

# MINNESOTA DEPARTMENT OF NATURAL RESOURCES

## Nonferrous Metallic Mineral Mineland Reclamation Rules

### STATEMENT OF NEED

#### INTRODUCTION

Minnesota Statutes, sections 93.44 to 93.51, entitled the Mineland Reclamation Act, authorize the commissioner of Natural Resources to adopt rules providing for the reclamation of lands disturbed by the mining of metallic minerals and peat. The law declares that it is the policy of the state, through mineland reclamation, to control the adverse environmental effects of mining, to preserve natural resources, and to encourage land use planning. The law further declares, as policy, the promotion of the orderly development of mining, the encouragement of good mining practices, and the recognition and identification of the beneficial aspects of mining.

The Mineland Reclamation Act, originally passed in 1969, represented a legislative response to Minnesota's nearly 100 year old iron mining industry (the only metallic mineral mining that had occurred in Minnesota). That industry has had enormous economic, social, and environmental impacts on this state and its residents. Because of these impacts, it was determined that the iron mining industry, and any other metallic mineral mining industry that might possibly develop, were in need of regulation. The non-metallic mineral resources, such as, sand, gravel, dimension stone, clay, and other industrial minerals, that had mining histories equally as long as that of iron, were viewed differently, because these were intentionally placed outside the scope of the law, by the legislature. Since the original passage of the Act, the only broadening of the scope was in 1983 when peat was included, by amendment of the statutes.

As a result of the original passage the Act, and the subsequent amendment, a set of metallic mineral reclamation rules (dealing exclusively with iron ore and taconite) was promulgated in 1980, followed by peat reclamation rules in 1985. Coincident with each of these events, a resource-specific reclamation program was developed by the department to deal with permitting issues.

Although the actual permitting process did not begin until 1980, the department had an extensive reclamation research program in place since well before that date. As early as 1975, the department was strongly focused on reclamation research. That research has been extensive and very divergent, including:

- 1) studies associated exclusively with iron ore and taconite reclamation, such as sloping, erosion control, and revegetation;
- 2) peatland resource studies that eventually led to the inclusion of peat into the Reclamation Act, and ultimately to the development of rules; and
- 3) studies associated with nonferrous metallic mineral characterization, drainage water evaluation, and the analysis and development of specialized nonferrous reclamation techniques and practices, that are in part the basis for these proposed rules.

Currently, as in 1969, the only metallic mineral mining that has been conducted, or that is currently proposed for development, in Minnesota, is related to iron. However, over the last three decades, a considerable annual investment of money and effort has been put into the exploration for nonferrous metallic minerals. Although there is presently no reason to believe that nonferrous mining is imminent, there has been a desire on the part of the department, the mineral industry, and the environmental community, to develop regulations so there can be a clear understanding of the obligations associated with nonferrous mineral development, should it occur in Minnesota.

The Mineland Reclamation Act directs the Commissioner of Natural Resources to conduct a comprehensive study and survey to determine the extent to which regulation of mining areas is necessary and in the interest of the general welfare. Upon conducting this study and survey, the department has identified the major

problems associated with nonferrous mining. The rules have been prepared by the department to specifically address these problems. The implementation of these rules will provide for the reclamation of lands disturbed by nonferrous mining activities, returning them to a safe, productive, and environmentally sound condition.

The Minnesota Administrative Procedures Act and other associated statutes, direct the commissioner to consider a number of issues during the process of rule development and adoption. Three such issues have been considered by the department during this rulemaking process. These include:

- 1) impact of the rules on small businesses, as required by Minn. Stat., sec. 14.115;
- 2) impact of the rules on expenditure of public money by local public bodies, as required by Minn. Stat., sec 14.11, subd. 1; and
- 3) impact of the rules on agricultural land, as required by Minn. Stat., sec. 14.11, subd. 2, and secs. 17.80 to 17.84.

Other statutes that are specifically identified in the Administrative Procedures Act, including: Minn. Stat., sec. 115.43, subd. 1; Minn. Stat., sec. 116.07, subd.6; and Minn. Stat., sec. 144A.29, subd. 4, were reviewed and determined to be not applicable to the proposed rule.

