criteria.

(iii) The plant inventory shall note the names and field locations of:

(A) Any herbarium samples collected;

(B) Any Designated Noxious Weeds or Prohibited Noxious Weeds defined by the State of Wyoming;

(C) Any plant species or habitat of special concern at the time of sampling; and

(D) Any species not previously recorded in Wyoming or outside its known range.

*Subsections (ii) and (iii) were taken from LQD Guideline 2 with the addition of the requirement concerning weeds which was taken from Chapter 2, Section 2(a)(vi)(C). The language was taken from the Guideline to provide clarity and consistency to the requirements. The requirement for selenium indicator plants was removed because seleniferous soils are generally identified during the baseline soil study. This makes the baseline information of little use and it is more important to track the amount of selenium in the reclaimed environment.*

(j) Each baseline vegetation study shall present descriptions of the vegetation communities and, unless a technical success standard is proposed for evaluation of revegetation present descriptions, of the Reference Areas/Unit. The descriptions shall include:

- (i) The general vegetation composition;
- (ii) The major species in each life form;
- (iii) The characteristic topography, including overall slope and aspect;
- (iv) The characteristic soil types;
- (v) The number, sizes, and types of inclusions;
- (vi) The degree of interspersion between communities;

(vii) A summary of the quantitative, semi-quantitative, and qualitative vegetation information for each community;

(viii) The presence of Designated Noxious Weeds or Prohibited Noxious Weeds identified in Chapter 2, Section 3(k), the description shall include information on the present and historical weed treatment; and

(ix) A three-inch by five-inch (or larger) color photograph, color copy or digital photograph panorama, showing the general features of each “Vegetation community” and “Reference area”.

*Subsection (k) was taken from Appendix A, I.D. This paragraph from Appendix A has been reformatted as a list to make it easier to read. Additional language has been added to the discussion on weeds to clarify what are the weedy species of concern. There has been much discussion concerning the issue of weeds. The use of the county lists was rejected as*

*they are inconsistent across the state and neighboring mines may be subjected to different standards. For federal lands, the operator will have to satisfy any special requirements of the Federal Land Managing Agency concerning weeds.*

(k) ~~Section 2(a)(vi)(C)(II)~~ Each baseline vegetation study shall include documentation of the presence or absence of Designated Noxious Weeds or Prohibited Noxious Weeds as defined by the State of Wyoming, Department of Agriculture Noxious weeds

(i) ~~Section 2(a)(vi)(C)(II)~~ If any Designated Noxious Weeds or Prohibited Noxious Weeds or other plants listed by the local Weed and Pest Control District as harmful are present within the proposed permit area, the description shall include a list of their names, either common or scientific, and a visual estimate of their abundance relative cover.

(ii) If any Designated Noxious Weeds or Prohibited Noxious Weeds are estimated to comprise more than 25% of the relative vegetation cover on two or more contiguous acres, that acreage shall be identified on the vegetation community map.

*There has been much debate on how to identify what is a weed. The Land Quality Division Advisory Board partially addressed this issue when considering Rule Package 1-P. The Board decided not to include county or local lists when determining what weeds needed to be controlled. The two rules above limit the weed list to those weeds listed in state statute. On federally managed lands, federally listed weeds would be addressed when the federal land managing reviews the application. Subsection (i) includes a reference to Section 2(a)(vi)(C)(II) in order to ensure that the concepts contained in the current language has been maintained. Subsection (ii) has been added to clarify the minimum size of a weed patch that is required to be shown on the map.*

(l) ~~Section 2(a)(vi)(C)(III) Endangered or Threatened Species.~~ If any State or Federally listed endangered or threatened plant species are known to exist within the permit area or in adjacent areas, their location shall be described and an evaluation provided on potential habitats within the permit area ~~or~~ and in adjacent areas.

*This rule is unchanged except replacing the "or" to "and" in the last line which makes the rule more logical and is how the rule is currently implemented. The original section title has also been struck out.*

(m) Cropland, either as a vegetation community and/or a land use category, is exempt from Chapter 2, Sections 3 (d) through (g), (i) and (j).

*Cropland is a special vegetation community and/or land use where the*



*items referenced in the rule do not apply. This rule comes from Appendix A, I,C,2d.*

#### **Section 4 Other Baseline Requirements.**

*Chapter 2 has been reorganized to incorporate some of the material from Appendix A. The vegetation baseline material has expanded to be so large that it was placed in its own subsection. The other baseline information has been placed together in this separate section.*

(a) Section 2(a)(vi) A description of the lands to be affected within the permit area, how these lands will be affected, for what purpose these areas will be used during the course of the mining operation, and a time schedule for affecting these lands. This description shall include a description of:

(i) Section 2(a)(vi)(A) The major past and present uses of the proposed permit area and adjacent lands. Previous uses of affected lands must be ranked on an individual basis according to the overall economic or social value of the land use to the landowner, community, or area in which these lands are found. The Administrator of the Land Quality Division shall bear the responsibility of making the final decision on the ranking of land uses in a particular area. This decision must be based on information concerning the economy, historical use of the area and the needs and desires of the landowner. The Land Quality Advisory Board may be consulted for suggestions or recommendations on the ranking of land uses in a given area. The present land uses shall be listed using the definitions of Chapter 1, and the vegetation communities which comprise each land use shall be presented.

*There has been a lot of discussion concerning vegetation communities and land uses as they relate to bond release. The purpose of reclamation is to return the land to an equal or higher use. Some land uses do not include vegetation communities. However, the predominate land uses in Wyoming are grazing and wildlife and are often combined. The added language attempts to capture the concept that land use is most important but likewise the vegetation communities that support that land use are also important in developing the reclamation plan.*

(ii) Section 2(a)(vi)(B) The capability of the land prior to mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and the land's history of previous mining, if any, and the uses of the land preceding mining; as well as the land use classification under local law, if any, of the proposed permit area and adjacent areas.

Section 2(a)(vi)(C) A description of vegetation types occurring on affected lands expressed as cover, productivity, species diversity, and species composition. The description shall be in accordance with the methods specified in

~~Appendix A of these rules and regulations. A map of the location and boundaries of the proposed reference or control areas shall be provided. In addition, a delineation of existing vegetation types within the proposed permit area shall be provided. The comparison area method may be used where the native or introduced premining vegetation cannot be described due to previous disturbance. In this case, all disturbed areas shall be delineated and described.~~

*The subsection above is indicated as struck out because the requirements discussed above have been incorporated throughout proposed Chapter 2 where appropriate. The struck out language was placed here to maintain continuity in indicating where the current Chapter 2 language ended up within the proposed chapter.*

~~Section 2(a)(vi)(C)(I) Grasses, forbs, trees and shrubs – the description shall include the common and/or scientific names of the predominating species and their estimated abundance within the proposed permit area. If trees are present within the proposed permit area, then the description shall include an estimate of the range of their heights and diameters.~~

*The above subsection has been deleted because the concepts contained above have been included elsewhere in Chapter 2 and is applicable to life forms other than those listed.*

~~(iii) Section 2(a)(vi)(D) Annual precipitation - the operator shall submit an estimated total annual precipitation for the proposed permit area. Data from the nearest official weather reporting station may be used. Operations more than 50 miles from an official weather station that are permanently staffed may be required to keep precipitation records.~~

~~(iv) Section 2(a)(vi)(E) Average wind direction and velocity - the operator shall submit the average wind direction and velocity recorded at the nearest official weather station or as measured at the site.~~

~~(v) Section 2(a)(vi)(F) Prime farmland information, which shall include, after a preapplication investigation of the proposed permit area, either:~~

~~(A) Section 2(a)(vi)(F)(I) A request for a determination that the land not be considered prime farmland on the basis that either the land has not had a history of intensive agricultural use; or there are no soil map units that have been designated prime farmland by the Soil Conservation Service Natural Resource Conservation Service in accordance with 7 CFR 657 (Federal Register Vol. 43, No. 21) and the Memorandum of Understanding between the Conservation Districts and the Soil Conservation Service, or~~

~~(B) Section 2(a)(vi)(F)(II) Where prime farmland occurs on~~

proposed affected land, an application which shall be submitted in accordance with Chapter 3.

(vi) Section 2(a)(vi)(G) Studies of fish, wildlife, and their habitats, in the level of detail and for those areas as determined by the Administrator, after consultation with the Wyoming Game and Fish Department in accordance with the Memorandum of Understanding between the two agencies; and Federal agencies having responsibilities for the management or conservation of such environmental values, including:

(A) Section 2(a)(vi)(G)(I) A list of indigenous vertebrate wildlife species within and adjacent to the permit area by common and scientific names. The area of survey for the possible presence of threatened or endangered species shall be on or within one mile of the permit area.

(B) Section 2(a)(vi)(G)(II) If critical habitat disruption is likely, the U.S. Fish and Wildlife Service and Wyoming Game and Fish Department shall be contacted by the Administrator. If crucial or important habitat or migration route disruption is likely, the Wyoming Game and Fish Department shall be contacted by the Administrator. Contacting the appropriate agency(ies) is required in order to determine the types and numbers of wildlife likely to be disturbed or displaced.

(vii) Section 2(a)(vi)(H) A detailed description, prepared or certified by a licensed professional geologist, or other qualified professional (as required by W.S. § 33-41-101 through 121), of the geology within the proposed permit area down to and including any aquifer to be adversely affected by mining below the lowest coal seam to be mined. The description shall include the aerial and structural geology of the permit area and, by extrapolation, adjacent areas, including geologic parameters which influence the required reclamation, and the occurrence, availability, movement, quantity, and quality of potentially affected surface and groundwaters.

(viii) Section 2(a)(vi)(I) For the proposed permit area and, by extrapolation, adjacent areas, characterization of the geologic strata down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined, or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. This information shall include a statement of the results of test borings or core samples which have been collected and analyzed to show:

(A) Section 2(a)(vi)(I)(I) Location of any groundwater;

(B) Section 2(a)(vi)(I)(II) Lithologic characteristics and thickness of each stratum and each coal seam;

(C) Section 2(a)(vi)(I)(III) Physical and chemical properties including the toxic and acid-forming properties of each stratum within the overburden; and

~~(D) Section 2(a)(vi)(I)(IV)~~ Chemical analyses for acid or toxic-forming substances of the coal seam, including the total sulphur and pyritic sulphur content. The Administrator may waive in whole or in part the requirements of these paragraphs if he makes a written finding that the testing is unnecessary because other equivalent information is available to him in a satisfactory form.

~~(ix) Section 2(a)(vi)(J)~~ Maps and cross-sections of the area, certified by a registered professional engineer, licensed professional geologist, or other qualified professional (as required by W.S. § 33-29-139 and 33-41-101 through 121), showing:

~~(A) Section 2(a)(vi)(J)(I)~~ Nature, depth and thickness of any coal seams to be mined or above those to be mined, each stratum of the overburden, and the stratum below the lowest coal seam to be mined;

~~(B) Section 2(a)(vi)(J)(II)~~ All coal crop lines and the strike and dip of the coal to be mined within the proposed permit area;

~~(C) Section 2(a)(vi)(J)(III)~~ Location and extent of existing or previously surface mined or underground mined areas within the proposed permit area and adjacent areas;

~~(D) Section 2(a)(vi)(J)(IV)~~ Sufficient slope measurements of the proposed permit area measured and recorded at such distances as the Administrator determines to be representative of the premining configuration and reflect geomorphic differences of the land to be mined;

~~(E) Section 2(a)(vi)(J)(V)~~ The location of water supply intakes for current users of surface water flowing into, out of and within a hydrologic area defined by the Administrator, and those surface waters which will receive discharges from affected areas in the proposed permit area;

~~(F) Section 2(a)(vi)(J)(VI)~~ The location of areas on which mining is limited or prohibited within or adjacent to the permit area, pursuant to Chapter 12, Section 1(a)(v), Land Quality Rules and Regulations;

~~(G) Section 2(a)(vi)(J)(VII)~~ Elevations and locations of test borings and core samplings;

~~(H) Section 2(a)(vi)(J)(VIII)~~ Elevations and locations of monitoring stations used to gather data for water quality and quantity, fish and wildlife, and air quality in preparation of the application; and

~~(I) Section 2(a)(vi)(J)(IX)~~ Other relevant information required by the Administrator.

~~(x) Section 2(a)(vi)(K)~~ Overburden, topsoil, subsoil, mineral seams or other deposits.

~~(A) Section 2(a)(vi)(K)(I)~~ Overburden - the operator shall submit a description including the thickness, geological nature (rock type, orientation, etc.), the presence of toxic, acid-forming, or vegetative-retarding substances, or any other factor that will influence the mining or reclamation activities.

~~(B) Section 2(a)(vi)(K)(II)~~ Topsoil and subsoil information including a soil survey of the affected lands conducted in accordance with the standards of the National Cooperative Soil Survey of the U.S. Department of Agriculture. If alternative materials are proposed to be used as a supplement to or substitute for topsoil, their suitability shall be demonstrated in accordance with Chapter 4, Section 2(c)(ix).

~~(I) Section 2(a)(vi)(K)(II)(1.)~~ Topsoil - the operator shall submit a description of the thickness and nature of the topsoil, if any, over the proposed affected lands. A soils survey and soil analyses conducted in accordance with standard methods acceptable to the Administrator, may be required to show variations in topsoil depth and suitability.

~~(II) Section 2(a)(vi)(K)(II)(2.)~~ Subsoil - the nature, thickness and distribution of the subsoil, if any, shall be described over the proposed affected lands. Detailed analyses of the subsoil may be required, if there is reason to suspect it may be of better quality for revegetation than the topsoil, or if it is to function as a topsoil supplement in reclamation efforts. If the subsoil is suspected of containing substances that might cause pollution or hinder reclamation, analyses will provide a basis for determining how to handle this material during reclamation.

~~(C) Section 2(a)(vi)(K)(III)~~ Mineral seams or other deposits - the operator shall submit a description of the mineral seams in the proposed permit area, including, but not limited to, their depth, thickness, orientation (strike and dip), and rock or mineral type. Maps or geologic cross-sections may be used to illustrate the description of the mineral seams.

~~(xi) Section 2(a)(vi)(L)~~ Complete information on surface water for the permit area and adjacent areas. This shall include the following:

~~(A) Section 2(a)(vi)(L)(I)~~ The operator shall list and describe the name and location for the present surface waters in and adjacent to the proposed permit area. The list shall include, but not be limited to, rivers, creeks, lakes, reservoirs, springs and marshes. Streams shall be classified as ephemeral, intermittent or perennial;

~~(B) Section 2(a)(vi)(L)(II)~~ The operator shall submit a description of the immediate drainage area which includes the proposed permit area. Surface water

use shall be identified as to domestic, municipal, industrial, agricultural, and wildlife;

(C) ~~Section 2(a)(vi)(L)(III)~~ Baseline monitoring information of surface water quantity within the permit area which is representative of the surface hydrologic system. Water quantity descriptions shall include, at a minimum, baseline information on seasonal flow rates, and identification of drainage area acreage; and

(D) ~~Section 2(a)(vi)(L)(IV)~~ Water quality data sufficient to identify seasonal variation. All surface water-quality sampling and analyses performed to meet the requirements of this Section shall be conducted according to the methodology in the 20th edition of "Standard Methods for the Examination of Water and Wastewater," or the methodology in 40 CFR Part 136 - "Guidelines Establishing Test Procedures for the Analysis of Pollutants," as amended on January 16, 2001. Contact the Land Quality Division for information on how to obtain a copy of either reference materials. The data shall include at a minimum:

(I) ~~Section 2(a)(vi)(L)(IV)(1.)~~ Total dissolved solids (mg/l);

(II) ~~Section 2(a)(vi)(L)(IV)(2.)~~ Total suspended solids (mg/l);

(III) ~~Section 2(a)(vi)(L)(IV)(3.)~~ pH (standards units);

(IV) ~~Section 2(a)(vi)(L)(IV)(4.)~~ Total and dissolved iron (mg/l); and

(V) ~~Section 2(a)(vi)(L)(IV)(5.)~~ Total manganese (mg/l).

(E) ~~Section 2(a)(vi)(L)(V)~~ Baseline alkalinity and acidity information shall be provided if there is a potential for acid drainage from the proposed mining operation.

(xii) ~~Section 2(a)(vi)(M)~~ Complete information on groundwater which may be affected in the permit area and adjacent areas. This shall include the following:

(A) ~~Section 2(a)(vi)(M)(I)~~ The operator shall submit an estimate of the depth and quantity of any groundwater existing in the proposed permit area down to and including the strata immediately below the lowest mineral seam to be mined. The operator may be required to conduct test drilling and monitoring in order to determine the exact depth, quantity and quality of groundwater in geological formations affected by the mining operations. Such drilling will require permits from the State Engineer's Office;

(B) ~~Section 2(a)(vi)(M)(II)~~ The lithology and thickness of all known aquifers;

(C) ~~Section 2(a)(vi)(M)(III)~~ All water-quality sampling and analyses performed to meet the requirements of this Section shall be conducted according to the methodology in the 20th edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Part 136 - "Guidelines Establishing Test Procedures for the Analysis of Pollutants," as amended on January 16, 2001. Contact the Land Quality Division for information on how to obtain a copy of either reference materials. The data shall include at a minimum:

(I) ~~Section 2(a)(vi)(M)(III)(1.)~~ Total dissolved solids (mg/l);

(II) ~~Section 2(a)(vi)(M)(III)(2.)~~ Total and dissolved iron (mg/l);

(III) ~~Section 2(a)(vi)(M)(III)(3.)~~ Total manganese (mg/l);  
and

(IV) ~~Section 2(a)(vi)(M)(III)(4.)~~ pH (standard units).

(D) ~~Section 2(a)(vi)(M)(IV)~~ According to the parameters and in the detail required by the Administrator, the recharge, storage, and discharge characteristics of the groundwater.

(xiii) ~~Section 2(a)(vi)(N)~~ Water rights.

(A) ~~Section 2(a)(vi)(N)(I)~~ The operator shall list by name and owner all known adjudicated and permitted water rights on the proposed permit area and adjacent lands.

(B) ~~Section 2(a)(vi)(N)(II)~~ The operator shall submit a list by name and owner of all existing water wells on the proposed permit area and adjacent lands, including all wells filed with the State Engineer's Office three miles or less from the proposed permit area. A survey of the premining water levels in the above wells may be required.

(xiv) ~~Section 2(a)(vi)(O)~~ A description of the surface water and groundwater and related geology in the permit area and general area sufficient to assess the probable hydrologic consequences (PHC). If the determination of the PHC required by Chapter 19, Section 2(a)(i) indicates that adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or that acid-forming or toxic material is present that may result in the contamination of groundwater or surface water supplies, then information supplemental to that required under ~~(a)(vi)(L)~~ (xi) and ~~(M)~~ (a)(xii) of this Section shall be provided to evaluate such PHC and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests,

hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water-quality or quantity characteristics.

~~(xv) Section 2(a)(vi)(P)~~ Information concerning the presence or absence of an alluvial valley floor within the permit area or on adjacent areas in accordance with Chapter 3.

~~(xvi) Section 2(a)(vi)(Q)~~ The location of existing man-made features to include roads, railroads, reservoirs, public or private rights-of-way and easements, utility lines, pipelines, oil wells, gas wells, and water wells.

~~(xvii) Section 2(a)(vi)(R)~~ Boundaries and descriptions of all cultural, historic and archaeological resources listed on, or eligible for listing on, the National Register of Historic Places. In compliance with the Archaeological Resources Protection Act of 1979 (P.L. 96-95), this information shall not be placed on display at the county clerk's office (as required by W.S. § 35-11-406(d)) where such resources occur on lands owned by the United States. This information shall be clearly labeled as “Confidential” and submitted separately from the remainder of the application materials. Requests to disclose confidential information shall be administered under the Department of Environmental Quality, Rules of Practice and Procedure, the Wyoming Public Records Act (W.S. §§ 16-4-2001 thru 16-4-2005 (2007)) and the Wyoming Environmental Quality Act (2007).

*The proposed amendment above is intended to address the deficiency noted at 30 CFR 950.16(u). Section 950.16(u) indicates that Wyoming must submit revisions to its program which “amend its regulations regarding procedures, including notice and opportunity to be heard for persons seeking disclosure, to ensure confidentiality of qualified information, which shall be clearly identified by the applicant and submitted separately from the remainder of the application ...”.*

*The OSM initially required Wyoming to amend its program to include a provision restricting as confidential information in an application on the nature and location of archeological resources on public land and Indian land as required under the Archeological Resources Protection Act of 1979 (December 23, 1985, 732 letter). Wyoming amended its rules and regulations to include the text of subsection (R) above. In its review of Wyoming’s program amendment the OSM stated that the rule revision was “no less effective than the Federal regulations ... [h]owever Wyoming must further amend its regulations regarding procedures, including notice and opportunity to be heard for persons seeking disclosure ...” (57 FR 48987, October 29, 1992).*

*The proposed revision clarifies that: information related to the nature and location of archeological resources on public lands shall be submitted*



*separately from other application materials. The proposed revision also: clarifies those procedures which shall govern requests to disclose information which has been submitted as confidential. References have been made to the Rules of Practice and Procedure and the Wyoming Public Records Act and the Environmental Quality Act to more clearly indicate the applicable standards related to materials which are submitted to the Land Quality Division.*

(xviii) Section 2(a)(vi)(S) A description of any significant artifacts, fossil or other article of cultural, historical, archaeological or paleontological value. Upon recommendation by a qualified archaeologist or a qualified paleontologist, the Administrator may require an evaluation of the proposed permit area prior to the time that a permit or license is issued.

### **Section 5 Mine Plan.**

*As part of the Chapter reorganization, all the mine plan components have been placed together in one section. The only changes are minor editorial changes to make the sentences complete or fit the outline of the chapter.*

(a) Section 2(b) In addition to that information required by W.S. § 35-11-406(b), each application for a surface coal mining permit shall contain:

(i) Section 2(b)(i) A complete operations plan proposed to be conducted during the life of the mine including:

(A) Section 2(b)(i)(A) A narrative description of the type and method of mining, the number of acres that will be affected annually, overburden and mineral removal and transport, anticipated annual and total production by tonnage, and the major equipment to be used for all aspects of the operations.

(B) Section 2(b)(i)(B) A map showing the estimated orderly progression of mining and reclamation on all proposed affected lands.

(C) Section 2(b)(i)(C) The size, sequence and timing of the areas for which it is anticipated that renewed permits for mining will be requested over the estimated total life of the proposed operation.

(D) Section 2(b)(i)(D) Cross-sections, and/or maps and plans of the area to be mined during the term of the permit, unless required for the permit area by the Administrator or as specified below, certified by a registered professional engineer or professional geologist, showing:

(I) Section 2(b)(i)(D)(I) Location of proposed water treatment control and monitoring facilities;

~~(II) Section 2(b)(i)(D)(II)~~ Location of each proposed explosive storage and handling facility;

~~(III) Section 2(b)(i)(D)(III)~~ Location and construction of each proposed waste disposal facility relating to coal processing or pollution control;

~~(IV) Section 2(b)(i)(D)(IV)~~ Location of and typical design for surface water and groundwater hydrologic control methods including proposed temporary impoundments, sedimentation ponds, diversions, stream channels, erosion control methods, and water treatment, water storage, water collection and discharge facilities. The location and typical design of permanent impoundments and general location of the above described hydrologic control methods shall be provided for the permit area;

~~(V) Section 2(b)(i)(D)(V)~~ The location, construction and maintenance of coal stockpiles, temporary and excess spoil piles shall be provided for the permit area;

~~(VI) Section 2(b)(i)(D)(VI)~~ Location of permanently fixed signs and markers in accordance with and meeting the requirements of Chapter 4, Section 2(o); and

~~(VII) Section 2(b)(i)(D)(VII)~~ Location and description of any undisturbed natural barrier which is proposed to be provided to prevent slides and erosion, in accordance with the requirements of Chapter 4, Section 2(s).

~~(ii) Section 2(b)(iii) A narrative covering the area to be mined during the term of the permit, unless required for the permit area by the Administrator or as specified below, explaining the location and plans for modification or construction, use, and maintenance of new mine facilities, signs and markers, dams, embankments, impoundments, and soil, coal and waste removal, handling, storage, cleaning, transportation and disposal areas. In addition, the narrative shall contain a plan of operation describing methods for minimizing interference with services in accordance with Chapter 4, Section 2(n). The narrative shall also include~~ A narrative and a map of the permit area identifying the location of existing structures, a description of their use and maintenance, and an explanation of whether they meet the requirements of Chapter 4 or the plan for removal, if required, or modification to comply with those standards in a manner which protects the environment and public health and safety.

*All of the information in the above subsection except the last sentence is already covered in greater detail in the rest of this section and the above is deleted as being duplicative.*

~~(iii) Section 2(b)(viii)~~ A description of the measures to be used to

maximize the use and conservation of the coal resource as required in Chapter 4, Section 2(v).

~~(iv) Section 2(b)(ix)~~ A description of the contingency plans which have been developed to preclude sustained combustion of any materials constituting a fire hazard.

~~(v) Section 2(b)(i)(E)~~ A description, plans, and drawings for each mine facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings shall include a map, appropriate cross-sections, design drawings, and specifications sufficient to demonstrate compliance with section 2(n) of Chapter 4 for each facility.

~~(vi) Section 2(b)(i)(F)~~ A map of the permit area which clearly shows that a railroad spur(s) which provides exclusive service to that particular permit is being included within the permit boundary from the point that it provides such service. This spur(s) shall be covered by a reclamation bond.

~~(vii) Section 2(b)(v)~~ A blasting plan for the area to be mined during the term of the permit, which shall include:

~~(A) Section 2(b)(v)(A)~~ Proposed compliance with limitations on ground vibration and airblast, the basis for those limitations, and methods to be applied in controlling the adverse effects of blasting operations. The applicant should also include:

~~(I) Section 2(b)(v)(A)(I)~~ A blasting plan which depicts the worst-case scenario (i.e., the maximum probable amount of explosives to be detonated in any eight millisecond period).

~~(II) Section 2(b)(v)(A)(II)~~ The identification, direction and distance, in feet to the nearest dwelling, public building, school, church, and community or institutional building from any blasting area during the term of the permit. This paragraph shall not apply if the building is owned by the operator and not leased to another or, if leased, the lessee signs a waiver relieving the operator from meeting the limitations in Chapter 6.

~~(B) Section 2(b)(v)(B)~~ If blasting operations will be conducted within 1,000 feet of any building used as a dwelling, public building, school, church, and community or institutional building outside the permit area, or within 500 feet of an active or abandoned underground mine, an anticipated blast design, prepared and signed by a certified blaster. The design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, as well as a discussion of design factors to be used which protect the public and meet the applicable airblast, flyrock and ground vibration standards in Chapter 6. This paragraph

shall not apply if the building is owned by the operator and not leased to another or, if leased, the lessee signs a waiver relieving the operator from meeting the limitations in Chapter 6.

~~(C) Section 2(b)(v)(C)~~ Description and location of blasting monitoring, warning and site access control equipment and procedures proposed to be used pursuant to Chapter 6, Section 4.

~~(D) Section 2(b)(v)(D)~~ Description of procedures and plans for recording and retaining information required by Chapter 6, Section 5.

~~(E) Section 2(b)(v)(E)~~ A sample copy of the public notices required by Chapter 6, Section 3.

~~(F) Section 2(b)(v)(F)~~ Other information requested by the Administrator which he determines necessary to ensure compliance with Chapter 6.

~~(viii) Section 2(b)(vi)~~ A plan for minimizing adverse impacts to fish, wildlife and related environmental values within and adjacent to the permit area during the operation, including:

~~(A) Section 2(b)(vi)(A)~~ Whether such resources will be enhanced through successful revegetation in accordance with Chapter 4, Section 2(r);

~~(B) Section 2(b)(vi)(B)~~ A statement of how the applicant will utilize monitoring methods as specified in Appendix B of these rules and regulations, and impact control measures and management techniques to protect or enhance the following, if they are likely to be affected by the proposed operation:

~~(I) Section 2(b)(vi)(B)(I)~~ Threatened or endangered species of plants or animals listed by the Secretary under the Endangered Species Act of 1973, as amended (16 U.S.C. Section 1531 et seq.) and their critical habitats;

~~(II) Section 2(b)(vi)(B)(II)~~ Species identified through the consultation process described in Section 2(a)(vi)(G); and

~~(III) Section 2(b)(vi)(B)(III)~~ Important habitats for fish and wildlife, such as wetlands, riparian areas, rimrocks, areas offering special shelter or protection, reproduction and nursery areas, and wintering areas.

~~(C) Section 2(b)(vi)(C)~~ Upon request, the Administrator shall provide the resource information required under paragraph (B) of this Section and that required by Section 2(a)(vi)(G) of this Chapter to the U.S. Department of the Interior, Fish and Wildlife Service regional or field office for their review. This information shall be provided within 10 days of receipt of the request from the Service.

~~(ix) Section 2(b)(xi)~~ A plan to ensure the protection of the quantity and quality of, and rights to, surface water and groundwater both within and adjacent to the permit area, which shall include:

~~(A) Section 2(b)(xi)(A)~~ A plan and timetable for control and treatment of surface water and groundwater in accordance with Chapter 4, Section 2(e)-(h);

~~(B) Section 2(b)(xi)(B)~~ A plan for sediment removal and disposal;

~~(C) Section 2(b)(xi)(C)~~ A plan to restore the approximate recharge capacity of the permit area in accordance with Chapter 4, Section 2(h);

~~(D) Section 2(b)(xi)(D)~~ A plan to collect, record and report water quantity and quality data according to Chapter 4, Section 2(i); and

~~(I) Section 2(b)(xi)(D)(I)~~ Surface water monitoring plan.

~~(1.) Section 2(b)(xi)(D)(I)(1.)~~ The application shall include a monitoring plan based upon the PHC determination required under subsection 2(b)(xii) of this Chapter and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in subsection 2(b)(xi) of this Chapter.

~~(2.) Section 2(b)(xi)(D)(I)(2.)~~ The plan shall identify the surface water quantity and quality parameters to be monitored, sampling frequency, and site locations. At a minimum, the parameters specified in Section 2(a)(vi)(L)(III) and (IV) of this Chapter shall be measured. Results of monitoring shall be available for inspection at the mine and available to the Director's designated authorized representative, and shall be reasonably current. Surface water monitoring shall be conducted quarterly unless an alternate frequency, appropriate to the monitored site, is approved by the Administrator. Results of monitoring shall be submitted in the annual report for each monitoring location.

~~(3.) Section 2(b)(xi)(D)(I)(3.)~~ The plan shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance.

~~(II) Section 2(b)(xi)(D)(II)~~ Groundwater monitoring plan.

~~(1.) Section 2(b)(xi)(D)(II)(1.)~~ The application shall include a groundwater monitoring plan based upon the PHC determination required under

subsection 2(b)(xii) of this Chapter and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the groundwater for current and approved postmining land uses and to the objectives for protection of the hydrologic balance set forth in subsection 2(b)(xi) of this Chapter.

~~(2.) Section 2(b)(xi)(D)(II)(2.)~~ The plan shall identify the quantity and quality parameters to be monitored, sampling frequency, and site locations. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, the parameters specified in Section 2(a)(vi)(M)(III) of this Chapter and water levels shall be measured. Groundwater monitoring shall be conducted quarterly unless an alternate frequency, appropriate to the monitored site, is approved by the Administrator. Results of monitoring shall be available for inspection at the mine and available to the Director's designated authorized representative, and shall be reasonably current. Results of monitoring shall be submitted in the annual report for each monitoring location.

~~(E) Section 2(b)(xi)(E)~~ A plan to provide alternative sources of water in accordance with W.S. § 35-11-415(b)(xii), where the protection of quantity or quality cannot be ensured as determined under the requirements of (xii) below.

*The above subsection is current language and has only been relocated in the reorganized Chapter. It has not been modified from its current content.*

~~(x) Section 2(b)(xii)~~ Probable hydrologic consequences determination (PHC). A determination of the PHC of the proposed operation on the hydrologic regime and the quantity and quality of surface water and groundwater systems within the permit area and the general area consistent with the information required in Chapter 19, Section 2 of these regulations. The PHC determination shall be based on baseline hydrologic, geologic and other information collected for the permit application and may include data statistically representative of the site. This determination shall specifically address potential adverse hydrologic consequences and describe preventive and remedial measures.

~~(xi) Section 2(b)(xiii)~~ An evaluation of the impact of the proposed mining activities that may result in contamination, diminution, or interruption of the quality and quantity of groundwater or surface water within the proposed mine permit area or adjacent areas that are used for domestic, agricultural, industrial, or other legitimate purposes. If contamination, diminution, or interruption may result, then the application shall identify the alternative sources of water supply that could be developed to replace the existing sources in accordance with State law.

~~(xii) Section 2(b)(xv)~~ A general plan for each coal-processing waste bank. It shall contain a description, map, and cross-section of the structure and its location, preliminary hydrologic information required to assess the hydrologic impact of the bank,

and any additional information the Administrator may deem necessary to show compliance with Chapter 4, Section 2(c). Where the applicant proposes to return coal-processing waste to abandoned underground workings, the application shall:

(A) ~~Section 2(b)(xv)(A)~~ Describe the design, operation and maintenance of any proposed coal-processing waste disposal facility, including flow diagrams and any other necessary drawings and maps, for the approval of the Administrator and the Mine Safety and Health Administration;

(B) ~~Section 2(b)(xv)(B)~~ Describe the sources and quality of waste to be stowed, area to be backfilled, percent of the mine void to be filled, method of constructing underground retaining walls, influence of the backfilling operation on active underground mine operations, surface area to be supported by the backfill and the anticipated occurrence of surface effects following backfilling;

(C) ~~Section 2(b)(xv)(C)~~ Describe the source of the hydraulic transport mediums, method of dewatering the placed backfill, retainment of water underground, treatment of water if released to surface streams, and the effect on the hydrologic regime;

(D) ~~Section 2(b)(xv)(D)~~ Describe each permanent monitoring well to be located in the backfilled area, the stratum underlying the mined coal, and gradient from the backfilled area except where pneumatic backfilling operations are exempted from hydrologic monitoring; and

(E) ~~Section 2(b)(xv)(E)~~ Be approved by MSHA as well as the Administrator prior to implementation.

(xiii) ~~Section 2(b)(xvi)~~ For surface mining activities to be conducted within 500 feet of an underground mine, measures to be used to comply with Chapter 4, Section 2(t).

(xiv) ~~Section 2(b)(xvii)~~ Plans describing the measures to be taken to obtain permit approval regarding areas where mining would be otherwise limited or prohibited pursuant to Chapter 12, Section 1(a)(v).

(xv) ~~Section 2(b)(xviii)~~ Descriptions, including appropriate maps and cross-sections of any proposed excess spoil disposal site and design of the spoil piles in accordance with the requirements of Chapter 4, Section 2(c). This shall contain the results of a geotechnical investigation of the proposed excess spoil disposal site, including the following:

(A) ~~Section 2(b)(xviii)(A)~~ The character of bedrock and any adverse geologic conditions in the disposal area;

(B) ~~Section 2(b)(xviii)(B)~~ A survey identifying all springs, seepage, and groundwater flow observed or anticipated during wet periods in the area of the disposal site;

(C) ~~Section 2(b)(xviii)(C)~~ Where applicable, an evaluation of the potential effects of subsidence of the subsurface strata due to past and future mining operations;

(D) ~~Section 2(b)(xviii)(D)~~ A stability analysis including, but not limited to, strength parameters, pore pressures and long-term seepage conditions. These data shall be accompanied by a description of all engineering design assumptions and calculations and the alternatives considered in selecting the specific design specifications and methods; and

(E) ~~Section 2(b)(xviii)(E)~~ If, under Chapter 4, Section 2(c)(xi)(F), special structural provisions are required for spoil disposal on overall slopes greater than 20 degrees, information on:

(I) ~~Section 2(b)(xviii)(E)(I)~~ The number, location and depth of borings or test pits which shall be determined with respect to the size of the spoil disposal structure and subsurface conditions; and

(II) ~~Section 2(b)(xviii)(E)(II)~~ The engineering designs, design rationale and design calculations for the special structural provisions, which are based on the information required in paragraph (D) above.

(xvi) ~~Section 2(b)(xix)~~ Road Systems.

(A) ~~Section 2(b)(xix)(A)~~ Each applicant shall submit plans and drawings for each road as defined in Chapter 1 to be constructed, used, or maintained within the proposed permit area. The plans and drawings shall:

(I) ~~Section 2(b)(xix)(A)(I)~~ Include a map, appropriate cross-sections, design drawings and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, drainage structures and low-water crossings;

(II) ~~Section 2(b)(xix)(A)(II)~~ Contain the drawings and specifications of each proposed road that is 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 or any perennial stream, as necessary for approval of the road by the Administrator in accordance with Chapter 4, Section 2(j)(iv)(A);

(III) ~~Section 2(b)(xix)(A)(III)~~ Contain the drawings and



specifications for each proposed ford of intermittent or perennial streams that is used as a temporary route, as necessary for approval of the ford by the Administrator in accordance with Chapter 4, Section 2(j)(vii)(C)(II);

~~(IV) Section 2(b)(xix)(A)(IV)~~ Contain a description of measures to be taken to obtain approval from the Administrator for alteration or relocation of a natural stream channel under Chapter 4 Section 2(j)(vii)(D)(IV);

~~(V) Section 2(b)(xix)(A)(V)~~ Contain the drawings and specifications for each low-water crossing of an ephemeral stream channel 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 so that the Administrator can maximize the protection of the stream in accordance with Chapter 4, Section 2(j)(vii)(D)(VI); and

~~(VI) Section 2(b)(xix)(A)(VI)~~ Describe the plans to remove and reclaim each road that would not be retained under an approved postmining land use, and the schedule for this removal and reclamation.