The Department of Natural Resources has determined that complying with the provisions of Minn. Stat., sec. 14.115, relating to methods for reducing the impact of the rule on small businesses, would be contrary to the statutory objectives that are the basis for the proposed rulemaking. Based on site visits, conducted by the department, to nonferrous metallic mining operations located outside Minnesota, and discussions with regulators in other states and Canada, the department has determined that the potential for environmental concern is independent of the size of the business conducting the mining operation. Regulators from other states have reported numerous environmental problems at small, often under-capitalized, mining operations. These regulators have further indicated that it is often more difficult to resolve problems when dealing with small businesses than when deal with large businesses. If such situations were to occur in Minnesota, the intent of the reclamation statute, that requires the maintenance of satisfactory environmental control, could be defeated if the rules incorporate less stringent compliance standards or schedules that would lessen the requirements for mining operations conducted by small businesses.

Minnesota Statutes, section 14.115 specifically requires the commissioner to address the following:

- 1) **the establishment of less stringent compliance or reporting requirements for small businesses** - The commissioner has, in part, based the reclamation requirements on the extent of efforts necessary to protect natural resources. The extent of reclamation that may be necessary at a given site has no direct relationship with the size of the business conducting the mining operation, therefore the commissioner has not proposed less stringent compliance standards for small businesses. The commissioner requires the submission of an annual report, that coincides with a statutory requirement of an annual review of an operator's financial assurance, and also requires immediate reporting, in the event the permittee determines there is a permit violation. The commissioner finds both these reporting requirements to be necessary and reasonable, and is therefore not proposing a less stringent requirement.
- 2) **the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses** - The commissioner requires that the permittee be in compliance at all times, in order, in part, to protect natural resources. In the event that a permittee violates the permit, the commissioner will determine the allowable deadline for reestablishing compliance, based on the extent of the violation and the reasonable time necessary to correct it. These decisions are not dependent on the size of the business, and therefore the commissioner is not proposing a less stringent standard.
- 3) **the consolidation or simplification of compliance or reporting requirements for small businesses** - The commissioner has already taken steps to accomplish this for all permittees, regardless of size.
- 4) **the establishment of performance standards for small businesses to replace design or operational standards required in the rule** - The commissioner's rules are already basically established based upon performance standards. Each site and specific operation, without regard to size, will be analyzed individually to determine the extent of regulation needed to protect natural resources.
- 5) **the exemption of small businesses from any or all requirements of the rule** - If the commissioner

were to implement either of these options the intent of the reclamation statute, that requires the maintenance of satisfactory environmental control, could be defeated.

Minnesota Statutes, section 14.115 also requires the commissioner to make efforts to include small businesses in the rulemaking process. This has been accomplished for the proposed rule by:

- 1) distributing and taking comment on three separate major drafts of the proposed rules;
- 2) conducting group meetings with nonferrous metallic mineral explorers and miners;
- 3) the publication of notice of the proposed rule in Skillings' Mining Review, a minerals trade publication; and
- 4) direct notification of nonferrous metallic mineral explorers and miners.

In accordance with the provisions of Minn. Stat., sec. 14.11, subd. 1, the commissioner has concluded that adoption of the proposed rule is not anticipated to result in the significant expenditure of public money by local public bodies. The rules do establish the requirement that a public information meeting be held shortly after a potential mine operator decides to proceed with an application for a permit to mine. This meeting requirement does include the voluntary involvement of the local governmental units, whose involvement may merely extend to supplying a place to conduct the meeting and having local officials available to express local concerns. If a mining operation is ultimately conducted, the local involvement, associated with planning and zoning decisions that are currently the obligations of local public bodies, might be extensive. However, such obligations, and associated expenses, would not be a direct result of the adoption of the proposed reclamation rules.

In accordance with Minn. Stat., sec 14.11, subd. 2, the commissioner has determined that adoption of the proposed rule is not anticipated to have a direct and substantial adverse impact on agricultural lands in Minnesota. It is possible that at some future date a person may apply for a permit to mine that involves agricultural lands, however such decision is not a direct result of the adoption of these rules. In addition, because one of the purposes of these rules is to ensure that utility of the land is restored when mining is complete, these rules will help minimize any long-term adverse impacts on agricultural lands, that might possibly be affected by mining.