~~(B) Section 2(b)(xix)(B)~~ The plans and drawings for each primary road (as defined in Chapter 4, Section 2(j)(i)(B)) shall be prepared by, or under the direction of, and certified by a qualified registered professional engineer as meeting the requirements of this Chapter and current, prudent engineering practices.

~~(xvii) Section 2(b)(xx)~~ Plans for compliance with the temporary and permanent cessation of operations requirements contained in Chapter 4, Section 2(k) and (u).

~~(xviii) Section 2(b)(xxi)~~ Plans of mine facilities (including overstrip areas) that are to be shared by two or more separately permitted mining operations may be included in one permit application and referenced in the other application(s). Each permittee shall bond the mine facilities unless the permittees sharing it agree to another arrangement for assuming their respective responsibilities. If such agreement is reached, the application shall include a copy of the agreement between or among the parties setting forth the respective bonding responsibilities of each party for the mine facilities. The agreement shall demonstrate to the satisfaction of the Administrator that all responsibilities under the Act and regulations for the mine facilities will be met.

~~(xix) Section 2(b)(xxii)~~ A Cultural Resources Management Plan which:

~~(A) Section 2(b)(xxii)(A)~~ Describes the measures to be used to prevent impacts to public parks or places listed on the National Register of Historic Places or, in cases of valid existing rights or where joint agency approval has been obtained, to minimize impacts to such parks or places;

~~(B) Section 2(b)(xxii)(B)~~ Provides for the mitigation of adverse effects to historic or archaeological properties eligible for listing on the National Register of Historic Places; and

~~(C) Section 2(b)(xxii)(C)~~ Ensures that the appropriate treatment measures or mitigation will be undertaken prior to the commencement of any specific mining operation that would affect such parks, places or properties.

~~(xx) Section 2(b)(xxiii)~~ A plan for the management and disposal within the proposed permit area of industrial solid wastes generated by the operation (such as, but not limited to, grease, lubricants, paints, flammable liquids, garbage, trash, discarded mining machinery, lumber and other combustible material), in accordance with Chapter 4, Section 2(c) and with those provisions of the Solid Waste Management Rules and Regulations deemed appropriate by the Administrator.

~~(xxi) Section 2(b)(xxiv)~~ Plans for the management and disposal within the permit area of any solid wastes generated by a mine mouth power plant or mine mouth coal drier, in accordance with Chapter 4, Section 2(c) and with provisions of the Solid Waste Management Rules and Regulations deemed appropriate by the Administrator.

*The above sections are existing language and were only moved from their previous location due to the reorganization of the chapter. No changes were made to the language.*

## **Section 6 Reclamation Plan.**

*As part of the Chapter reorganization, all the reclamation plan components including those from Appendix A that were kept as rule have been placed together in one section.*

~~(a) Section 2(b)(ii)~~ The reclamation plan shall include a A time schedule for each major step in the reclamation which coordinates the operator's reclamation plan with the mining plan in such a manner so as to facilitate reclamation at the earliest possible time consistent with Chapter 4, Section 2(k) and the orderly development of the mining property.

*The paragraph has been modified to contain an opening phase since the original rule was a subpart of a different section that contained a similar phrase.*

~~(b) Section 2(b)(iv)~~ The reclamation plan shall also describe how A plan whereby the operator will reclaim the affected lands to the proposed postmining land use in accordance with Chapter 4, Section 2(a) which shall include:

*The introductory phrase of the opening sentence in (b) and (c) was*

*changed to make the language flow better.*

(i) Section 2(b)(iv)(A) A plan for topsoil and subsoil removal, storage, protection, and replacement; and for handling and disposal of all toxic, acid-forming, or otherwise hazardous materials, in accordance with Chapter 4, Section 2(c). This shall include a description with location maps and, where appropriate, typical topographic profiles of the mine facility area, mineral stockpiles, spoil piles, and topsoil and subsoil stockpiles. The location, and where required, the capacity of each stockpile shall be described and shown on a map. The application shall also explain how the topsoil will be replaced on the affected land during reclamation, including a description of the thickness of topsoil to be replaced and procedures that will be followed to protect the topsoil from excessive compaction and wind and water erosion until vegetation has become adequately established.

(ii) Section 2(b)(iv)(B) A plan for backfilling, grading and contouring of all affected lands in accordance with Chapter 4, Section 2(b). The plan shall include:

(A) Section 2(b)(iv)(B)(I) A description of the reclaimed land surface with contour maps or cross-sections that show the final surface configuration of the affected lands.

(B) Section 2(b)(iv)(B)(II) Where terraces or benches are proposed, detailed drawings shall be provided which show dimension and design of the terraces, check dams, any erosion prevention techniques and slopes of the terraces and their interval.

(C) Section 2(b)(iv)(B)(III) Where permanent water impoundments are proposed, contour maps and cross-sections which show slope conditions around the impoundment and the anticipated high and low postmining water level. The plan shall contain a description of erosion control techniques and such other design criteria and water quality and quantity conditions to comply with Chapter 4, Section 2(g)(ii).

(D) Section 2(b)(iv)(B)(IV) Maps and descriptions necessary to demonstrate that the slopes of the reclaimed land surface do not exceed the approximate premining slopes.

(E) Section 2(b)(iv)(B)(V) Procedures for assuring stability of the reclaimed land surface.

~~Section 2(b)(vii) A revegetation plan, including descriptions of:~~

*Due to the reorganization of Chapter 2 and consolidation of revegetation plan requirements Section 2(b)(vii) becomes redundant and is therefore deleted from Chapter 2. Subsection (iii) below contains similar language and better fits the proposed organization of Chapter 2.*

~~(iii) Section 2(b)(iv)(C)~~ A plan to assure revegetation of all affected land in accordance with Chapter 4, Section 2(d). The plan shall include:

~~(A) Section 2(b)(iv)(C)~~ The method and schedule of revegetation, including but not limited to species of plants, seeding rates, seeding techniques, mulching requirements ~~or~~ and other erosion control techniques, and seeding times to be used in a given area for reclamation purposes.

*The "or" has been changed to "and" because mulching is required (unless specific approval is granted – see (F) below) to enhance moisture and not only for erosion control. There may be other erosion control techniques the operator will wish to perform.*

~~(B) Section 2(b)(iv)(C)~~ The Wyoming Game and Fish Department shall be consulted and its approval shall be required for minimum stocking and planting arrangements of trees and shrubs, including species composition and vegetative ground cover for crucial habitat, declared as such prior to the submittal of a permit application or any subsequent amendment, and critical habitat. For crucial habitat and critical habitat, consultation with and approval obtained from the Wyoming Game and Fish Department for tree and shrub species composition and ground cover for minimum stocking and planting arrangements of trees and shrubs. Crucial habitat must be declared as such prior to the submittal of a permit application or any subsequent amendment.

~~(C) Section 2(b)(iv)(C)~~ The Wyoming Game and Fish Department shall be consulted for minimum stocking and planting arrangements of trees and shrubs, including species composition and vegetative ground cover for important habitat. For important habitat, consultation with and recommendations obtained from the Wyoming Game and Fish Department for tree and shrub species composition and ground cover for minimum stocking and planting arrangements.

*Former Section 2(b)(iv)(C) was revised and split into several subsections. The discussions in proposed Subsections (B) and (C) above were revised to clarify the language contained in the current rules and to fit the new format.*

~~Section 2(b)(iv)(C)~~ The Wyoming Department of Agriculture shall be consulted regarding croplands and erosion control techniques.

*The final sentence in Section 2(b)(iv)(C) has been deleted. The requirement to consult the Wyoming Department of Agriculture has been deleted because the LQD and coal operators have gained the necessary experience over the past decades on how to control erosion.*

(D) The tree species, the number per species, and the location

of tree plantings.

*Proposed subsection (D) was added in response to a requirement contained in Rule Package 1-P that the reclamation plan contains the three items listed.*

~~(E) Appendix A, Section VII. B. After choosing the postmining land uses and considering the dominant postmining topographic features and landowner desires, the applicant should develop different seed mixes which will accommodate the postmining land uses and differences in soils, moisture conditions, exposures etc. on the postmining landscape. A separate seed mix(es) shall be developed for each approved postmining land use, considering the dominant postmining topographic features and landowner desires.~~

*This section was moved from Appendix A, Section VII. B. and revised for clarity and to fit the proposed format of this Chapter.*

~~(I) Ch. 4, Section 2(d)(v) The species of vegetation to be used in vegetation efforts shall be described in the reclamation plan indicating the composition of seed mixtures and the amount of seed to be distributed on the area on a per acre basis.~~

~~(II) Ch. 4, Section 2(d)(v) The species and varieties shall Seed types will depend upon the climatic and soil conditions prevailing in the permit area and the proposed postmining landuses of the land after reclamation.~~

~~(III) Ch. 4, Section 2(d)(v) The sSpecies to be planted as permanent cover shall be self-renewing;~~

~~(IV) Ch. 4, Section 2(d)(v) Seeding rates shall depend upon seed types, climatic conditions and the techniques to be used in seeding;~~

*(I) through (IV) were moved from Chapter 4, Section 2(d)(v). The revised text uses similar terms and similar sentence structure and reduces some wordiness. Chapter 4, Section 2(d)(v) of the current rules reads as follows:*

*“(v) Seeding which is accomplished by mechanical drilling 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. Any rills or gullies that would preclude successful establishment of vegetation or achievement of postmining land use shall be removed or stabilized. The species of vegetation to be used in revegetation*

*efforts shall be described in the reclamation plan indicating the composition of seed mixtures and the amount of seed to be distributed on the area on a per acre basis. Seed types will depend on the climatic and soil conditions prevailing in the permit area and the proposed use of the land after reclamation. Species to be planted as permanent cover shall be self-renewing. Seeding rates will depend on seed types, climatic and soil conditions and the techniques to be used in seeding.”*

*The proposed subsections (I) through (IV) use several of the sentences from the paragraph above. The remaining portions of subsection (v) are discussed more thoroughly on page 78.*

~~(V) Appendix A, VII., B., 4. The seed mix shall contain naturalized, introduced species only if:~~

~~(1.) Appendix A, VII., B., 4. aAdditional herbaceous species are needed; or if~~

~~(2.) Appendix A, VII., B., 4. sSuitable, native species are unavailable; or if~~

~~(3.) Appendix A, VII., B., 4. For cropland or pastureland naturalized introduced species are superior for a specialized land use (e.g. managed hayland or pastureland); or~~

~~(4.) Ch. 4, Section 2(d)(vi) Introduced species may be used only Needed to achieve a quick, temporary, stabilizing cover to control erosion; or~~

~~(5.) Ch. 4, Section 2(d)(vi) Conducive to achieve a postmining land use approved by the Administrator.~~

*Proposed subsection (V) contains concepts and language taken from Appendix A, VII. B. and Chapter 4, Section 2(d)(vi). The proposed subsection was reworded to clarify the intent of the rule and restructured for clarity.*

~~(VI) Ch. 4, Section 2(d)(vi) Naturalized or nonindigenous native plant species may be included in the approved seed mixture if they support the approved postmining land uses. The operator shall document, unless otherwise authorized by the Administrator, the suitability of these introduced species using data from published literature, from experimental test plots, from on-site experience, or from other information sources.~~

*Subsections (VI) was moved from Chapter 4, Section 2(d)(vi) and were*

*split to facilitate reading. The word “these” was deleted and replaced with “introduced” to clarify the object of the sentence.*

(VII) Appendix A, VII., B. 5. For grazingland, the seed mix shall contain full shrub and/or subshrub species when these species will support the postmining land uses. To increase postmining species diversity and establish shrub mosaics, shrub mixtures shall be developed and seeded separately from the herbaceous mixtures.

*Proposed subsection (VII) was moved from Appendix A, VII., B., 5. and revised to fit the proposed structure of Chapter 2.*

(VIII) For federally owned surface, the federal land managing agency shall be consulted for mulching requirements and seeding requirements for cover crops, temporary and permanent reclamation.

(IX) Appendix A, VII. B. The proposed postmining location of each seed mixture shall be illustrated on a post mining contour map.

*Proposed subsection (IX) was moved from Appendix A. The word “mixture” was edited for clarity.*

(F) Appendix A, VII. C. Locations and/or conditions where the operator specifically requests approval not to use mulch.

*Appendix A, VII., C., page A-24, allowed the operator to request approval not to use mulch on specific areas and proposed subsection (F) above maintains that option.*

(G) A weed control plan for State of Wyoming Designated Noxious and Designated Prohibited Weeds and, on federal surface, any additional weeds listed by the federal land managing agency.

*The control of weeds is required in current Chapter 4, Section 2(d)(xiv). A plan to meet that requirement has been added to Chapter 2 Subsection (G) and has been clarified that only those weeds designated by the state as noxious and prohibited are required to have a control plan in addition to those by the federal land managing agency if federally owed surface land is involved.*

(H) Ch. 4, Section 2(d)(xii) An explanation of aAny plans for irrigation must be explained.

*(H) was moved from current Chapter 4, Section 2(d)(xii). The proposed rule in (H) above also accounts for the deleted text in (I) below which*

comes from the current Chapter 2.

(I) Section 2(b)(vii)(A) Irrigation and An explanation of pest and disease control measures, if appropriate;

*Current Section 2(b)(vii)(A) was edited for consistency and to match the proposed organization of Chapter 2. The reference to irrigation was deleted because it was redundant due to the addition of subsection (H) above. The changes were made for consistency and to fit with the heading for Section 6(c)(iii).*

(J) Section 2(b)(vii)(C) A plan for monitoring permanent revegetation on reclaimed areas, specifically including quantitative sampling, as required by Chapter 4, Section 2(d).

*(J) was moved from current Chapter 2, Section 2(b)(vii)(C).*

(iv) Section 2(b)(vii)(B) Measures proposed to be used to determine the success of revegetation as required by Chapter 4, Section 2(d); and A plan for measurement of revegetation success to include:

*Proposed subsection (iv) maintains the requirement that a plan for measurement of revegetation success be discussed. The current language in Section 2(b)(vii)(B) did not fit the proposed chapter organization, therefore the current language was revised to fit the proposed organization of the chapter.*

(A) How a “Reference area” shall be used for cover and production, unless technical standards for cover and production have been approved for a projected postmine community. A “Reference area” is defined in Chapter 1, Section 2(dl).

(B) The methods to be used for measuring the shrub density standard as approved by the Administrator.

(C) The methods to be used for evaluating the shrub density goal as approved by the Administrator, where applicable.

(D) The procedures to be used for measuring species diversity and composition as approved by the Administrator.

(E) If proposed, a technical success standard for a specified vegetation parameter. The technical success standard:

(I) Is derived from a sufficient number of years of



baseline data so the standard value can be considered representative over a range of climatic conditions or a relationship between the parameter and climatic variables can be determined. For technical standards for cover and production, a minimum of five years of baseline data is necessary; and

(II) May be extended to an amendment area if the baseline information indicates the standard is applicable in that area.

(F) The procedures to be used as approved by the Administrator for the evaluation of restored postmining vegetation communities which carry the “Cropland” or “Pastureland” land use designation.

*The new language has been moved from Appendix A. New subsection (C) has been added to reflect the need to include the necessary information for those lands that are under the shrub “goal” requirements as opposed to the shrub “standard.”*

~~(G) Ch. 4, Section 2(d)(x)(G) Standards for the success for reforestation for commercial harvest shall be established in consultation with forest management agencies and prior to approval of any mining and reclamation plan that proposes reforestation. If reforestation for commercial harvest is the method of revegetation, reforestation shall be deemed to be complete when a reasonable population density as established in the reclamation plan has been achieved, the trees have shown themselves capable of continued growth for a minimum period of five years following planting, and the understory vegetation is adequate to control erosion and is appropriate for the land use goal. Quality and quantity, vegetation cover, productivity, and species diversity shall be determined in accordance with scientifically acceptable sampling procedures approved by the Administrator.~~

*Subsection (G) was moved from Chapter 4, Section 2(d)(x)(G). The language that has been struck from the current Chapter 4 language has been included in the proposed changes to Chapter 4. More specifically the first and last sentences are incorporated with revision into Chapter 4 and the second sentence has been retained here in Chapter 2.*

~~(v) Section 2(b)(iv)(D) Descriptions, including maps and cross-sections, of the surface water diversion systems which meet the requirements of Chapter 4, Section 2(e). Monitoring of surface and groundwater conditions may be required during the course of the operation based on the existing water conditions and the nature of the proposed operation. If so required, the application shall include a description of the location, construction, maintenance, and removal, where necessary, of such monitoring stations.~~

~~(vi) Section 2(b)(iv)(E) Where a permanent water impoundment is proposed as final reclamation, the application shall include:~~

(A) Section 2(b)(iv)(E)(I) Written consent from the surface landowner if different than the mineral owner.

(B) Section 2(b)(iv)(E)(II) A description of the proposed use of the impoundment.

(C) Section 2(b)(iv)(E)(III) A statement of the source, quality and quantity of water available for impoundment and a statement regarding its suitability for recreational, irrigation, livestock or wildlife watering. If, upon review of this information, water quality and quantity are not reasonably demonstrated to be suitable for the postmining use, the applicant shall be so notified in writing and shall be allowed to submit further documentation in support of the proposed impoundment to reasonably satisfy the Administrator. If the applicant is unable to demonstrate to the satisfaction of the Administrator that the water quality and quantity will be suitable for the postmining land use, the applicant shall provide an alternate plan.

(D) Section 2(b)(iv)(E)(IV) The operator may be required to monitor surface and groundwaters in order to determine that upon completion of the operation, the water quality and quantity will be consistent with the approved postmining use.

(E) Section 2(b)(iv)(E)(V) A description of the construction of the impoundment so as to meet the requirements of Chapter 4, Section 2(g)(ii).

(vii) Section 2(b)(iv)(F) A plan to assure proper construction and reclamation of any tailings impoundments in accordance with the Act and these regulations.

(viii) Section 2(b)(iv)(G) A plan for the disposal of mine facilities, erected, used or modified by the applicant in accordance with the requirements of Chapter 4, Section 2(m).

(ix) Section 2(b)(x) A description of the measures to be used to seal or manage mine openings in accordance with Chapter 4, Section 2(p), and to cap, plug and seal all exploration holes, bore holes, wells and other openings, excepting developmental drill holes which will be mined through within one year, within the area to be mined during the term of the permit in accordance with Chapter 14. For developmental drilling the application shall contain general descriptions relating to spacing, data collection, and techniques which will be employed, including those which may be needed to comply with the plugging and sealing requirements of W.S. § 35-11-404.

(x) Section 2(b)(xiv) A postmining land use plan, including:

(A) Section 2(b)(xiv)(A) The necessary support and maintenance

activities that may be needed to achieve the proposed land use.