## GENERAL PROVISIONS

### 6132.0100 Definitions

Subpart 1. This section contains two types of definitions; those terms which appear and are defined in the statute, and those terms which are used in the proposed rules, which may not be generally recognized and accepted, and to which special and specific meanings are attached for the purposes of specifically understanding the rules. It is reasonable to define any word that is meant to have a specific meaning, not normally associated with it, or when the word is a term of art used by a specific industry. When a word or term is used in the proposed rules, and does not appear in this section, it shall be assumed to have the definition that is found in commonly used dictionaries. Some commenters have asked that certain words, that were meant by the department to be used as they are commonly defined, be included in this section. In at least one instance when the department tried to comply with such a request, the revisor of statutes removed the word and its commonly used definition from this section.

Subp. 2. "Acceptable research" is defined to require approval by the commissioner, with its parameters dictated by the site and its measure of success based on the standards set forth in the rules. Because such research may be used to develop an alternative method of reclamation, it is reasonable to require that the research for an alternative method should be designed with the intention of striving to achieve the goals of these rules, which is the method followed by the commissioner in establishing the stated standards of the rules.

Subp. 3. "Adversely impact natural resources" is defined because it is one of the basic criteria used by the commissioner to establish several of the goal statements contained in the reclamation standards portion of the proposed rules. In addition, it is used as one of the factors for identifying generally acceptable locations for those mining facilities that have flexibility siting. As such, the definition is purposely devised to broadly and generally include any possible harmful effect on natural resources, that might potentially occur as a result of a mining operation, while recognizing that the effect is not likely to be specifically identifiable until an exact mine site is identified and the specific operating plans are selected and approved. Because the commissioner has, through numerous statutes, been given specific authority to protect the state's natural resources, it is reasonable that each of the department's rules, on any specific topic, should, at a minimum, give general considerations to impacts on all natural resources. This term is used in those parts of the rules that describe the basic philosophy of the rules, and as noted, for some general siting decisions. Because the term is used only to provide general guidance, it is reasonable that the definition be broad and general. The actual mandatory requirements of the rules, with which the permittee must comply, are necessarily very specific.

Subp. 4. "Auxiliary facilities" is defined to include every alteration to the natural environment associated with the mining operation because all such areas should be subject to reclamation. Common carrier facilities are not so included because their usefulness is not directly related to only a single mining operation nor will they necessarily terminate operations upon termination of the permit to mine.

Subp. 5. "Beneficiating plants" is defined in order to clarify that the applicability of these proposed rules extends to processing and fabrication facilities, and because the term is included in the definition of "Mining area" contained in the statute, and therefore relates to the scope of the rules.

Subp. 6. "Closure" is defined to establish the period of time when activities at a particular site change from being mining related to being reclamation and post mining end-use related. Increased inspection to determine adherence with specific reclamation standards will occur during this period to determine if ultimate release from the permit to mine is possible. Because compliance is in part dictated by when closure occurs, it is reasonable to have it defined.

Subp. 7. "Commissioner" is defined to extend the powers of the commissioner of natural resources to duly authorized field and office staff assigned to make determinations regarding the adequacy of reclamation

activities associated with a permit to mine. Since it is more likely that field and office staff, rather than the commissioner will be directly dealing with the permittee and the public, it is reasonable that the rule acknowledge that such staff are authorized to act on behalf of and with the same force and effect as the commissioner.

Subp. 8. "Goals" is defined to provide a brief statement of policy, defining the rationale used in the development of specific requirements contained in Reclamation Standards portion of the rules. While it is recognized, by the department, that all the goals in the proposed rule may not be fully attainable, they provide needed targets for achievement and a framework within which reasonably effective and attainable requirements have been developed, and they will provide guidance and a measurement of success by which any requests for variance from stated requirements can in part be judged.

Subp. 9. "Heap and dump leaching" is defined because it is a method of ore processing typically used by nonferrous metallic operations. Traditionally, heap leaching has been used to treat precious metal ores placed in piles upon a prepared pad, while dump leaching is most often associated with base and heavy metals extracted from lean ores stockpiled on compacted foundations. In both cases, chemical solutions appropriated to ionize metals are applied to the mineralized material. The metal ions enter the solution, drain through the heaps and dumps, and are conveyed along the pad or foundation to a collection point. From the collection point, usually a pond, the metal bearing solution is directed to a facility where the metal ions are removed from the solution and are eventually converted into a solid metallic form. These processes, which are viewed by some as being different, have been combined into one definition to emphasize that, in Minnesota, from a reclamation standpoint the same requirements will be applied without regard to the type of metal produced, the chemical solution used, or the type of pad or foundation that is developed. It is reasonable and necessary to define this term because specific rules have been prepared to deal with reclamation of heap and dump leaching activities, and the term is one commonly used in the mining industry but not by the general public.

Subp. 10. "Heap and dump leaching facilities" is defined to include every source of alteration to the natural environment associated with heap or dump leaching because all such areas should be subject to reclamation.

Subp. 11. "In-situ leaching" is defined because it is a method of ore processing that has been utilized by some nonferrous metallic mining operations, where a unique combination of geology and hydrology have made the practice feasible. The proposed rules direct that this process not be allowed to be included in an operation for which a permit to mine is issued, until the environmental effects of the process can be determined and appropriate rules developed. Because a permit to mine will be denied if these activities are included in a mining and reclamation plan, it is reasonable to define specifically what it is so that confusion with other acceptable processes does not occur.

Subp. 12. "Leached ore" is defined because it is a specific type of mine waste that may need to be reclaimed in a manner differently than other mine wastes and is therefore reasonable to specifically define. Some commentors suggested that certain tailings may be considered to fit within this definition. This however was not the department's position. Leached ore is only that mine waste produced as part of a heap or dump leaching process. Tailings from a beneficiating process that includes a leaching procedure are to be considered as tailings, not leached ore.

Subp. 13. "leaching solutions" is defined because it is a specialized type of mineral processing liquid that is typically encountered at some nonferrous metallic operations. Such solutions require specialized handling and containment in order to ensure satisfactory reclamation of a mine site where they are utilized, and it is therefore reasonable to define this term.

Subp. 14. "Lean ore" is defined because it is a specific type of mine waste that because of its future economic potential, may require special siting and handling considerations to allow it to be readily available in the event favorable economic conditions arise and is therefore reasonable to specifically define.

Subp. 15. "Metallic mineral" is defined because it is one of the bases established in statute for determining whether reclamation rules are to be developed and applied to a particular mining operation, it is therefore reasonable and necessary to define this term.

Subp. 16. "Mine waste" is defined by the statute.

Subp. 17. "Minimize to the extent practicable" is defined because it is a term used frequently in the rules to identify specific requirements of the reclamation standards section. The term incorporates reasonability by requiring the use of existing technologies, practices, guidelines, standards, or engineering safety standards developed for and commonly used by mining or reasonably similar activities. The definition requires that the commissioner determine whether the technologies or practices are the most effective and workable means of achieving reclamation, that are available. The definition is reasonable and necessary because until a specific assessment can be completed, and available practices analyzed, the most appropriated mitigation can not be determined. It is further reasonable that the techniques and practices be approved by the commissioner since the selection of the practices, in effect, has the same force and effect as rule. The commissioner should not be bound from seeking advice from whatever sources are determined necessary by the commissioner, in arriving at the appropriate technologies and practices.

Subp. 18. "Mining" has been defined to include all activities directly associated with the production of nonferrous metallic minerals which could cause sufficient damage to require reclamation. Such definition is consistent with the statute since all such activities should be subject to reclamation.

Subp. 19. "Mining area or area subjected to mining" is defined by the statute.

Subp. 20. "Mining operation" is defined as it is to assure that projects which are indeed related are considered and acted upon concurrently so the ultimate decision can properly consider all factors related to the operations.

Subp. 21. "Natural resources" is defined in similar fashion as it is in M.S. Chapter 116B.02, Subd. 4. It was determined necessary to define natural resources because of the confusion expressed by commentors to the draft rules as to what the term included.

Subp. 22. "Nonferrous metallic mineral" is defined to clarify the minerals to which this set of regulations shall apply. Since rules dealing with the reclamation of iron ore and taconite already exist, under Minnesota Rules Chapter 6130, it is reasonable to excluded minerals from which iron is extracted from Chapter 6132.