~~(B) Section 2(b)(xiv)(B)~~ Where a land use is proposed different from the premining land use:

~~(I) Section 2(b)(xiv)(B)(I)~~ A discussion of the utility and capacity of the reclaimed land to support a variety of uses and the relationship of the proposed use to existing land use policies and plans; and

~~(II) Section 2(b)(xiv)(B)(II)~~ A comparison of the premining and postmining land uses. The premining uses of land to which the postmining land use is compared shall be those uses which the land previously supported, if the land has not been previously mined and has been properly managed.

~~(1.) Section 2(b)(xiv)(B)(II)(1.)~~ The postmining land use for land that has been mined and not reclaimed shall be judged on the basis of the highest and best use that can be achieved and is compatible with surrounding areas without requiring unreasonable disturbance of areas previously unaffected by mining.

~~(2.) Section 2(b)(xiv)(B)(II)(2.)~~ The postmining land use for land that has received improper management shall be judged on the basis of the premining use of surrounding lands that have received proper management.

~~(3.) Section 2(b)(xiv)(B)(II)(3.)~~ If the premining use of the land was changed within five years of the beginning of the mining, the comparison of postmining use to premining use shall include a comparison with the historic use of the land as well as its use immediately preceding mining.

~~(C) Section 2(b)(xiv)(C)~~ Approval of alternative land uses shall require a demonstration that:

~~(I) Section 2(b)(xiv)(C)(I)~~ The alternative land use is equal to or greater than the highest previous use;

~~(II) Section 2(b)(xiv)(C)(II)~~ There is reasonable likelihood for achievement of the use;

~~(III) Section 2(b)(xiv)(C)(III)~~ The use does not present any actual or probable hazard to public health or safety, or threat of water diminution or pollution; and

~~(IV) Section 2(b)(xiv)(C)(IV)~~ The use will not:

~~(1.) Section 2(b)(xiv)(C)(IV)(1.)~~ Be impractical or unreasonable;

(2.) ~~Section 2(b)(xiv)(C)(IV)(2.)~~ Be inconsistent with applicable land use policies or plans;

(3.) ~~Section 2(b)(xiv)(C)(IV)(3.)~~ Involve unreasonable delay in implementation; or

(4.) ~~Section 2(b)(xiv)(C)(IV)(4.)~~ Cause or contribute to violation of Federal, State, or local law.

DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 4

ENVIRONMENTAL PROTECTION PERFORMANCE STANDARDS

FOR ~~SURFACE~~ COAL MINING OPERATIONS

*The word “surface” was struck for consistency and clarity.*

...

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

...

Section 2(b)(viii) Permanent Impoundments: Where permanent impoundments are authorized in accordance with Chapter 2, Section 2 ~~6(b)(xiv)(vi)~~, spoil that may result from the impoundment ...

...

Section 2(c)(ix)(G)(II)(1)(c.) Designed using current ... in accordance with Chapter 2, Section 2 ~~5(b)(xviii)(E)~~.

*No changes were made to Sections 1 through 2(c) except as indicated above. These changes were necessary due to the reorganization of Chapter 2 which required that several references made needed to be updated to reflect the proposed changes to Chapter 2.*

(d) Revegetation.

*This section is re-organized into two subsections. The first subsection (i) contains general performance standards. The second subsection (ii) contains revegetation success performance standards organized by land use category. The current rules are not clear exactly which performance standards apply to each land use category. LQD intends to clarify the rules by listing the required performance standards separately by land use category.*

*In addition to the two subsections within Section 2(d), two appendices are added to the end of Chapter 4. Appendix 4A is the new species diversity and composition standard. Appendix 4B is the shrub density standard*

*which is moved, unrevised, from Appendix A.*

*NOTE: All of the current rules are in Section 2 (d)(i). They are either retained in that section or relocated to Section 2(d)(ii) or another chapter. Where rules are moved to another location, they are struck out at their current location and the statement of reasons indicates their new location. Any language revisions are shown using strike and underline where the rules are inserted. Relocated rules with no revision will not be underlined, but the statement of reasons will indicate the rules have been moved and provide their previous location.*

(i) General Revegetation Performance Standards

*This subsection was added to organize general performance standards into a single section, differentiated from revegetation success standards in (ii). With two exceptions, the performance standards in this section are in the current Chapter 4 Section 2(d) rules, and have been included here with some revision. The rules on normal husbandry practices (Section 2(d)(i)(M)) and routine land management activities (Section 2(d)(i)(N)), are the only new additions to this section. Some of the rules currently located in Section 2(d) of this chapter are moved to Chapter 2 because they are more appropriate for that chapter. Rules on revegetation success standards were moved to Section 2(d)(ii) of this chapter.*

(A) ~~(i)~~ 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) ~~(ii)~~ Land which did not support vegetation prior to becoming affected ~~land~~ 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.

*This edit reduces redundancy.*

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

*The proposed revisions are to improve clarity and brevity, and are not*

*intended to change the content of the rules.*

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

(E) ~~(v)~~ Any tillage and/or drill seeding ~~which is accomplished by mechanical drilling~~ 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.

*Section 2(d)(v) in the current rules was divided into subsections (E) and (F) to separate out different performance standards with the intention of improving readability and clarity.*

*This rule (E) is the same text as the beginning of Section 2(d)(v) of the current rules. The phrase discussing mechanical drilling was deleted because it was too prescriptive and does not allow alternative seeding methods. The phrase “Any tillage and/or drill seeding” specifies what type of practices are required to be implemented on the topographic contour.*

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

*This text is excerpted from Section 2(d)(v).*

~~(v) The species of vegetation to be used in revegetation efforts shall be described in the reclamation plan indicating the composition of seed mixtures and the amount of seed to be distributed on the area on a per acre basis. Seed types will depend on the climatic and soil conditions prevailing in the permit area and the proposed use of the land after reclamation. Species to be planted as permanent cover shall be self-renewing. Seeding rates will depend on seed types, climatic and soil conditions and the techniques to be used in seeding.~~

*The remainder of this section (not included in (E) and (F) above) was moved with minor revision to Chapter 2 Section 6(b)(iii)(E), as agreed by the WMA-LQD working group. The requirements for seed mixes are already addressed in Chapter 2. Therefore, this section was moved to collect all rules on seed mixes in one place.*

~~(vi) Introduced species may be used only to achieve a quick, temporary, stabilizing cover to control erosion, or to achieve a postmining land use as approved by the Administrator. Naturalized or nonindigenous native plant species may~~

~~be included in the approved seed mixture if they support the approved postmining land uses. The operator shall document, unless otherwise authorized by the Administrator, the suitability of these species using data from published literature, from experimental test plots, from on site experience, or from other information sources.~~

*Section 2(d)(vi) was moved to Chapter 2 Section 6(b)(iii)(E) so that all rules on seed mixes are in one location.*

~~(vii) When the approved postmining land use is for residential, industrial/commercial, or cropland, the reclaimed area shall be stabilized and revegetated to control erosion unless development or cropping shall immediately occur.~~

*Section 2(d)(vii) was moved to Section 2(d)(ii) of this Chapter, and divided into different land use subsections for the cropland (Section 2(d)(ii)(B)(I)) and industrial/commercial (Section 2(d)(ii)(E)) land uses.*

~~(viii) 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.~~

*Section 2(d)(viii) was moved to Section 2(d)(ii)(I)(I) of this Chapter, titled Special Success Standards.*

~~(G) (ix) Bond release. 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 bonding responsibility period shall not be affected where normal and reasonably good 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)(x)(ii) of this chapter and paragraphs (E) (J) below. If the Administrator approves an alternative success standard, as allowed by Section 2(d)(x) of this Chapter, the standard shall be based on technical information obtained from a recognized authority (e.g. Natural Resource Conservation Service, Agricultural Research Service, Universities, Wyoming Game and Fish Department, U.S. Fish and Wildlife Service, etc.), or be supported by scientifically valid research. Use of an alternative technical standard shall be supported by concurrence from State and Federal agencies having an interest in management of the affected lands.~~

*“Bond release” was deleted to be consistent with other subsections which do not have headings in this section.*

*The term “bonding period” was changed to “bond responsibility period” because the latter term was established as the preferred terminology for consistent use throughout the rules, and is consistent with OSM terminology.*



*“[A]nd reasonably good” was deleted because it is difficult to determine an objective meaning for “reasonably good” that can be interpreted and agreed upon as an enforceable rule. In addition, the acceptable normal husbandry practices are now specified below in Subsection (M), negating the need for discussion of good or bad normal husbandry practices. Text was added to update the rule citations to the correct location in this proposed rule package.*

*The discussion of the alternative success standard was deleted because of an OSM disapproval. 30 CFR 950.12(a)(7) states that there is a disapproval of the phrase “or an alternative success standard approved by the Administrator” in Section 2(d)(x) of the current rules. This is the section that the rule above refers to for authority for approval of an alternative success standard. Please refer to the Statement of Principle Reasons in Section 2(d)(ii)(A)(I) of this chapter for a more detailed discussion of the reasons for the disapproval of this language on alternative success standards.*

*Although the language discussing technical standards is deleted here, specific rules describing technical standards are included in Section 2(d)(ii)(A)(I)(3.) of this chapter.*

(H) ~~(x)~~ 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.

*This section was excerpted from the beginning of Section 2(d)(x) of this chapter.*

~~(x) 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 vegetative cover and total ground cover are at least equal to the cover on the area before mining, (2) the productivity is at least equal to the productivity on the area before mining, (3) the species diversity and composition are suitable for the approved postmining land use and the revegetated area is capable of withstanding grazing pressure at least comparable to that which the land could have sustained prior to mining, unless Federal, State or local regulations prohibit grazing on such lands, and (4) the requirements in (1), (2) and (3) are met for the last two consecutive years of the bonding period. The Administrator shall specify quantitative methods and procedures for determining whether equal cover and productivity has been established including, where applicable, procedures for evaluating postmining species diversity and composition. The following options or an alternative success standard approved by the Administrator are available:~~

*The deleted portion of Section 2(d)(x) above was moved with revision to Section 2(d)(ii)(A)(I) of this chapter, titled Revegetation Success Standards for Grazingland and Pastureland.*

~~(x)(A) The method utilizing control areas may be selected. If selected, the control areas shall be sampled for cover, productivity, species diversity and composition in the same season that the area to be affected is sampled for baseline data. Quantitative premining and postmining vegetation data from the control areas shall be used to mathematically adjust premining affected area data for climatic change. Premining affected area cover and productivity data will be directly compared by statistical procedures to data from the reclaimed vegetation type when evaluating revegetation success for final bond release. Species diversity and composition data will be qualitatively or quantitatively evaluated as determined by the Administrator.~~

~~(x)(B) The method utilizing reference areas may be selected. If selected, the representativeness of the reference area is verified by a statistical comparison to the plant community that it typifies. Postmining cover and productivity data from the reference area are directly compared by standard statistical procedures to data from the reclaimed area when evaluating revegetation success for final bond release. Species diversity and composition data will be qualitatively or quantitatively evaluated as determined by the Administrator.~~

~~(x)(C) Where the premining cover, productivity, species diversity and composition data cannot be collected, or where the area to be affected is small and incidental to the operation, comparison areas may be selected. For purposes of this method, postmining qualitative and quantitative data from the comparison area are directly compared by procedures acceptable to the Administrator to data from the reclaimed lands when evaluating success of revegetation for final bond release.~~

~~(x)(D) Without regard to the type of method selected, control, reference or comparison areas should be at least two acres in size, located in areas where they will not be affected by future mining, while serving their designated use, managed in a fashion which will not cause significant changes in the vegetation parameters of cover, productivity, species diversity and composition and be representative of the postmining land use.~~

*Sections 2(d)(x)(A) through (D) were moved to Chapter 1 Section 2(do), Reference Area definitions, and revised to make the formatting appropriate for definitions. The options for control areas, reference areas, and comparison areas are listed without definition in Section 2(d)(ii)(A)(I)(1.) and (2.) of this chapter.*

~~(x)(E) The postmining density, composition, and distribution of shrubs 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.

~~(x)(E)(I) For lands affected between May 3, 1978 and August 6, 1996, a goal of a density of a minimum 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 interspersion and edge effect.~~

~~(x)(E)(II) Except where a lesser density is justified from premining conditions in accordance with Appendix A, 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 .05 acres each and shall be arranged in a mosaic that will optimize habitat interspersion and edge effect. Criteria and procedures for establishing the standard are specified in Appendix A. This standard shall apply to all lands affected after August 6, 1996.~~

~~(x)(E)(III) Approved shrub species and seeding techniques shall be applied to all remaining grazingland. Trees shall be returned to a density equal to the premining conditions.~~

~~(x)(E)(IV) For areas containing crucial habitat, designated as such prior to the submittal of a permit application or any subsequent amendment, or critical habitat the Wyoming Game and Fish Department shall be consulted about, and its approval shall be required for, minimum stocking and planting arrangements of shrubs, including species composition. 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.~~

*Section 2(d)(x)(E) and Sections 2(d)(x)(E)(I)-(III), regarding the shrub density standard, were moved, with revision, to Section 2(d)(ii)(A)(II) of this chapter. The sentence on tree replacement in Section 2(d)(x)(E)(III) above was moved to section (I), below.*

(I) ~~(x)(E)(III) and (x)(F)~~ 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 permittee 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.

*Language on tree replacement is combined from two sections into a single section. The first sentence is excerpted from Section 2(d)(x)(E)(III), and the remaining portion is Section 2(d)(x)(F) of this chapter.*

*“Permittee” was changed to “operator” to maintain consistent terminology throughout this rule package.*

*One sentence was added requiring that planted trees be “in place for at least two growing seasons.” A recent OSM rule revision resolves the burden placed on the operator requiring them to verify that volunteer species were in place for at least two growing seasons. Instead, OSM allows all volunteer individuals of approved species to be counted, but requires that all planted individuals be in place for at least two growing seasons. Using this system, the operator may demonstrate compliance through planting records and field counts of trees and/or shrubs, rather than cumbersome field verifications. The proposed revision to the LQD rules makes them consistent with the new OSM rules. The OSM rule change adds the following sentences to the rules in CFR 816.116(b)(3)(ii):*

*”The requirements of this section apply to trees and shrubs that have been seeded or transplanted and can be met when records of woody vegetation planted show that no woody plants were planted during the last 2 growing seasons of the responsibility period and, if any replanting of woody plants took place during the responsibility period, the total number planted during the last 60% of that period is less than 20% of the total number of woody plants required. Any replanting must be by means of transplants to allow for adequate accounting of plant stocking. This final accounting may include volunteer trees and shrubs of approved species. Volunteer trees and shrubs of approved species shall be deemed equivalent to planted specimens 2 years of age or older and can be counted towards success. Suckers on shrubby vegetation can be counted as volunteer plants when it is evident the shrub community is vigorous and expanding”.*

*According to the Federal Register (Vol. 70, Number 51, page 13086), the revision would “eliminate the current potential need under the 80/60 rule for field verification” and allow operators to document compliance by “comparing records of initial planting and replanting to the final count of individual plants” (Federal Register Vol.70, Number 51, page 13083). Documentation would establish that: “(1) The final field count shows that the requisite number of plants of approved species are in place; (2) records show that no woody species has been planted in the last 3 years of a 5-year responsibility period or 6 years of a 10-year responsibility*

*period; (3) if replanting has occurred in the last 60% of the responsibility period, that planting records show that the number of plants replanted is below 20% of the total acceptable plant count; and (4) no woody species were planted during the last two years of the responsibility period” (Federal Register Vol.70, Number 51, page 13083).*

*Therefore, the proposed WY change is consistent with OSM rules. As indicated in the text above, the requirement that all planted trees must be in place at least two growing seasons does not mean that the operator must track the location and condition of each individual planted tree, but rather that the operator must submit documentation to demonstrate the requirements have been met. For the state of Wyoming requirements for tree replacement, documentation would include: (1) a final field count showing that the requisite number of healthy plants of approved tree species are in place; (2) records showing that no woody species were planted during the last two years of the responsibility period, and (3) if replanting has occurred in the last eight years, then planting records show that the number of plants replanted is below 20% of the total required plant count.*

*The current WY rules, requiring that 80% of planted trees be in place for the last eight years, while still allowing volunteer trees to be counted, requires that the operator provide documentation as part of this demonstration. Items (1) and (3) in the paragraph above would be necessary to demonstrate the current rules. The addition of (2), showing that no woody plants were planted during the last two growing season is the only additional requirement necessary to meet the standards of the proposed rule change. Specifications on the required documentation will be included in the guideline.*

~~(x)(G) Standards for the success of reforestation for commercial harvest shall be established in consultation with forest management agencies and prior to approval of any mining and reclamation plan that proposes reforestation. If reforestation for commercial harvest is the method of revegetation, reforestation shall be deemed to be complete when a reasonable population density as established in the reclamation plan has been achieved, the trees have shown themselves capable of continued growth for a minimum period of five years following planting, and the understory vegetation is adequate to control erosion and is appropriate for the land use goal. Quality and quantity, vegetation cover, productivity, and species diversity shall be determined in accordance with scientifically acceptable sampling procedures approved by the Administrator.~~

*The first and last sentences of Section 2(d)(x)(G), standards for success of reforestation, were moved with revision to Section 2(d)(ii)(H) of this Chapter, and the remainder were moved to Chapter 2 Section 6(b)(iv)(G).*

~~(x)(H) If the Administrator approves a long-term, intensive agricultural postmining land use, the ten year period of liability shall commence at the date of initial planting for such long-term agricultural use.~~

*Section 2(d)(x)(H) was moved, with revision, to Section 2(d)(ii)(B)(I) of this Chapter.*

~~(x)(I) When the approved reclamation plan is to return to cropland, reclamation shall be deemed to be complete when productive capability is equivalent, for at least two consecutive crop years, to the premining conditions or approved reference areas. The premining production data for the reclaimed site shall be considered in judging completeness of reclamation whenever said data are available.~~

*Sections 2(d)(x)(H) and (I) on cropland success standards were moved, with revision, to Section 2(d)(ii)(B)(II) of this chapter.*

~~(x)(J) The Administrator may set technical success standards for cover and 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 set for a single mine or group of mines in the same geographical area.~~

*Section 2(d)(x)(J) was moved, with revision, to Section 2(d)(ii)(A)(I)(3) of this chapter.*

(J) ~~(xi)~~ Monitoring of permanent revegetation on reclaimed areas before and after grazing shall be conducted at intervals throughout the ~~period prior to bond release~~ 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.

*The “period prior to bond release” was changed to “bond responsibility period” because the latter term was established as the preferred terminology for consistent use throughout the rules.*

~~(xii) Any plans for irrigation must be explained.~~

*Plans for irrigation are discussed in the section on normal husbandry practices (Section 2(d)(i)(M)) below.*

(K) ~~(xiii)~~ 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, ~~permittee~~ operator, and the landowner or land managing agency shall determine when the revegetated area is ready for livestock grazing.