Subp. 23. "Passive reclamation methods" is defined because the rules encourage the use of reclamation which can in effect sustain itself without substantial and perpetual maintenance. This is reasonable because the corporate lives of mine operators are limited, while the area subjected to mining will exist in perpetuity, thereby elevating the desirability of reclamation practices that do not require active maintenance.

Subp. 24. "Permit to mine" is defined because it represents the legal instrument which prescribes the terms and conditions under which a mining operation may be conducted, and constitutes the authorization by the commissioner to conduct such a mining operation.

Subp. 25. "Person" is defined because the term is used throughout the rules, and the statute, to describe those entities which must receive a permit to mine prior to initiation of a mining operation. The listing of types of businesses, contained in the definition, are those that currently exist and operate iron ore and taconite mines in Minnesota and it is therefore reasonable to assume that they also exist for the operation of nonferrous mining activities.

Subp. 26. "Post closure maintenance" is defined to describe reclamation activities for which the permittee will retain responsibility after cessation of the mining operation. Since continued maintenance of the mine area, though not desirable, may be inevitable it is reasonable to address this time period.

Subp. 27. "Progressive reclamation" is defined because it is reasonable to require that when mining activity is completed on a particular area, even though operations may not have ceased, that the area be stabilized through the application of reclamation practices to prevent adverse impacts on surrounding natural resources.

Subp. 28. "Reactive mine waste" is defined because nonferrous metallic mining often generates mine wastes with characteristics that can cause water that might contact such waste to assume an unacceptable quality due to contamination. Since such waste will have to be reclaimed in a manner different from that without such characteristics it is reasonable to require its identification.

Subp. 29. "Reclamation" is defined because it provides the basis for determining the degree to which the terms and conditions of the Permit to mine have been met.

Subp. 30. "Reference area" is defined because it provides a reasonable means by which the extent of vegetation required by a Permit to Mine, and therefore compliance with vegetation standards can be measured.

Subp. 31. "Storage pile" is defined because it serves to collectively identify a number of different types of landforms containing physically similar types of material, created as a result of mining. It excludes from the definition other similar landforms which are temporary in nature, thereby not requiring reclamation, and tailings basins which have unique characteristics that require the application of different reclamation practices. Because specific requirements have been proposed for storage piles, that are different than the requirements for other types of mining facilities, it is reasonable to provide for their definition. In the iron ore and taconite rules these landforms were referred to as stockpiles. However, this term seemed to be confusing to some commentors to the draft nonferrous rules, and was therefore changed to storage piles.

Subp. 32. "Surface overburden" is defined because it is a specific type of mine waste that is often susceptible to erosion, but also often has the characteristic of readily supporting vegetation, thus making it a material needing reclamation attention, but also providing aid in the promotion of reclamation. Because specific requirements have been proposed for surface overburden, that are different than the requirements for other types of mine waste, it is reasonable to provide for its definition.

Subp. 33. "Tailings" is defined because it is a specific type of mine waste that has unique physical and sometimes chemical characteristics that cause its disposal and reclamation to be conducted in a manner completely different than any other waste encountered during mining. Because specific requirements have been proposed for tailings, that are different than the requirements for other types of mine waste, it is reasonable to provide for its definition.

Subp. 34. "Waste rock" is defined because it is a specific type of mine waste that because of its chemical content may require specialized storage and reclamation practices. Because specific requirements have been proposed for waste rock, that are different than the requirements for other types of mine waste, it is reasonable to provide for its definition.

#### 6132.0200 Purpose and Policy

This section cites the enacting legislation for these proposed rules, that contains a number of statements regarding the purpose for which the statute and these rules were written. The statement of purpose lists those considerations required by the statute of the commissioner in determining the extent and nature of these proposed rules. It is necessary and reasonable to include these statements of statutory policy because they provide the rationale for many of the specific requirements in the rules. Comments received on the draft copy of the rules have indicated either a misunderstanding of what is included in statutory policy or perhaps even a disagreement with what that policy is.

The section also contains a statement of the Department's policy that describes the main factors it believes

are essential, for a mining operation to accomplish, in order for the purpose expressed in the statute to be met. There is also an expression of the policy that the best way of ensuring permanent reclamation is to promote the use of practices that will require little of no maintenance, but if such maintenance is necessary it must be the responsibility of the mine operator. It is necessary and reasonable to include these statements of statutory policy because they provide the rationale for many of the specific requirements in the rules.