*“Permittee” was changed to “operator” to maintain consistent terminology throughout this rule package.*

(L) ~~(xiv)~~ 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.

*The proposed revisions clarify that the operator must control both the introduction and spread of noxious weeds, and that all affected lands must be controlled for noxious weeds. Adding the phrase “throughout the entire bond responsibility period” clarifies that weed control is required until the operator is fully released from responsibility for the reclamation.*

(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.

*The rules specifying normal husbandry practices address an OSM requirement that “If Wyoming desires to recognize husbandry practices, such practices need to be incorporated into the program and approved through the state program amendment process” (732 letter, 2/21/1990).*

*30 CFR 816.116(c)(4)states that “The regulatory authority may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, provided it obtains prior approval from the Director with 732.17 of this chapter that the practices are normal husbandry practices, without extending the period of responsibility for revegetation success and bond liability, if such practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success. Approved practices shall be normal husbandry practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control; and any pruning , reseeding and transplanting specifically necessitated by such actions.”*

*732 letter, dated February 21, 1990 states “When requesting approval for a specific practice(s), the state will need to demonstrate that the practice is one which is customarily performed on similar unmined lands to prevent exploitation, destruction or neglect of the resource and maintain the prescribed level of use or productivity. The state will also need to establish limitations to ensure that the amount or degree to which the practice is applied is equivalent to that customarily performed on similar unmined lands under equivalent management”.*

*Review of existing rules identified the need to provide additional details and descriptions of practices that qualify as normal husbandry. Specific details and descriptions of the statements of reason pertinent to individual normal husbandry practices, or specific groupings of practices, are provided below in the correspondence subsection of the revised rule.*

*In addition to specific statement of reasons provided with some individual practices, the revised rule also identifies the following as normal husbandry practices that do not have limits either on timing or areal extent of application, provided that the categorical description is met:*

- *Grazing of reclamation*
- *Fertilization, irrigation, and rototilling of an approved shelterbelt*
- *Cropland fertilization, and irrigation of cropland when the approved postmine land use is irrigated cropland*
- *Pastureland fertilization, and irrigation of pastureland when the approved postmine land use is irrigated pastureland*
- *Listed mechanical husbandry practices*
- *Plowing and replanting croplands*
- *Construction and removal of fences*

*Also, review of the rules noted that several routine land management activities need to be separated to distinguish them from normal husbandry practices. Those activities are now described in a new subsection of these revised rules (Chapter 4, Section 2(d)(i)(M)(XII)). Examples of those activities include: installation and/or removal of fences, monitoring equipment or features, and/or power lines, among others.*

*Discussions with the Office of Surface Mining identified the need to also differentiate between Establishment Practices and Normal Husbandry Practices. Establishment Practices are those that are used after planting to facilitate actual establishment of the targeted plants, and not intended to continue throughout the duration of the bond responsibility period. These practices are acceptable, but delay the start of the bond responsibility period until they are discontinued. An example is irrigation and/or fertilization practices used to enhance tree and/or shrub establishment. By contrast, Normal Husbandry Practices are those that would be expected to be continued after the bond responsibility period and, even if not continued, discontinuation would not adversely affect the reclaimed vegetation. Since Establishment Practices are preparatory in nature and precede initiation of the bond responsibility period, they are not specifically described in the revised rules.*

(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.

*The OSM requires that the regulatory authority define when reseeding practices are extensive enough to result in restarting the bond responsibility period (48 FR 40140, 9/2/1983, and 53 FR 34636 9/7/88, and 732 letter 2/21/1990). The language above was based on WMA-LQD meetings, and approved rule language from New Mexico and Colorado.*

***Interseeding (also known as overseeding):*** *The practice of interseeding, as defined in Chapter 1, has been listed with a limited time period for implementation to provide for a sufficient demonstration that the results of the interseeding are representative of the long-term success of the reclamation area where this practice has been applied. The revised rule specifies that interseeding cannot be used within the period six years prior to the end of the bond responsibility period.*

*Interseeding was recognized as an example of normal husbandry practices within the approved Appendix A of WDEQ LQD Rules and Regulations (Section VIII. F.).*

*Overseeding into existing rangeland has been identified as a practice that facilitates opportunistically taking advantage of optimal climatic conditions (Westoby, et al, 1989).*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Range Planting (Code 550) (July 2005) that standard Maintenance actions include any necessary replanting, including overseeding, should be conducted to address drought, insects or other uncontrollable event which prevented adequate stand establishment. The scope of that standard applies to rangeland, native or naturalized pasture, or other suitable location where the principle method of vegetation management will be with herbivores, and included situations where the potential for enhancement of the vegetation by grazing management is unsatisfactory.*

*The research paper by the USDA Agriculture Research Station – Cheyenne WY entitled Carbon Sequestration by Rangelands: Management Effects and Potential (Schuman & Derner, August 2004) lists interseeding of legumes in rangelands and other grazing lands as a general management strategy.*

*The Wyoming Game and Fish Department Habitat Extension Bulletin No 37(D. Samuelson, September 1992) entitled Guidelines for Planting Herbaceous Species for Wildlife notes that interseeding is often not successful, but also outlines that if interseeding is utilized that methods of interseeding into stubble in the spring are recommended.*

*New Mexico Section IV.B of the Coal Mine Reclamation Program Vegetation Standards guidance document includes interseeding as a normal husbandry practice applicable to the postmining land uses of grazing land, fish and wildlife habitat, forestry, and recreation.*

*(1) Interseeding of individual native species and approved introduced species contained in the original seed mix up to the period six years prior to bond release to be counted in determinations of revegetation success and suitability for the post-mining land use;*

*(2) Interseeding and planting of native herbaceous, shrub, and tree species not contained in the original seed mix to be allowed any time prior to six (6) years before bond release*

*New Mexico Rangeland Circular 525, Cooperative Extension Service, New Mexico State University, 1988, indicates that the goals of rangeland seeding, including interseeding, are restoring production potential, changing composition of the vegetation, achieving a higher quality forage resource, getting a better seasonal balance of forage supply, and improving wildlife habitat.*

*The sidebar limiting qualifications of the practice as normal husbandry to the period prior to 6 years before the end of the responsibility period is consistent with federal limits on modifications to the reclamation vegetation stand, and provides demonstration of long-term vegetation community sustainability.*

(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.

*This rule is based on OSM requirements and WMA-LQD discussions. Shrubs and trees may be planted any time **before the last two years** of the bond responsibility period, provided the reclamation still meets the performance standards of Chapter 4, Section 2(d)(i)(I) and Section 2(d)(ii)(A)(II)(2).*

*Attached as an appendix is a copy of a letter from the Wyoming Game & Fish Department to a representative of the Wyoming Mining Association. This letter supports this normal husbandry rule as normal practices supported by the Wyoming Game and Fish Department and published in one of their extension bulletins.*

(III) Grazing of reclamation is a normal husbandry

practice.

*Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 14 continues to identify grazing as a normal husbandry practice: “The LQD considers grazing husbandry practices as short duration management tools.”*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Prescribed Grazing (Code 528)(July 2002) the standard management practice of controlled harvest of vegetation with grazing animals that applies to all lands where grazing animals are managed. The stated purposes are to improve or maintain the health and vigor of plant communities, improve or maintain quantity and quality of forage for livestock health and productivity and improve or maintain the quantity and quality of food and/or cover available for wildlife, among others.*

*A number of research articles from authors associated with the USDA Agriculture Research Station – Cheyenne WY, and other entities, note that grazing by various species of ungulates is the predominant use for much of the world’s semiarid rangelands and used as a strategic grassland/rangeland management tool.*

- *Ingram, L.J., Schuman, G.E., Stahl, P., Buyer, J.S. 2005. Influence of Grazing and Soil Microbial Communities on a Mixed Grass Prairie Ecosystem. P. 236. In: D.A. Mcgilloway (ED.) Grassland: a Global Resource. XX International Grassland Congress, 26 June-1 July, 2005, Dublin, Ireland. Wageningen Academic Publishers, Wageningen, the Netherlands.*
- *Derner, J.D., Lauenroth, W.K., Stapp, P.T. 2005. Using Cattle Grazing to Manage Grassland Structure for Nesting Mountain Plover. P. 13. Great Plains Conservation Conference.*
- *Reeder, S.J., Schuman, G.E., Morgan, J.A., Lecain, D.R. 2004. Response of Organic and Inorganic Carbon and Nitrogen to Long-Term Grazing of the Shortgrass Steppe. Environmental Management. 33(4):485-495.*
- *Lecain, D.R., Morgan, J.A., Schuman, G.E., Reeder, S.J., Hart, R.H. Carbon Exchange and Species Composition of Grazed and Ungrazed Pastures in the Shortgrass Steppe of Colorado. Agriculture Ecosystems and the Environment. 2001*
- *Derner, J.D., Schuman, G.E., Reeder, S.J., Morgan, J.A. Carbon Storage on Shortgrass and Northern Mixed-Grass Prairies. Meeting Abstract. 2002.*

- Schuman, G.E., Derner, J.D. 2004. *Carbon Sequestration by Rangelands: Management Effects and Potential. Proceedings of the Western Regional Cooperative Soil Survey Conference. 13-17 June, 2004, Jackson, Wy, USDA, Natural Resources Conservation Service, Casper, Wy.*

(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.

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Windbreak/Shelterbelt Establishment (Code 380)(July 2002) that standard Maintenance actions include supplemental watering as needed, and that periodic applications of nutrients may be needed to maintain plant vigor.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Hedgerow Planting (Code 422)(March 2006) notes that standard Maintenance actions include periodic applications of nutrients that may be needed to maintain plant vigor.*

*The Wyoming Game and Fish Department Habitat Extension Bulletin No. 12 (E. Oneale & D. Perko, NOT DATED) entitled Windbreak Habitats for Wildlife notes that watering following windbreak establishment may not be imperative but will enhance survival and growth of the windbreak plants.*

*The Laramie County Conservation District Circular entitled Seedling Trees outlines that irrigation may be needed at planting time and is often helpful throughout the first several growing seasons.*

*The Laramie County Conservation District Circular entitled Living Snow Fence notes the need for supplemental watering of shelterbelts in the form of living snow fences.*

(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.

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Pasture and Hay Planting (Code 512)(January 2006) that general criteria applicable to all purposes include fertilizer and soil amendment recommendations that shall be based on results from a current soil test, and that resultant applications shall be appropriately placed and timed to be effective. The Operation and Maintenance section of this CPS also notes that water*

*stress situations may require irrigating when possible. The companion Specification Guide notes that on dryland fields that fertilizer shall not be applied unless the land user's experience and soil test results support it; if supported; the Nutrient Management CPS (Code 590) is to be followed.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Nutrient Management (Code 590)(April 2005) notes that recommended nutrient application rates are those specified in the University of Wyoming Guide to Wyoming Fertilizer Recommendations – Agronomy Tech Note 10.*

*30 CFR 816.116(c)(4) excludes fertilization and irrigation as normal husbandry practices: "The regulatory authority may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation,..." This section further states that management practices are normal husbandry practices "if such practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success." Therefore, because irrigation and fertilization are explicitly excluded as normal husbandry practices by OSM, the only way Wyoming will be as stringent as OSM is if these practices are constrained to only apply to croplands and pasturelands that will continue to be fertilized and/or irrigated following bond release. Irrigation of dryland pastureland or cropland is an establishment practice.*

(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.

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Grazing Land Mechanical Treatment (Code 548)(January 2005) outlines that the standard may be applied on pastureland, rangeland, grazed forest and native pastures where slopes are less than 30 percent. The purposes of this practice as listed in the Standard are to improve soil permeability, reduce water runoff, increase infiltration, increase plant vigor, and to renovate and stimulate the vegetation community for greater productivity and yield. The accompanying Practice Specifications outline that typical treatment methods include tilling, pitting, furrowing, chiseling, and disking among the renovations.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Conservation Cover (Code*

327)(March 2003) *that the standard applies to lands needing permanent protective cover, among other conditions. The purposes of this practice as listed in the Standard are to reduce soil erosion and sedimentation, improve water quality and enhance wildlife habitat. The general criteria note that vegetation manipulation will be accomplished by mechanical, biological or chemical methods, by prescribed burning, or a combination of the four. The Standard specifies that competitive weeds will be controlled by either herbicides or mechanical methods.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Pest Management (Code 595)(December 2005) that the practice applies wherever pests, including invasive pest species and noxious weeds, will be managed. Considerations and methods include biological controls, cultural controls and chemical controls. Cultural control practices can include burning and mechanical pest control, with the latter encompassing methods of mowing and cultivation. The mechanical methods to manipulate vegetation and control weeds can include mowing, combining, raking or other means to reduce standing vegetation.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Early Successional Habitat Development/Management (Code 647)(August 2005) discusses normal management practices and activities that include periodic burning, light disking, selected herbicide techniques, selected mechanical removal or mowing when necessary to maintain the health of the vegetation community and control weeds.*

(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.

***Weed and pest control techniques:*** *The revised rule verifies that a diverse list of methods may be applied within the normal husbandry category. The revision also outlines that up to five acres of the treated area may be seeded as an acceptable part of this husbandry practice, to address potential invasion of treated areas by undesirable plant species, and that this interseeding will not reset the applicable liability period.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Pest Management (Code 595)(December 2005) that the practice applies wherever pests, including*

*invasive pest species and noxious weeds, will be managed. Considerations and methods include biological controls, cultural controls and chemical controls. Cultural control practices can include burning and mechanical pest control, with the latter encompassing methods of mowing and cultivation. Chemical pest control methods to reduce a pest population or its impacts can include herbicides, insecticides or fungicides, provided that applications adhere to all applicable Federal, State and local regulations.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Early Successional Habitat Development/Management (Code 647)(August 2005) discusses normal management practices and activities that include periodic burning, light disking, selected herbicide techniques, selected mechanical removal or mowing when necessary to maintain the health of the vegetation community and control weeds.*

*The sidebar limiting application of this husbandry practice to five acres of interseeding phase recognizes the relatively small areas of weed and pest affected areas that would qualify for simple husbandry practices. Larger areas would indicate a more extensive issue requiring intensive treatment instead of simple husbandry practices to address.*

(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.

***Controlled burning:*** *The revised rule verifies this as a normal husbandry practice, without timing or areal limitations other than those that may apply to other regulatory permits that must be obtained to conduct this practice. Interseeding may be conducted on any or all areas that have received controlled burning treatments, to address potential invasion of treated areas by undesirable plant species, and this interseeding will not reset the applicable liability period.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Controlled Burning (Code 338)(January 2006) that the practice applies on all lands as appropriate, for the purposes of controlling undesirable vegetation, improving wildlife habitat, improving plant production quantity and/or quality, among others.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Pest Management (Code 595)(December 2005) that the practice applies wherever pests, including invasive pest species and noxious weeds, will be managed. Considerations and methods include biological controls, cultural controls*

*and chemical controls. Cultural control practices can include burning.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Conservation Cover (Code 327)(March 2003) that the standard applies to lands needing permanent protective cover, among other conditions. The purposes of this practice as listed in the Standard are to reduce soil erosion and sedimentation, improve water quality and enhance wildlife habitat. The general criteria note that vegetation manipulation will be accomplished by mechanical, biological or chemical methods, by prescribed burning, or a combination of the four.*

*The Wyoming Natural Resources Conservation Service Conservation Practice Standard (CPS) for Early Successional Habitat Development/Management (Code 647)(August 2005) discusses normal management practices and activities that include periodic burning, light disking, selected herbicide techniques, selected mechanical removal or mowing when necessary to maintain the health of the vegetation community and control weeds.*

*Localized hot spots where most of the plants are killed often occur during controlled burns, even though most of the vegetation survived the burn and the management goal was achieved. Allowing limited reseeding provides the operator with the opportunity to seed hot spots without restarting the bond clock when most of the vegetation is healthy following the burn.*

(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.

***Repairing subsidence and erosional features:*** *The revised rule verifies that a diverse list of methods may be applied within the normal husbandry category. The revisions specify that treated areas less than five acres may also be reseeded as a component of the husbandry practices, as part of long-term stabilization, and that this reseeding will not reset the applicable liability period.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Conservation Cover (Code 327)(March 2003) that the standard applies to lands needing permanent protective cover, among other conditions. The purposes of this husbandry practice are listed in the Standard and include reduction of soil*



*erosion and sedimentation, improvements in water quality and enhancement of wildlife habitat. Although this standard focuses on protective vegetative cover, it is common rangeland maintenance practice to apply mechanical methods to erosion areas as a first phase prior to addressing permanent vegetative cover for those areas.*

*The sideboard limiting application of this husbandry practice to five acres of interseeding phase recognizes the relatively small areas of erosional areas that would qualify for simple husbandry practices. Larger areas would indicate a more extensive issue requiring intensive erosion treatment instead of simple husbandry practices to address.*

(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.

***Removing small sediment control measures:*** *The revised rule verifies that a diverse list of control measures may be removed and that the actions will constitute normal husbandry practices. The revisions specify that areas that received removal treatments and that are less than five acres may also be reseeded as a component of the husbandry practices, as part of prudent efforts to address potential invasion of treated areas by undesirable plant species, and that this reseeding will not reset the applicable liability period.*

*The Wyoming Natural Resources Conservation Service outlines in the Conservation Practice Standard (CPS) for Sediment Basin (Code 350)(No date) that the standard applies to lands where a sediment basin offers the most practical solution to the problem, among other applicable conditions. The purposes include prevention of undesirable deposition on bottom lands and developed areas and trapping of sediment originating from construction sites or other disturbed areas.*

*The Wyoming Game and Fish Department Habitat Extension Bulletin No. 51 (S. Brockmann; March 1995) entitled Controlling Streambank Erosion notes that erosion and sedimentation are natural processes that occur along water courses, and outlines several methods used to address them, including riprap and check dams. The logical subsequent practice for such structures that are no longer needed to address erosion and sedimentation is removal and revegetation of those sites.*

*Regarding interseeding, please see Statements of Reason listed at (M)(I) above.*

*The sidebar limiting application of this husbandry practice to five acres of interseeding phase recognizes the relatively small areas of typical rangeland sediment control structures that would qualify for simple husbandry practices. Larger areas would indicate a more extensive structure and disturbance area requiring intensive reclamation rather than simple husbandry practices to address.*

(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.

*Routine land management activities: The LQD Administrator has determined that these activities involve insignificant disturbance area, are temporary in extent, and represent land stewardship practices.*

(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.

*This section is a major departure from the current version of Section 2(d) performance standards. The current rules are not clear on what standards apply to each land use category, and there is potential for confusion. Listing the revegetation success standards by land use category clarifies the exact standards required for each land use.*

*The coal vegetation rules revision work group agreed to categorize revegetation success standards into qualitative, semi-quantitative, and*

*quantitative standards, as defined by the work group. Qualitative standards do not require any numeric demonstration. Semi-quantitative standards require a numerical comparison, but no statistical test. Quantitative standards require a numeric comparison using a statistical test and sampling to adequate sample size to verify the standard was achieved.*

*NOTE: In order to discern new or revised rules from current rules that were relocated, strike and underline is used to show new text and deleted current rule text. Text that simply has been relocated is not underlined, but the relocation is noted in the SOR.*

(B) Grazingland and Pastureland

*The revegetation success standards are combined for pastureland and grazingland because they are exactly the same in Section (A)(I) below. The shrub replacement requirements follow in Sections (A)(II) and (III), and are specific to grazingland.*

(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 ~~and total ground cover~~ is at least equal to the cover on the reference area or technical standard before mining, (2) the annual herbaceous production productivity is at least equal to the annual herbaceous production productivity 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 ~~the last two consecutive years of the bonding period for those mines using native area comparisons or the requirements in (1), (2), and (3) are met for two out of four years beginning no sooner than year eight of the bonding responsibility period for those mines with technical standards. The Administrator shall specify quantitative methods and procedures for determining whether equal cover and productivity has been established including, where applicable, procedures for evaluating postmining species diversity and composition. 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 ~~or an alternative success standard approved by the Administrator~~ are available:

*This section is revised text from Chapter 4, Section 2(d)(x). All changes from the current rules are shown in strike and underline.*

*“Absolute total” is added to vegetative cover to provide precise language for the vegetation cover parameter that is the standard. The term “absolute total vegetative cover” does not change the parameter currently*

*used to evaluate revegetation success. Using this parameter also addresses an OSM deficiency regarding Wyoming's definition of cover (732 letter dated 11/13/1987, 30 CFR 950.12(a)). The director of OSM found that inclusion of litter and rock in our definition of cover rendered the Wyoming program less effective than the Federal regulations. Specifying total vegetative cover will make Wyoming regulations consistent with Federal regulations.*

*The Coal Vegetation Rules Revision work group agreed to delete total ground cover from the revegetation success standards. Total ground cover is deleted because this parameter does not provide information on the successful establishment of vegetation on reclamation. Instead, total ground cover provides information on reclamation stability and vulnerability to erosion. This is evaluated during sediment control release and through other performance standards. Therefore, total ground cover was deleted from the revegetation success standards.*

*“Annual herbaceous production” is substituted for “productivity” to provide more precise language to describe the parameter that is the standard. Again, this does not change the parameter currently used to evaluate revegetation success.*

*The distinction for timing of sampling for cover, production, and species diversity and composition (i.e., last two years for a reference area comparison, or two out of four years for a technical standard) was eliminated because the differential treatment between these two approaches was not justified.*

*“The Administrator shall specify quantitative methods....” was deleted because the content of this sentence was duplicative with the new language. The second part of the sentence stating that the Administrator shall specify procedures for evaluating species diversity and composition was deleted because a procedure has been specified and is incorporated into the rules as Appendix 4A.*

*The new language discussing the methods and statistical analyses for cover and production was added to make it explicit that these parameters are “quantitative” as defined by the rules revision group (requires statistical analysis), and to specify that acceptable sampling and statistical methods will be “approved and published by the Administrator” in a separate document. This is consistent with OSM rules which require that “Standards for success and statistically valid sampling techniques for measuring success shall be selected by the regulatory authority, described in writing, and made available to the public.”*

*The new sentence requiring a “90-percent statistical confidence interval” addresses an OSM disapproval requiring insertion of this language into the rules.*

*The new sentence discussing the species diversity and composition standard references the specific location of the standard in the rules, and specifies that it does not require statistical analysis.*

*The discussion of alternative success standards was deleted because of an OSM disapproval of this language. 30 CFR 950.12(a)(7) states that there is a disapproval of the phrase “or an alternative success standard approved by the Administrator” in Chapter 4 Section 2(d)(vi), currently Section 2(d)(x) in the approved rules. The Federal Register (51 FR 226, page 42213, 11/24/86) provides additional discussion on this disapproval. The Federal regulations require that success standards be included in the approved regulatory program. The preamble to the Federal regulations clarifies that standards be subject to public review and comment. Therefore, OSM will not approve language allowing alternative success standards in the absence of a description of what the standards are, and how the operator’s success in attaining them will be evaluated.*

(1.) The method utilizing control areas may be selected. 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 the effective date of these rules as determined under W.S. 16-3-104(b) of the Wyoming Administrative Procedure Act (2007).

*This is revised from Section 2(d)(x)(A) of this chapter, where control areas are defined. New language clarifies when an operator may use control areas, while the definition is moved to Chapter 1.*

(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.

*This is revised from Section 2(d)(x)(B) and (C), where reference areas and comparison areas are discussed. New language clarifies alternative options to a control area. Various types of reference areas are defined in Chapter 1 (reference area, extended reference area, comparison area) as subsections of reference area.*

(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 ~~set~~approved for a single mine or a group of mines in the same geographical area.

*This text was relocated from Section 2(d)(x)(J). The word “quantitative” is added to the text to clarify that the standard is quantitative. Inclusion of “quantitative” specifies that success will be evaluated using statistical tests and data sampled to an adequate sample size. The OSM discussion of technical standards requires that the standards, and how they will be evaluated, be described in rule by the regulatory authority (51 FR 42213, 11/24/86).*

(II) The shrub standard for grazingland shall include the  
~~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.

*Relocated, with revision, from Section 2(d)(x)(E) of this chapter. Rephrasing of the first sentence is intended to improve clarity.*

*The phrase “as approved in the permit” was added to clarify exactly what procedures the operator shall use for shrub reclamation. Before this proposed rule change, “best technology” was not defined or specified, making the rule difficult to enforce. By including a definition of best technology in Chapter 1, and specifying that methods are spelled out in the permit, the rule is now clear and enforceable. Retention of the requirement for best technology makes it clear that the operator shall use the best methods possible to establish shrubs. In addition, it provides the Administrator with the authority to require permit revisions if shrubs are not successfully establishing and if the operator is using technology that is not the best that is available.*

(1.) ~~Section 2(d)(x)(E)(I)~~ 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 interspersion and edge effect.

*Relocated without revision from Section 2(d)(x)(E)(I) of this chapter.*

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.

*The LQD and WMA have been operating with an understanding that shrub mosaics on shrub goal lands with acreage in excess of what is required for shrub goal lands may be banked for shrub standard lands. The added section clarifies how this banking may be accomplished. It is important to include the requirement that any banked goal lands meet shrub standard techniques because shrub goal lands will not qualify to meet the standard unless they are sampled and analyzed according to shrub standard requirements.*

(2.) Except where a lesser density is justified from premining conditions in accordance with Appendix A 4-2 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 interspersion and edge effect. Criteria and procedures for establishing the standard are specified in Appendix A 4-2 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.

*This is the same text as Section 2(d)(x)(E)(II), with the exception that the location of the appendix describing the shrub standard rule has been moved to the end of Chapter 4 (Appendix 4B). Grazingland outside the shrub patches is not required to meet the shrub density standard, as described in Appendix 4B, but will be required to have shrubs present through the species diversity and composition standard in Appendix 4A.*

*The last sentence of the rule is from Appendix A, page A-29, Section VII.E, relocated with no revision. This sentence is part of the shrub density rule, and therefore is also in Appendix 4B.*

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.

*This text was added to clarify specific requirements to demonstrate successful achievement of the standard and to address OSM disapprovals. The requirement for a 90% confidence interval satisfies the OSM requirement that “techniques for measuring success shall use a 90-percent statistical confidence interval” (30CFR 816.116 (a)(2)). The*

*requirement that 80% of shrubs be planted for at least 60% of the bond responsibility period is an OSM requirement (30 CFR 816.116(b)(3)(ii)). This regulation states in full “Trees and shrubs that will be used in determining the success of stocking and the adequacy of the plant arrangement shall have utility for the approved postmining land use. Trees and shrubs counted in determining such success shall be healthy and have been in place for not less than two growing seasons. At the time of bond release, at least 80 percent of the trees and shrubs used to determine such success shall have been in place for 60 percent of the applicable minimum period of responsibility.”*

*New OSM rules were approved in August of 2006. These rules require that shrubs and trees “shall equal or exceed the applicable success standard during the growing season of the last full year of the responsibility period (30 CFR 816.116(c)(3)(i)), as published in the Federal Register, Volume 71, No. 168, page 51699. The proposed LQD rule change is consistent with the newly approved OSM rules.*

b. Approved shrub species and seeding techniques shall be applied to all remaining grazingland. ~~Trees shall be returned to a number equal to the premining number.~~

*This is the same text as Section 2(d)(x)(E)(III). The sentence on tree replacement was separated from the discussion on the shrub density rule, and is included in Section 2(d)(i)(H).*

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.

*This rule was added to clarify which standards apply to shrub patches. Shrub patches are considered wildlife habitat, and as such, are not required by OSM to meet production standards (30 CFR 816.116(b)(3)). In addition, the LQD determined that requiring a production standard may conflict with reclamation attempts to establish shrubs. The cool season grass species that contribute to high production compete vigorously with shrub seedlings for soil water and nutrients and, therefore, may inhibit shrub establishment.*

*The final sentence clarifies that the Administrator may approve a change to a different shrub option prior to verification of the shrub standard,*



*provided the baseline data support using the proposed new shrub option. This is an important point because the shrub options the operator may choose from are determined by the baseline shrub data.*

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 ~~For areas containing crucial habitat, designated as such~~ prior to the submittal of a permit application or any subsequent amendment, ~~or critical habitat the Wyoming Game and Fish Department shall be consulted about and its approval shall be required for, minimum stocking and planting arrangements of shrubs, including species composition.~~ 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.

*This text captures revised rules from Section 2(d)(x)(E)(IV) of this chapter. The revision is an attempt to improve clarity. After discussion with the Wyoming Game and Fish Department, the requirement that the approved success standards be incorporated into the reclamation plan was added. The current rule indicates that Wyoming Game and Fish shall approve the standards, but not where the standards or the approval will be housed.*

### (C) Cropland

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

*This text is revised from Section 2(d)(vii) of this chapter. The phrases on industrial/commercial were deleted to make the standard specific to cropland only. The last sentence is revised from Section 2(d)(x)(H) of this chapter and clarifies when the bond responsibility period begins.*

(II) ~~When the approved reclamation plan is to return to cropland, r~~Reclamation shall be deemed to be complete when productive capability is equivalent ~~for at least two consecutive crop years,~~ 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. ~~the premining conditions~~

~~or approved reference areas. The premining production data for the reclaimed site shall be considered in judging completeness of reclamation whenever said data are available.~~

*This text is revised from Section 2(d)(x)(I) of this chapter. The text discussing premining conditions is deleted to comply with an OSM disapproval on the use of premining data for evaluating cropland (51 FR#226, page 42212, 11/24/86). The disapproval is based on the likely development of new farming practices since the initiation of mining that might significantly increase crop yields. Therefore cropland data must be compared to current yields, reflecting the productive capacity of current farming practices. The Coal Rules Revision Group agreed that reasonable sources for comparison were nearby reference areas agreed to by the operator and LQD, or published county production data (meeting notes 8/16/2004). The text was revised to clarify the content.*

*The requirement that the standard be demonstrated two out of four, starting no sooner than year seven, of the bonding period addresses a required program amendment from OSM. The current LQD rules allow comparisons during any “two consecutive years”, while the new OSM rules published in the August 30, 2006 Federal Register (page 51706) allow demonstration of success standards any two years after year six of the bonding period. The current 30 CFR 950.16(m) has not been revised yet to account for the OSM rule change, and requires that “Wyoming shall submit revisions to clarify that operators must meet cropland success standards during at least the last two consecutive crop years of the responsibility period.” In anticipation of changes to the required amendment, the rule was revised to allow measurements two out of four years, starting year seven, to be consistent with new OSM rules.*

(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.

*The specifications for comparisons allowed for cropland are taken from the 8/16/04 Coal Rules Revision Group meeting. The alternative of using reference areas was provided because county production data may not reflect local conditions. These alternatives are consistent with OSM regulations (30 CFR 816.116(b)(2)).*

(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

*The section referred to above refers to the “80/60” OSM rule which is required by OSM for any wildlife habitat reclamation where shrubs are planted in reclamation.*

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

*Currently, there are no general standards for fish and wildlife habitat land use in Section 2(d) of Chapter 4. There is specific discussion of crucial and important habitat in the proposed rules for grazingland (Section 2(d)(ii)(A)(II)(6)). However, that requirement applies only to grazingland, and is based on Wyoming Statute. The OSM requires that minimum stocking and planting arrangements shall be specified by the regulatory authority after consultation with and approval by the appropriate state agencies on areas designated for fish and wildlife habitat, recreation, shelterbelts, or forest products (53 FR, page 34636, 9/7/88). Therefore, consultation with and approval by the WY Game and Fish Department is required for Fish and Wildlife Habitat.*

*The coal vegetation rules revision group agreed that the standards should be specific to the type of fish and/or wildlife habitat the land will support. For example, a sage grouse lek would have very different standards than winter elk range. Therefore, the standards must be developed in cooperation with the appropriate agency for that land use and specified in the permit. The standards are specified in the context of items (1)-(3) above. This does not mean that there is a standard for each parameter listed or that the standard is the same as that for grazingland (for example), but that the standard should be described based on the relevant parameter(s) for the postmining land use. They may be qualitative, semi-quantitative, or quantitative, and are used to determine that the proposed habitat has been successfully reclaimed.*

*This land use category does not apply to the joint grazingland/fish and*

wildlife habitat land use. Reclamation standards for that land use are determined by the section on grazingland and the shrub standard requirements.

(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.

*The Army Corps of Engineers must authorize wetland disturbance and approve mitigation plans for jurisdictional wetlands under Section 404 of the Clean Water Act. The Administrator must approve the mitigation plans and incorporate them into the LQD coal permit. It is important to include the mitigation plan in the reclamation plan because the LQD needs to know how the reclamation will be accomplished and how this plan fits with surrounding areas. The Army Corps of Engineers has the sole regulatory responsibility to determine successful mitigation of wetlands under the Clean Water Act. Therefore, while it is important for the wetland mitigation reclamation plan to be included in the permit, it is not necessary for the success standards to be in the permit. The Army Corps of Engineers is the sole entity for determining successful wetland mitigation, and a statement from them is sufficient demonstration that the operator has met their commitments for wetland mitigation.*

(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.

*Successful mitigation depends upon many factors, few of which the operator can control during the bond liability period. By initially creating extra mitigation acreage, the operator may increase and/or maintain a reasonable potential for successful mitigation within the bond liability period. The Army Corps of Engineers will not approve nor declare successful an unlimited acreage of additional wetlands. The extra 25 percent is arbitrary, but reasonable, to increase the potential for overall mitigation success.*

(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.

*The statement of a ten year bond liability period conforms to OSM requirements. Although the Army Corps of Engineers permits an operator to receive a statement of successful mitigation based upon “Reports ... submitted for a period not to exceed 5 years or until mitigation is determined to be successful, whichever is less”, the OSM requirement that measurements be made no sooner than the last year of the bond responsibility period prevails. This apparent contradiction was resolved through the following:*

- 1. The Army Corps of Engineers is the authority that determines successful wetland mitigation.*
- 2. A determination of successful mitigation may occur as early as five years after mitigation wetlands are fully reclaimed.*
- 3. Request for Phase 3 Incremental Bond Release may not occur any earlier than the last year of the bond responsibility period.*
- 4. If wetland mitigation has already been successfully demonstrated, then the wetland will be included for sampling in the surrounding land when that area is sampled for revegetation success verification. For example, if the surrounding area is grazingland, the wetland will be included in the study area for the verification – with common sense provisos such as open water will be excluded from sampling, etc.*

*It is the operator’s responsibility to demonstrate successful wetland reclamation by providing LQD with an Army Corps of Engineers successful mitigation statement. This is a crucial element of the Chapter 15 Full (Phase 3) Incremental Bond release process. Successful bond release cannot occur until after the Army Corps of Engineers has approved the wetland reclamation, and this approval has been submitted to LQD.*

(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.

*Unlike jurisdictional wetlands, enhancement wetlands are not regulated by the Army Corps of Engineers. Enhancement wetlands are postmining wetlands which are in excess of the acreage required for mitigation wetlands. These distinctions are elaborated in Chapter 1 definitions for mitigation wetlands and enhancement wetlands. The Army Corps of Engineers has no regulatory authority to review and/or approve enhancement wetlands. In addition, Army Corps of Engineer's standards for wetland establishment do not apply, unless they are appropriate for the postmining land use. The LQD-WMA review team determined that all enhancement wetlands should be considered fish and wildlife habitat. Therefore, all reclamation plans and success standards for enhancement wetlands should be reviewed and approved by the Wyoming Game and Fish Department. The LQD believes that successful enhancement wetlands can contribute significant value to the postmining environment and can clearly support postmining land uses. The LQD seeks R&R which will allow an operator to create quality enhancement wetlands.*

*The final sentence establishes the bond liability period, and the earliest possible bond release demonstration for enhancement wetlands.*

(F) Industrial, Commercial, and Residential. When the approved postmining land use is ~~for~~ residential, or industrial/commercial, ~~or cropland~~, the reclaimed area shall be stabilized and revegetated to control erosion unless development ~~or cropping~~ shall immediately occur.

*This is the same text as Section 2(d)(vii) of this chapter, with references to cropland deleted. This section is also included in the cropland land use section, with references to industrial/commercial and residential deleted.*

(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.

*OSM does not require a ten-year bond period for land uses that do not have a revegetation component to the reclamation plan. Therefore, the time frame and standards are determined by the postmine land use, and should be stated in the permit.*

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

*Currently, there are no rules on standards for developed water resources in Section 2(d) of this chapter. The coal vegetation rules revision group*

*agreed to include this land use in Section 2(d) to clarify that there were no 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.

*Currently, there are no specific standards for recreational land use in Section 2(d) of this chapter. The coal vegetation rules revision group agreed that the standards are specific to the type of recreation that the land will support. For example, a park would have very different standards than a motocross course. Therefore, the standards must be developed in cooperation with the appropriate agency for that land use, and the commitment incorporated into the permit.*

*The requirements for tree and shrub stocking were inserted to be as effective as 30 CFR 816.116 (b)(3)(ii): "Trees and shrubs counted in determining such success shall be healthy and have been in place for not less than two growing seasons. At the time of bond release, at least 80 percent of the trees and shrubs shall have been in place for 60 percent of the applicable minimum period of responsibility."*

(I) ~~Section 2(d)(x)(G)~~ Forestry. Standards for the success of reforestation for commercial harvest shall be established in consultation with and approval from forest management agencies, ~~and~~ prior to approval of any mining and reclamation plan that proposes reforestation. ~~If reforestation for commercial harvest is the method of revegetation, reforestation shall be deemed to be complete when a reasonable population density as established in the reclamation plan has been achieved, the trees have shown themselves capable of continued growth for a minimum period of five years following planting, and the understory vegetation is adequate to control erosion and is appropriate for the land use goal.~~ The qQuality and quantity of trees, and the vegetation cover of the understory vegetation community shall be not less than that required to achieve the postmining landuse 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.