Finally the section concludes that the rules are designed to act as a framework within which specific permit requirements are to be developed to address the unique problems anticipated to exist at each individual mine site. The actual reclamation, conducted at a given mine, will have to be custom designed to account for each site and operation's uniquely specific characteristics. In order to make the proposed rules workable, it is necessary and reasonable to build in enough flexibility, while still providing basic direction on how reclamation can be achieved.

#### 6132.0300 Scope

Subpart 1. The requirement to obtain a permit to mine prior to initiation of a mining activity is a requirement of Minn. Stat. 93.481. This rule specifically requires that the permittee be a person that both supplies capital and makes decisions on how the funds will be expended. It is reasonable for the commissioner to identify who has the ability to make decisions involving reclamation activities and therefore who will be held accountable for compliance with requirements of the permit. Persons whose only involvement is the supply of capital, such as financial institutions or stockholders will not be required to become permittees.

Subp. 2. This requirement acknowledges that often more than one person is engaged in or carries out a mining operation. Where this occurs a permit will be issued on a joint basis requiring each person to be jointly and severally liable responsible for compliance with the reclamation requirements. It is reasonable to require that each joint permittee be jointly and severally responsible, in order to avoid a situation where one, or all, might claim that the others are responsible but not themselves.

Subp. 3. The term of the permit, often referred to as "life of the mine," is established in statute as a requirement of Minn. Stat. Chapter 93.481. To determine the extent of this life, the commissioner requires the submittal of information related to the ore body and the permittee's plans for development.

Subp. 4. This section describes the types of mining activities to which these proposed rules will and will not apply. The rule clarifies that where iron is the predominant metal extracted during the mining of a metallic mineral, Chapter 6130 and not these proposed rules will be applicable. This is reasonable since there are already rules in use dealing specifically with mining from which iron is the predominant metal extracted, and this set of proposed rules is not intended to amend those existing rules.

The proposed rule states that the rules apply only to portions initiated after promulgation of the rules. This is so stated in order to be in compliance with the language of the statute. However, since no nonferrous mines exist in Minnesota, the proposed rules will only apply to new operations, or to the reactivation of these new operations at some time in the future.

The proposed rule identifies two types of mining activities for which no substantive effort has been made to determine the degree of reclamation regulation that might be required before adequate rulemaking can occur. These include any activity associated with radioactive ore development, and activities related to an ore beneficiating process called in-situ leaching. Until such time as adequate studies related to these activities can be completed, it would be unreasonable for the commissioner to allow such activities to occur. Some commentors have suggested that the mineral processing technique of heap and dump leaching should also be included in this category. Those commentors feel that this relatively new technology has not yet been shown to be practically applicable in Minnesota. The department has studied this technology extensively and has concluded that in particular, because of the ease with which fluids flow through the heaps and dumps, fluids



that will neutralize the residual leaching chemicals can easily be introduced into the piles, and render the leached ore non-reactive. Since this is one of the major requirements associated with the reclamation of reactive mine wastes, such as leached ore, it would be unreasonable to preclude the use of this technology, from the perspective of reclamation alone.

Subp. 5. All rules, statutes, and ordinances combine to make up the compendium of law applicable to a certain activity. The commissioner does not intend, nor have the authority, to prevent the enforcement of laws which are applicable or which are more restrictive in a specific instance. In the same light, these proposed rules should apply regardless of the existence of a less stringent standard adopted by another unit of government.

## PERMIT REQUIREMENTS

### 6132.1000 Mine Waste Characterization

Subpart 1. As explained earlier in this statement, relative to the Purpose and Policy section, "...the rules are designed to act as a framework within which specific permit requirements are to be developed to address the unique problems anticipated to exist at each individual mine site." One of the main factors that is likely to determine whether unique problems will exist is the chemical and mineralogical composition of the mine wastes produced during the process of mining. In order for the commissioner to determine the degree of reclamation that needs to be required at a particular site it is necessary and reasonable to characterize the wastes that will be generated by the proposed mining operation.

This entire section is designed to identify those constituents that exist within the various mine wastes that have the potential to adversely affect natural resources. This would include wastes that generate a low pH drainage or that release unacceptable levels of metals. Since the results of the characterizations will have a significant impact on how, or even whether, mining can be allowed, it is reasonable that the studies be conducted in advance of the submittal of a permit application. In addition since the commissioner has been significantly involved with characterizations of various potential Minnesota mine wastes, it is reasonable for an applicant to meet with the commissioner to determine the extent of necessary analyses and tests.

Subp. 2. This section identifies the types of analyses and tests that are to be utilized in conducting the mine waste characterization. In addition it identifies sources of test material that are normally collected during the process of exploration and mineral deposit evaluation. The specific evaluations that are proposed, have been determined to be necessary and reasonable based upon the extensive mine waste characterization studies that the department has been conducting since the mid 1970's. These efforts have been recognized both nationally and internationally as pioneering the evaluation procedures that are currently being utilized worldwide.

The types of analyses that constitute the mine waste characterization include those typically conducted by mine operators to evaluate ores. Tests for describing acid generation and dissolved solids release, though less common, are being more routinely conducted.

Similarly the proposed rules require analyses of all reagents added during mineral beneficiation and to the subsequent mine wastes created. By applying such analyses to the reagents and mine wastes it is expected that constituents having the potential for creating adverse impacts can be identified.

When the analyses reveal the existence of constituents known to have the potential for creating adverse impacts, the proposed rules require that additional analyses and tests be completed. These subsequent analyses and tests, listed in the proposed rules, are designed to identify the extent, or scale, of the potential impact. Such information is essential in determining whether mining can be allowed, or what type and degree of reclamation might be necessary to protect natural resources.

Subp. 3. This section identifies specific points when mine waste characterization results must be presented to the commissioner. It is necessary and reasonable to require submission of results at the designated time periods since these correspond to points when the commissioner is normally evaluating the issuance of, or determining compliance with, a permit to mine.

In addition this section requires submittal of the mine waste characterization to regulatory agencies that establish water quality standards. Because such standards are often designed with consideration given to impacts on natural resources, it is reasonable for the commissioner to share this information.

## 6132.1100 Permit Applications

Subpart 1. The purpose of this section is to initiate a dialogue between a potential permit applicant and the commissioner at the time when the applicant is nearing a decision on proceeding with mine development. This meeting will also give the commissioner an opportunity to visit the sites of potential development. The results of the mine waste characterization conducted up to this point shall be reviewed, and the potential applicant shall explain any preliminary mine development and siting thoughts, including any options or alternatives that have been evaluated. This type of process normally would occur, even without it being required by rule. However, it is reasonable and necessary to formalize an initiation of the permitting process in order to ensure that all requirements of these and other rules are addressed in a timely manner.

If, upon conclusion of the conference, the potential applicant wishes to proceed with the development of an application, the commissioner and the applicant shall jointly conduct an informational meeting to appraise the public concerning the possibility of mineral development. Other regulators will also be encouraged to participate in this meeting so that the issues, that must be addressed through the permit to mine, can be discussed in terms of how they relate to other requirements that may be placed upon the mining operation.

This section outlines procedures for noticing the informational meeting that are designed to reach a wide variety of people who may be affected by, or interested in such a mine development. If it is deemed practical, and would not result in a substantial delay, the commissioner may consider combining the meeting required by these proposed rules with other required meetings, such as those associated with environmental review.

Subp. 2. requires that submittals be made in duplicate for use in the DNR's Hibbing and St. Paul offices.

Subp. 3. The first three pieces of information required by this section are dictated by the statute. The affidavit of advertisement is necessary because it ensures that the public, who may be affected by the operation, have been appraised of the proposed operation. The certificate of authority to transact business is reasonable to require because it indicates that the applicant has met all legal requirements necessary to operate in Minnesota. The proof of insurance satisfies the statutory desire that compensation for injury to persons and property caused by the mining operation has been obtained.

The fourth requirement of this section, documents relating to financial assurance, are those deemed necessary by the commissioner to protect against the potential for expenditure of public funds to cover the costs of reclamation or corrective action in the event the permittee goes out of business or becomes insolvent before the mine site is satisfactorily reclaimed.

Subp. 4. This section is necessary to describe the applicant(s), and how each joint applicant relates to the proposed project and to each other.