*This text was excerpted from Chapter 4 Section 2(d)(x)(G). The deleted portion was moved to Chapter 2 Section 6(b)(iv)(G). The OSM requirements for forestry states that “success of vegetation shall be determined on the basis of tree stocking and vegetative ground cover” (CFR 116.116(b)(3). In addition, CFR 116.116(b)(3)(iii) states that “Vegetative ground cover shall not be less than that required to achieve the approved postmining land use.”. Therefore, the reclamation standards for forestry must include both tree stocking and vegetation cover as approved by the Administrator and the relevant forest management agency.*

(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.

*This is the same text as Chapter 4 Section 2(d)(viii). This rule is applicable to areas that were mined and reclaimed pre-SMCRA, and redisturbed post-SMCRA. This differs from the rules in Chapter 5 Section 7(b), which refers to remining areas that were never reclaimed.*

(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.

*Currently, there are no specific standards for this land use category. Because topsoil was not protected pre-SMCRA, these areas will generally be reclaimed without the benefit of topsoil, and reclaimed vegetation may not meet SMCRA standards. These areas typically have lower cover and production than reclamation with topsoil. If there were reclamation requirements at the time of the initial disturbance, those requirements apply, unless they are inadequate for the basic OSM requirement that areas be revegetated for erosion control. The addition of a minimum requirement sets the lowest possible reclamation standard to ensure that the reclamation is adequate to control erosion.*

...

(g) Permanent and temporary water impoundments.

...



*No changes are proposed to subsections (i) through (iii).*

(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:

...

*No changes are proposed for subsections (A) through (J).*

(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 Manger of MSHA und 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 ~~larger~~ peak flow, as may be required by the Administrator.

*The proposed amendment above is intended to address two OSM deficiencies which were identified in the February 21, 1990 732 letter issued by the OSM. The first deficiency is related to the prohibition against the use of single closed-conduit spillways and the revised design standards for impoundments which meet the criteria of 30 CFR 77.216(a). The second deficiency related to those structures which are intended to impound coal mine waste and that also meet the criteria of 30 CFR 77.216(a).*

**Subsection C-1, February 21, 1990 732 Letter**

*The deficiency identified in Subsection C-1 of the letter addressed two distinct requirements. First, the OSM stated that Wyoming's regulations must prohibit the use of single closed conduit spillways. Second, the OSM stated that spillways designs for impoundments meeting the criteria of 30 CFR 77.216(a) must be designed to pass the peak runoff of at least the 100-year, 6 hour storm.*

**Subsection C-2, February 21, 1990 732 Letter**

*Section C-2 of the 732 letter stated that the federal rules had been revised to "require that structures meeting the criteria of 30 CFR 77.216(a) and either constructed of coal mine waste or intended to impound coal mine waste have sufficient spillway and/or storage capacity to safely pass or control the runoff from the probable maximum precipitation of a 6-hour or greater precipitation event."*

*Wyoming informally responded to the above referenced 732 letter on May 14, 1990. In regards to Section C-1 of the 732 letter Wyoming first stated that "[s]iltation structures with spillways are also considered reservoirs in Wyoming." Subsection (L) above was added to clarify that the use of closed conduit spillways is prohibited. Wyoming also stated that it would "revise the rules ... to require that spillways for all impoundments meeting the criteria of 30 CFR 77.216(a) be designed to pass the peak runoff of a 100-year, 6-hour storm." The proposed rules above address this deficiency at Subsection 2(g)(v)(A).*

*Wyoming responded to the second deficiency noted by the OSM in Section C-2 of the 732 letter by stating that the LQD intended to amend the regulations to meet the revised requirements. The OSM revised their regulations in 1988 (53 FR 43584) to establish consistent standards for all impoundments regardless of whether the impoundment was temporary or permanent. Proposed subsection 2(g)(v)(B) has been revised to include*

*the requirement that “[t]emporary impoundments which are intended to impound coal mine waste shall have sufficient spillway and/or storage to safely pass or control runoff from the probable maximum precipitation of a 6-hour precipitation event ...”.*

*The federal rules at 30 CFR § 816.84(b)(2) requires impounding structures which are intended to impound coal mine waste or are constructed of coal mine waste to be designed to safely control the Probable Maximum Precipitation (PMP) of a 6-hour precipitation event. Because Wyoming’s program contains a prohibition against the use of coal mine waste to construct dams, embankments or diversion structures (Chapter 4, Section 2(c)(xii)(A)) it was not necessary to include the “impoundments constructed of coal mine waste” language in the proposed rule change.*

*The proposed rule changes above are intended to address the two deficiencies noted in the February 21, 1990 OSM 732 letter and again discussed in the OSM’s October 3, 1990 informal response letter. The October 3 letter was drafted in response to comments made in the WDEQ’s initial response (May 14, 1990) to the 732 letter. The proposed changes above attempt to resolve any remaining rule language that has been identified by the OSM as less effective than or inconsistent with the Federal regulations.*

...

*No changes were made to the remainder of Chapter 4 except the following sections which required revision due to changes in Chapter 2 references.*

(i) Surface water and ground water 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) ~~2(b)(xi)(D)(I) and (H)~~ 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:

...

(j) Roads.

...

*No changes are proposed for Subsections 2(j)(i) – (vi).*

(vii) Primary roads.

(A) ...

(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) ~~2(b)(xix)(B)~~.

DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 4, APPENDIX 4A

Species Diversity and Composition Standard

I. Applicability

A. For lands disturbed prior to the effective date of the species diversity and composition standard as determined under W.S. 16-3-104(b) of the Wyoming Administrative Procedure Act (2007), the operator may choose from two options:

1. The operator may use the evaluation methods and commitments for attaining species diversity and composition approved in the permit, or

2. The operator may use the standards for species diversity and composition in this appendix.

*This opening text for this new Appendix 4A will establish two temporal classes for the evaluation of postmining species diversity and species composition, based upon the date of approval of this rule package. This initial text allows the permittee two evaluation methods for the earliest temporal class (lands affected after May 3, 1978 and permanently reclaimed prior to the approval date for this rule package).*

B. For lands disturbed after the effective date of the species diversity and composition standard as determined under W.S. 16-3-104(b) of the Wyoming Administrative Procedure Act (2007), the operator shall meet the standards in this appendix or alternative standards and methods approved by the Administrator.

*This text allows the permittee only one set of evaluation methods for the later temporal class (lands affected after May 3, 1978 and permanently reclaimed after the date of approval for this rule package). This topic was vigorously discussed during portions of at least two of the Large Group Meetings among Land Quality Division (LQD) staff, Wyoming Mining Association (WMA) members and other stakeholders. The Large Group Meeting participants generally agreed to the options outlined in Sections A and B above.*

II. Grazingland, including shrub mosaics, is required to meet the standard for species diversity and composition. Pastureland shall meet a separate standard for species diversity and composition. Both standards are listed in this appendix.

*This text establishes that these rules will contain two distinct sets of performance standards, due in part to distinctions in the definitions of land use categories. The Large Group Meeting participants generally agreed to this concept of distinct sets of performance standards.*

III. This standard is semi-quantitative. Therefore, successful achievement of the species diversity and composition standard will be evaluated using a nonstatistical comparison of numerical data.

*This text clearly establishes that all species diversity and species composition performance standards are semi-quantitative as (newly) defined in Chapter 1. The Large Group Meeting participants agreed to this concept.*

IV. Vegetation sample parameters for the species diversity and composition standard for grazingland and shrub mosaics are:

A. The requirement for the average number of species per 100 square meter belt transect shall be determined by the Administrator.

*The numerical value for this performance standard element was vigorously discussed at the Large Group meetings. The Large Group Meeting participants agreed that the LQD Administrator would include a numerical value in a new LQD Guideline and this numerical value will constitute the performance standard until further field sampling and data analyses establish another value for this performance standard element. The Large Group Meeting participants also agreed that once the LQD Administrator established another numerical value, that value would be inserted into the coal rules via a formal coal rule revision.*

*The Large Group Meeting recorded no schedules for publication of the new LQD Guideline, nor completion of the field sampling program nor promulgation of a final numerical performance standard via coal rule revision.*

B. The frequency for the following life forms, when they appear in the vegetation baseline study, shall be determined by the Administrator:

*The topics embedded in this Section B.1. through 4. were vigorously discussed during at least two Large Group Meetings wherein the participants agreed that the LQD Administrator would publish a numerical value for each life form in a new LQD Guideline. Each numerical value (discussed below) will constitute the performance standard until the LQD Administrator establishes another numerical value. The Large Group Meeting participants also agreed that once the*

*LQD Administrator established a revised numerical value, that value would be inserted into the coal rules via a formal coal rule revision.*

*The Large Group Meeting recorded no schedules for publication of the new LQD Guideline, nor completion of the field sampling program which would revise the Guideline numerical values nor promulgation of final numerical performance standards via coal rule revision.*

1. Cool season graminoids, including all species native to North America and introduced species except graminoids defined in Chapter 1 as “Species lacking creditable value”.

*The Large Group Meeting participants generally agreed to expand this life form category to include all introduced vascular plant species native to North America and to include both grass and grass-like species under the collective graminoid life form category (defined in Chapter 1).*

2. Warm season graminoids, including all species native to North America and introduced species except graminoids defined in Chapter 1 as “Species lacking creditable value”.

*The Large Group Meeting participants generally agreed to include introduced and native (to North America) warm season grasses and grass-like vascular plants under the collective graminoid life form category (defined in Chapter 1).*

3. Full shrubs and subshrubs, except all species defined in Chapter 1 as “Species lacking creditable value”.

4. All annual, biennial and perennial forbs, including all species native to North America and introduced species except defined in Chapter 1 as “Species lacking creditable value”.

*The Large Group Meeting participants generally agreed to expand this life form category to include all introduced and native (to North America) forbs, independent of their reproductive strategy (annual, biennial, or perennial). The Large Group Meeting participants vigorously discussed the numerical value of this life form category.*

V. Vegetation sample parameters for the species diversity and composition standard for Sample Units with the pastureland designation are:

A. The requirement for the average number of species per 100 square meter belt transect shall be determined by the Administrator.

B. The frequency for the following life forms shall be determined by the Administrator:

1. Cool season graminoids, including all species native to North America and introduced species except graminoids defined in Chapter 1 as “Species lacking creditable value”.

2. All annual, biennial and perennial forbs, including all species native to North America and introduced species except those species defined in Chapter 1 as “Species lacking creditable value”.

*The Large Group Meeting participants generally agreed that separate numerical performance standards for the number of vascular plant species and the frequency of the four life form categories should be crafted for reclaimed vegetation communities carrying the pastureland land use designation. However, the Large Group Meeting participants did not discuss nor craft the actual numerical values for any of the five pastureland species diversity and species composition performance standards.*

*The LQD Administrator will publish these five numerical performance standards in the new LQD Guideline.*

VI. If the parameters derived from belt transects associated with the randomly placed cover transects do not achieve the species diversity and composition standard, the operator may selectively place additional 100 square meter non-overlapping belt transects within the Sample Units in order to increase the numerical value of the parameter(s) that did not achieve the standard. These transects may originate in or pass through areas, such as mitigation wetlands, with known inclusions of species or life forms which demonstrate achieving the standard.

*The Large Group Meeting participants acknowledged that various environmental factors (e.g. prolonged drought, plant disease, plant pests) or and management practices or the inherent limitations of random sampling programs could compromise the permittee’s ability to demonstrate achievement of all five species diversity and species composition performance standards. The Large Group Meeting participants agreed that the “rescue” methods described in this Section VI could allow the permittee to show that the sufficient numbers of plant species actually exist and/or that the frequency of life forms is present.*

VII. Frequency is defined as the percentage of the 100 square meter belt transects in which an individual life form is present.



VIII. The average number of species per transect and each of the life form frequency values will be evaluated separately, and each evaluation shall carry equal weight for demonstration of this performance standard within each Sample Units

*The Large Group Meeting participants agreed that each of the five vegetation parameters (average number of plant species and each frequency value for the four life form categories) will constitute a separate element of the overarching species diversity and species diversity composition performance standard. Standing as separate elements, each vegetation parameter carries equal value in demonstrating achievement of the overarching performance standard.*

*This group of five separate and equal elements is necessary to cover the larger group of vegetation parameters and vegetation characteristics contained in the Chapter 1 definitions of species diversity and species composition.*

IX. A species list shall also be provided, organized by life form, scientific binomial, and common name for each Sample Unit. The species list will not be compared to any quantitative, semi-quantitative, or qualitative criteria, but will provide information on overall species diversity and composition of the Sample Units.

*Historically, Appendix A to the LQD coal rules required a species list compiled from sampling data and other observations made during the mapping and sampling programs. The Large Group Meeting participants agreed to retain this performance standard element and to add clarity by specifying the content, format and purpose of the species list.*

*The presentation of the species list fulfills the performance standard.*

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DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND QUALITY DIVISION

CHAPTER 4, APPENDIX 4B

**A. Evaluation of Shrub Density**

Introduction

All “eligible lands”, as defined in Chapter 1, Section 2(am), shall be ~~All land affected after August 6, 1996, excluding cropland, pastureland or treated grazingland as defined in Chapter 1 shall be considered eligible land~~ subject to the standard. Except where a lesser density is justified by premining conditions, at least 20 percent of the eligible land shall be restored to shrub patches supporting an average density of one shrub per square meter (~~Chapter 4, Section 2(d)(x)(E)~~).

The postmining areal extent of shrub patches and specific shrub density(ies) shall be based on the original premining shrub densities in each vegetation community and the percentage each community contributes to the total eligible land existing in the original permit area and any lands added to the permit area through the amendment process.

Premine community(ies) identified and sampled during the baseline studies shall serve as the target for bond release unless otherwise approved by the Administrator.

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.

**CALCULATING THE REQUIRED POSTMINE DENSITY AND SPECIES COMPOSTION**

In order to calculate density and composition, the following must be identified:

1. Areal extent and premining total density of eligible land by vegetation community;
2. Relative density for each species;
3. Dominant premine species which then becomes the target postmine species;
4. Density of target postmine species using the formula  $D[1/(N + 1)]$ ;
5. Allowable density of postmining residual species; and

6. Acceptable residual species.

\* D is the postmining total shrub density. When D is less than 1.00, the density of the target postmining species is reduced proportionately. N is the number of primary premining shrub and subshrub species.

Table 3- Identification of available options

Option	Identification	Premine
I	Reduced permit-wide full shrub standard	$< 20\% @ \geq 1/M^2$
II	Permit-wide full shrub standard	$\geq 20\% @ \geq 1/M^2$
III	Community-specific full shrub standard	No restrictions
IV	Community-specific full and subshrub standard	No restriction – add subshrubs

The operator shall select one option only for bond release purposes within each permit or amendment area.

Option I: Permit-wide full shrub density standard; reduction in areal extent; composition based on premining full shrub density only (see Figure 1 for an illustration of this Option). For bond release purposes, no more than two separate acreage/density standards shall be used.

1. Reductions in areal extent and shrub density shall be appropriate when the premining vegetation community(ies) supporting at least one shrub per square meter comprised less than 20 percent of the eligible land. The percentage this community contributed to the total eligible land would then become the percentage of the postmining landscape that is required to support one shrub per square meter. The remainder of the postmining 20 percent areal extent of shrub patches shall be required to support shrubs at a density equaling the next highest density existing in a premining community.

2. Compute the relative premining dominance of full shrub species based on a weighted average of the percent areal extent of all vegetation communities and their associated full shrub species present within the eligible land. In this instance, one shrub patch seed mixture will be developed for the entire 20 percent areal extent.

3. From the information calculated in step 2. above, identify the dominant premine full shrub species. This species then becomes the target postmine species within the postmine shrub patches.

4. Compute the minimum density that the postmining target shrub (identified in step 3. above) must meet in order to achieve bond release under the standard. This is accomplished by applying the following equation:

$$D[1/(N + 1)]$$

D is the postmining total shrub density (D is always  $\leq 1.00$ ). N is the number of primary shrub species existing in the premining communities as identified in step 2. above. Primary shrub species shall be defined as full shrub species which comprise at least 10 percent of the relative density of full shrubs.

All primary shrub species shall be included in the shrub patch seed mixture.

5. The postmining residual density is calculated by subtracting the minimum required density of the target species from the total required density.

6. Residual density may be comprised of any premining primary species and any other approved full shrub species. In addition, the following subshrub species may be counted towards up to one half of the residual density.

<i>Artemisia frigida</i>	fringed sagewort
<i>Atriplex gardneri/gordonii</i>	Gardners saltbush
<i>Ceratoides lanata</i>	winterfat
<i>Artemisia pedatifida</i>	birdfoot sagewort
<i>Artemisia spinescens</i>	bud sagewort

**FIGURE 1**

**OPTION I: PERMIT-WIDE SHRUB DENSITY, REDUCTION OF DENSITY  
POSSIBLE COMPOSITION BASED ON FULL SHRUBS**

Note: No reduction of density is possible when 20 percent or more of the eligible acreage supports a premining total shrub density of over 1 shrub per square meter.

**TABLE 1**

Vegetation Community	Number of Acres Affected Following Rule Approval	Percent Eligible Acreage	Premining Total Shrub Density per m <sup>2</sup> (1)	Premining Total Shrub Number
Mixed Shrubland	364.00	18.2	1.20	1,767,730
Upland Grassland	1506.00	75.3	0.80	4,875,826
Scoria Grassland	80.00	4.0	0.30	97,128
Drainage Bottomland	50.00	2.5	0.20	40,470
Pastureland (2)	300.00	n/a	n/a	n/a
<b>Total Eligible Acreage</b>	<b>2000.00</b>		<b>Premining No. of Shrubs</b>	<b>6,781,153</b>
<b>Total Acreage</b>	<b>2300.00</b>			
<b>% Eligible/Total</b>	<b>86.96</b>			

(1) When the permit-wide standard is applied, premining density may be calculated from full shrubs only.  
 (2) Pastureland excluded by regulation

**TABLE 2**

Relative Premining Density for Primary Shrubs (≥ 10% Relative Density)			Postmining Total Shrub Density m <sup>2</sup> D*	N	D* (1/N+1) Density of Dominant per m <sup>2</sup>	Density of Residual Shrubs per m <sup>2</sup>	Density of Approved Subshrubs per m <sup>2</sup>	20% Acreage Reclaimed with Shrubs	Number of Shrubs Established
Big Sagebrush	Rubber Rabbitbrush	Douglas Rabbitbrush							
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>0.43</b>	<b>0.13</b>	<b>0.21</b>	← Numbers are weighted average relative density from Table 3						
<b>Dominant Species for this Option:</b>			<b>BIG SAGEBRUSH</b>						
<b>Reduced Permit-wide Standard</b>									
<b>18.2% at 1/m<sup>2</sup></b>			<b>1.00</b>	<b>3</b>	<b>0.25</b>	<b>0.375</b>	<b>0.375</b>	<b>364.00</b>	<b>1,473,108</b>
<b>1.8% at 0.8/m<sup>2</sup></b>			<b>0.80</b>	<b>3</b>	<b>0.20</b>	<b>0.300</b>	<b>0.300</b>	<b>36.00</b>	<b>116,554</b>
<b>20 percent of eligible lands</b>								<b>400.00</b>	
								<b>Postmining No. of Shrubs</b>	<b>1,589,662</b>

\* D = Postmining Total Shrub Density (e.g. 0.8 \* [1/(3+1)] = 0.20)

**TABLE 3 – Option I, Figure 1 continued**

<b>Relative Density Information for Species</b>					
Note: Relative density is calculated by number of individuals of each species divided by total number of individuals.					
The value of the dominant species for each type is shaded ■					
	Mixed Shrubland	Upland Grassland	Scoria Grassland	Drainage Bottomland	Weighted Average Relative Density**
Silver sagebrush	0.06			0.28	0.02
Big sagebrush	0.63	0.39	0.35	0.11	0.43
Fourwing saltbush		0.03			0.02
Black sagebrush		0.06	0.18		0.05
Rubber rabbitbrush	0.19	0.13			0.13
Douglas rabbitbrush		0.27	0.18		0.21
Wax currant			0.05		0.00
Skunkbrush sumac	0.12		0.20		0.03
Greasewood				0.61	0.02
Common snowberry		0.12	0.04		0.09
Full Shrub Total	1.00	1.00	1.00	1.00	1.00
Fringed sagewort*	0.21	0.03			0.06
Gardner's saltbush*		0.28			0.21
Winterfat*				0.08	0.00
<b>All Full Shrubs/m<sup>2</sup>*</b>	1.20	0.80	0.30	0.20	

\* excludes these subshrubs, which are not allowed to be included in Option I, II or III.

\*\* Calculated by summing across communities the individual species density times the percent eligible acreage of each community divided by 100

Option II: Permit-wide full shrub density standard, no reduction in areal extent or density, composition based on premining full shrub density only (see Figure 2 for an illustration of this Option II).

1. If 20 percent or more of the premine eligible land supports at least 1 shrub per square meter, no reduction in shrub density or areal extent shall be permitted.
2. Compute the relative premining density of full shrub species based on a weighted average of the percent areal extent of all vegetation communities and their associated full shrub species present on eligible land. In this instance, one shrub patch seed mixture will be developed for the entire 20 percent areal extent.
3. From the information calculated in step 2. above, identify the dominant premine full shrub species. This species then becomes the target postmine species within the postmine shrub patches.
4. Compute the minimum density that the postmining target shrub (identified in step 3. above) must meet in order to achieve bond release under the standard. This is accomplished by applying the following equation:

$$D[1/(N + 1)]$$

D is the postmining total shrub density (D is always  $\leq 1.00$ ). N is the number of primary shrub species existing in the premining communities as identified in step 2. above. Primary shrub species shall be defined as full shrub species which comprise at least 10 percent of the relative density of full shrubs.

All primary shrub species shall be included in the shrub patch seed mixture.

5. The postmining residual density is calculated by subtracting the minimum required density of the target species from 1.00.
6. Residual density may be comprised of any premining primary species and other approved full shrub species. In addition, the following subshrub species may be counted towards up to one half of the residual density.

<i>Artemisia frigida</i>	fringed sagewort
<i>Atriplex gardneri/gordonii</i>	Gardners saltbush
<i>Ceratoides lanata</i>	winterfat
<i>Artemisia pedatifida</i>	birdfoot sagewort
<i>Artemisia spinescens</i>	bud sagewort



**FIGURE 2**

**OPTION II: PERMIT-WIDE SHRUB DENSITY, NO DENSITY REDUCTION POSSIBLE  
COMPOSITION BASED ON FULL SHRUBS**

Note: No reduction of density is possible when 20 percent or more of the eligible acreage supports a premining total shrub density of over 1 shrub per square meter

**TABLE 1**

Vegetation Community	Number of Acres Affected Following Rule Approval	Percent Eligible Acreage	Premining Total Shrub Density per m <sup>2</sup> (1)	Premining Total Shrub Number
Mixed Shrubland	444.00	22.2	1.20	2,156,242
Upland Grassland	1426.00	71.3	0.80	4,616,818
Scoria Grassland	80.00	4.0	0.30	97,128
Drainage Bottomland	50.00	2.5	0.20	40,470
Pastureland (2)	300.00	n/a	n/a	n/a
<b>Total Eligible Acreage</b>	<b>2000.00</b>		<b>Premining No. of Shrubs</b>	<b>6,910,657</b>
<b>Total Acreage</b>	<b>2300.00</b>			
<b>% Eligible/Total</b>	<b>86.96</b>			

(1) When the permit-wide standard is applied, premining density may be calculated from full shrubs only.  
 (2) Pastureland excluded by regulation

**TABLE 2**

Relative Premining Density for Primary Shrubs (≥ 10% Relative Density)			Postmining Total Shrub Density m <sup>2</sup> D*	N	D* (1/N+1) Density of Dominant per m <sup>2</sup>	Density of Residual Shrubs per m <sup>2</sup>	Density of Approved Subshrubs per m <sup>2</sup>	20% Acreage Reclaimed with Shrubs	Number of Shrubs Established
<b>Big Sagebrush</b>	<b>Rubber Rabbitbrush</b>	<b>Douglas Rabbitbrush</b>							
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>0.43</b>	<b>0.13</b>	<b>0.21</b>	← Numbers are weighted average relative density from Table 3						
<b>Dominant Species for this Option:</b>			<b>BIG SAGEBRUSH</b>						
<b>Reduced Permit-wide Standard</b>									
<b>100% at 1/m<sup>2</sup></b>			<b>1.00</b>	<b>3</b>	<b>0.25</b>	<b>0.375</b>	<b>0.375</b>	<b>400.00</b>	<b>1,618,800</b>
								<b>20 percent of eligible lands</b>	<b>400.00</b>
								<b>Postmining No. of Shrubs</b>	<b>1,618,800</b>

\* D = Postmining Total Shrub Density (e.g. 1.0 \* [1/(3+1)] = 0.25)

**TABLE 3 – Option II, Figure 2 continued**

<b>Relative Density Information for Species</b>					
Note: Relative density is calculated by number of individuals of each species divided by total number of individuals.					
The value of the dominant species for each type is shaded ■					
	Mixed Shrubland	Upland Grassland	Scoria Grassland	Drainage Bottomland	Weighted Average Relative Density**
Silver sagebrush	0.06			0.28	0.02
Big sagebrush	0.63	0.39	0.35	0.11	0.43
Fourwing saltbush		0.03			0.02
Black sagebrush		0.06	0.18		0.05
Rubber rabbitbrush	0.19	0.13			0.13
Douglas rabbitbrush		0.27	0.18		0.21
Wax currant			0.05		0.00
Skunkbrush sumac	0.12		0.20		0.03
Greasewood				0.61	0.02
Common snowberry		0.12	0.04		0.09
<b>Full Shrub Total</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>
Fringed sagewort*	0.21	0.03			0.07
Gardner's saltbush*		0.28			0.20
Winterfat*				0.08	0.00
<b>All Full Shrubs/m<sup>2</sup>*</b>	<b>1.20</b>	<b>0.80</b>	<b>0.30</b>	<b>0.20</b>	

\* excludes these subshrubs, which are not allowed to be included in Option I, II or III.

\*\* Calculated by summing across communities the individual species density times the percent eligible acreage of each community divided by 100

Option III: Community-specific full shrub density standard (see Figure 3 for an illustration of this Option).

1. Each eligible premining vegetation community serves as the basis for developing the required postmine density and areal extent. The percentage each community contributes to the total eligible land is multiplied by 20 percent to establish the number of acres required on the postmining landscape. The average number of full shrubs each community supported premine serves as the postmine average density for that particular community.

2. Compute the relative premining dominance of all full shrub species within each eligible vegetation community. In this instance, one shrub patch seed mixture will be developed for each eligible vegetation community.

3. From the information calculated in step 2. above, identify the dominant premine full shrub species within each eligible vegetation community. This species then becomes the target postmine species within a particular shrub patch corresponding to a specific vegetation community.

4. Compute the minimum density that the postmining target shrub (identified in step 3. above) must meet in order to achieve bond release under the standard. This is accomplished by applying the following equation:

$$D[1/(N + 1)]$$

D is the postmining total shrub density (D is always  $\leq 1.00$ ). N is the number of primary shrub species existing in the premining communities as identified in step 2. above. Primary shrub species shall be defined as full shrub species which comprise at least 10 percent of the relative density of full shrubs.

All primary shrub species shall be included in the respective shrub patch seed mixtures.

5. The postmining residual density is calculated by subtracting the minimum required density of the target species with each vegetation community from the total required density for that community.

6. Residual density may be comprised of any premining primary species and any other approved full shrub species. In addition, the following subshrub species may be counted towards up to one half of the residual density with each community.

<i>Artemisia frigida</i>	fringed sagewort
<i>Atriplex gardneri/gordonii</i>	Gardners saltbush
<i>Ceratoides lanata</i>	winterfat
<i>Artemisia pedatifida</i>	birdfoot sagewort
<i>Artemisia spinescens</i>	bud sagewort

**FIGURE 3**

**OPTION III: COMMUNITY SPECIFIC SHRUB DENSITY – COMPOSITION BASED ON FULL SHRUBS ONLY**

**TABLE 1**

Vegetation Community	Number of Acres Affected Following Rule Approval	Percent Eligible Acreage	Premining Total Shrub Density per m <sup>2</sup>	Premining Total Shrub Number	Postmining Total Shrub Density m <sup>2</sup> "D"	N	Dominant Species	D x (1/N+1) Density of Dominant per m <sup>2</sup>	Density of Residual Shrubs per m <sup>2</sup>	Approved Subshrubs per m <sup>2</sup>	20% Acreage Reclaimed with Shrubs	Number of Shrubs Established
Mixed Shrubland	364	18.2	1.20	1,767,730	1.00	3	Big Sagebrush	0.25	0.38	0.38	72.80	294,622
Upland Grassland	1506	75.3	0.80	4,875,826	0.80	4	Big Sagebrush	0.16	0.32	0.32	301.20	975,165
Scoria Grassland	80	4.0	0.30	97,128	0.30	4	Big Sagebrush	0.06	0.12	0.12	16.00	19,426
Drainage Bottomland	50	2.5	0.20	40,470	0.20	3	Greasewood	0.05	0.08	0.08	10.00	8,094
Pastureland (1)	300	n/a	n/a									
<b>Total Postmining Shrub Acres</b>											<b>400.00</b>	
<b>Total Eligible Acreage</b>	<b>2000</b>	<b>Premining No. of Shrubs</b>		<b>6,781,153</b>							<b>Postmining No. of Shrubs</b>	<b>1,297,306</b>
<b>Total Acreage</b>	<b>2300</b>											
<b>% Eligible/Total</b>	<b>87.0</b>											
(1) pastureland excluded by regulation * D = Postmining Total Shrub Density (e.g. 0.8 x [1(4+1)] = 0.16)												

**TABLE 2 – Option III, Figure 3 continued**

<b>Relative Density Information for Species – Full Shrub Only</b>				
The value of the dominant species for each type is shaded. ■				
	<b>Mixed Shrubland</b>	<b>Upland Grassland</b>	<b>Scoria Grassland</b>	<b>Drainage Bottomland</b>
<b>Silver sagebrush</b>	<b>0.06</b>			<b>0.38</b>
<b>Big sagebrush</b>	<b>0.63</b>	<b>0.39</b>	<b>0.35</b>	<b>0.11</b>
Fourwing saltbrush		0.03		
Black sagebrush		0.06	0.18	
Rubber rabbitbrush	0.19	0.13		
Douglas rabbitbrush		0.27	0.18	
Wax currant			0.05	
Skunkbrush sumac	0.12		0.20	
Greasewood				0.51
Common snowberry		0.12	0.04	
<b>Full Shrub Total</b>	1.00	1.00	1.00	1.00
Fringed sagewort*	0.21	0.03		
Gardner's saltbush*		0.28		
Winterfat*				0.08
Number shrubs ≥ .1	3	4	4	3
All Full Shrubs/m <sup>2</sup>	1.20	0.80	0.30	0.20

\*excludes these subshrubs, which are not allowed to be included in Option I, II or III.

Option IV: Community-specific full shrub and approved subshrub density standard (see Figure 4 for an illustration of this Option)

1. Each eligible premining vegetation community serves as the basis for developing the required postmine density and areal extent. The percentage each community contributes to the total eligible land is multiplied by 20 percent to establish the number of acres required on the postmining landscape. The average number of full shrubs and approved subshrubs each community supported premine serves as the postmine average density for that particular community.

The following are the approved subshrubs which shall be included in calculating the premining density within each community:

<i>Artemisia frigida</i>	fringed sagewort
<i>Atriplex gardneri/gordonii</i>	Gardners saltbush
<i>Ceratoides lanata</i>	winterfat

2. Compare the relative premining dominance of full shrub and approved subshrub species within each eligible vegetation community. In this instance, one shrub patch seed mixture will be developed for each eligible vegetation community.

3. From the information calculated in step 2. above, identify the dominant premine full shrub or approved subshrub species with each eligible vegetation community. This species then becomes the target postmine species within a particular shrub patch corresponding to a specific vegetation community.

4. Compute the minimum density that the postmining target shrub/approved subshrub (identified in step 3. above) must meet in order to achieve bond release under the standard. This is accomplished by applying the following equation:

$$D[1/(N + 1)]$$

D is the postmining total shrub density (D is always  $\leq 1.00$ ). N is the number of primary shrub/approved subshrub species existing in the premining communities as identified in step 2. above. Primary shrub/approved subshrub species shall be defined as full shrub/approved subshrub species which comprise at least 10 percent of the relative density of full shrubs. However, in order to be considered primary species, fringed sagewort must comprise at least 20 percent of the relative shrub/approved subshrub composition.

All primary shrub/approved subshrub species shall be included in the respective shrub patch seed mixtures.

5. The postmining residual density is calculated by subtracting the minimum required density of the target species within each vegetation community from the total required density for that community.

6. Residual density may be comprised of any premining primary full shrub/approved subshrub species and any other approved full shrub species. In addition, the following subshrub species may be counted towards up to one half of the residual density within each community.

<i>Artemisia frigida</i>	fringed sagewort
<i>Atriplex gardneri/gordonii</i>	Gardners saltbush
<i>Ceratoides lanata</i>	winterfat
<i>Artemisia pedatifida</i>	birdfoot sagewort
<i>Artemisia spinescens</i>	bud sagewort

**OPTION IV: COMMUNITY SPECIFIC SHRUB DENSITY – COMPOSITION BASED ON FULL SHRUBS AND APPROVED SUBSHRUBS**

**TABLE 1**

Vegetation Community	Number of Acres Affected Following Rule Approval	Percent Eligible Acreage	Premining Total Shrub Density per m <sup>2</sup>	Premining Total Shrub Number	Postmining Total Shrub Density m <sup>2</sup> "D"	N	Dominant Species	D x (1/N+1) Density of Dominant per m <sup>2</sup>	Density of Residual Shrubs per m <sup>2</sup>	Approved Subshrubs per m <sup>2</sup>	20% Acreage Reclaimed with Shrubs	Number of Shrubs Established
Mixed Shrubland	364	18.2	1.40	2,062,351	1.00	3	Big Sagebrush	0.25	0.38	0.38	72.80	294,622
Upland Grassland	1506	75.3	1.10	6,704,260	1.00	3	Big Sagebrush	0.16	0.32	0.32	301.20	975,165
Scoria Grassland	80	4.0	0.30	97,128	0.30	4	Big Sagebrush	0.06	0.12	0.12	16.00	19,426
Drainage Bottomland	50	2.5	0.20	40,470	0.20	3	Greasewood	0.05	0.08	0.08	10.00	8,094
Pastureland (1)	300	n/a	n/a									
<b>Total Postmining Shrub Acres</b>										<b>400.00</b>		
<b>Total Eligible Acreage</b>	<b>2000</b>	<b>Premining Number of Shrubs</b>		<b>8,904,209</b>							<b>Postmining No. of Shrubs</b>	<b>1,297,306</b>
<b>Total Acreage</b>	<b>2300</b>											
<b>% Eligible/Total</b>	<b>87.0</b>											
<b>(1) pastureland excluded by regulation</b>												
<b>* D = Postmining Total Shrub Density (e.g. 0.3 x [1(4+1)] = 0.06)</b>												



A complete proposal for evaluation of postmining shrub density should include:

1. A commitment to provide a brief history of the methods employed to implant shrubs and the husbandry practices specifically related to shrub establishment and maintenance.
2. Methods to identify shrub patches and to determine their areal distribution and extent.
3. Proposed sampling methods for the determination of shrub density within the patches. This discussion should include number of samples.
4. Proposed methods for documenting the presence and distribution of shrub species on all other lands jointly used by livestock and wildlife.

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CHAPTER 5  
PERFORMANCE STANDARDS FOR SPECIAL CATEGORIES  
OF SURFACE COAL MINING

Section 2. **Prime Farmlands.**

...

(b) Prime farmland soil stabilization, productivity, and revegetation.

...

(iii) ~~Small acreages of prime farmland which the Administrator, in consultation with the local conservation district and soil conservation service personnel, determines to be uneconomical to maintain as cropland after restoration may be exempt from the reconstruction standards of this subsection.~~ Areas where permits were issued prior to August 3, 1977 are exempt from the reconstruction standards of this Section.

*The proposed amendment above is intended to address a deficiency identified in the February 21, 1990 732 letter issued by the OSM. Subsection B-1 of that letter stated that "Wyoming's regulations include an exemption from prime farmland performance standards for small acreage based upon an unidentified economic determination." Subsection B-1 continued that "[t]he federal rules contain no such exclusion ...". Wyoming replied to the 732 letter stating that "[t]he exemption from prime farmland performance standards for small acreage will be deleted from the State rule" in an informal response (May 14, 1990 response to 732 letter). On October 3, 1990 the OSM issued an informal response which stated that "[t]he proposal to remove the exemption from prime farmland performance standards appears acceptable" (Sect. B-1, October 3, 1990 OSM response). The proposed amendment above removes the exemption as discussed above.*

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**~~APPENDIX A~~**

**~~VEGETATION SAMPLING METHODS AND RECLAMATION  
SUCCESS STANDARDS FOR SURFACE COAL MINING OPERATIONS~~**

*The proposed rules discussed above include concepts and requirements taken from the current Land Quality Division's Appendix A. For the purposes of this rulemaking and to meet the requirements of the Secretary of State's Rules on Rules, Appendix A will be entirely struck out. Concepts or rules that were placed elsewhere in Chapters 1, 2 and 4 are indicated where appropriate in the detailed discussions for those chapters. Also Attachment 3 (Fate of Appendix A) of this rule package contains additional guidance on language that was retained, revised, moved or deleted.*