Subp. 5. This section is necessary so the commissioner can have a clear understanding of the geographic, geologic, and environmental setting in which the proposed project will be placed. The specific information requested will allow the commissioner to determine impacts on natural resources that might result due to the operation, and also to evaluate whether special restrictions on mine facility siting or design are necessary.

It is reasonable to require that environmental reports and impact statements be included as part of the permit application since these reports are prepared to aide regulators in decisions related to permit issuance.

The requirement of overlays to 7-1/2 minute quadrangle maps was chosen, and is reasonable, because this is an effective way to present diverse types of information relating to a single area, at a scale which is readily available and useable.

Presentation of the geology is necessary for an understanding of the type of mine waste that may be encountered. Delineation of the mining area is required to inform the commissioner of the magnitude and

location of lands which will be used for mining.

Delineation of the locations of surface waters that may be affected by mining is necessary to determine the type of reclamation that may be required with respect to siting, facility design, closure, and continued maintenance, since decisions concerning to these factors are closely related to maintaining the integrity of such water resources. This information is essential for determining water appropriations and discharge which are major considerations of a mining operation.

Knowledge about watershed boundaries is necessary to ensure that watershed modifications are minimized and that runoff is managed properly within watersheds.

Hydrogeologic information is required to present an understanding of the existence of groundwater resources in the mining area. The information is necessary to determine the impact on groundwater in the area, especially with regard to the influence that drawdown of the groundwater surrounding an open pit or underground mine may have on surrounding water appropriations. Some of the information related to this resource may more reasonably be presented in tabular form, in conjunction with the map overlay.

Knowledge about the location of monitoring sites and water quality requirements is necessary for the commissioner to determine if conditions exist that would impact decisions related to the issuance of the permit to mine.

The soil inventory will be used to determine the integrity of foundation soil and to estimate the types and amounts of surface overburden that must be stockpiled. Published information is available but is limited; however much of the required information is collected by the mining operator in order to determine ore stripping ratios.

The locations of rare, endangered, and threatened species, identified as part of the environmental review process, will influence the siting of mine facilities and is therefore reasonable to require.

Because the siting of mining facilities on already disturbed locations as, opposed to the use of undisturbed sites, may result in less impact on natural resources, it has been determined that identification and evaluation of such locations is reasonable.

The locations of archeological or historic sites, identified as part of the environmental review process, will influence the siting of mine facilities and is therefore reasonable to require.

Buried structures and utilities may be affected by the siting of mine facilities, and are therefore reasonable to identify.

Because certain areas have been identified in the proposed rules as having restrictions on their use, relative to mining, it is reasonable to require their identification in the permit application.

The identification of surface and mineral ownership is required because Minn. Stat. 93.481, Subd. 1(d) requires publication of the ownership of the mining area, and use of an overlay is a reasonable way of presenting the data.

Subp. 6. The information required by this section, in conjunction with data presented on the maps required by the next subpart, will constitute a complete explanation of how mining and reclamation is proposed to occur. It is reasonable to require that information developed, as a result of mine waste characterization, be incorporated into the plans.

Information related to the operating life of the mine is necessary for the commissioner to determine the extent of the term of the permit.

Descriptions of how ores will be mined and processed, and how wastes will be stockpiled or otherwise disposed of, is necessary for an understanding of the scope and extent of the proposed operation and the associated reclamation efforts that will be necessary.

In order that the commissioner have a clear understanding of the rationale behind the selection of each reclamation procedure or technique, for which approval is being sought, it is reasonable to require a presentation of all engineering designs, methods, sequences, and schedules, and an appraisal of how these meet the reclamation requirements. Similarly, since reclamation research may lead to requests for variances from stated requirements, it is reasonable for the commissioner to have an understanding of any anticipated research.

Subp 7. As stated above, this section is necessary in order for the commissioner to have a clear understanding of the mining and reclamation activities proposed by the applicant. The use of maps and cross sections is required because based on the experience of the commissioner, in the performance of resource management responsibilities, it is the easiest and clearest way of presenting and analyzing much of the information that is required. Information normally found on U.S.G.S. quadrangle maps is required because this is basic information which will help relate these maps to the environmental setting maps (see 6132.1100 Subp. 5). A specific scale for the maps is not specified because it seems reasonable to allow each applicant to use a map scale that best fulfills the applicant's needs.

The depiction of the orebody is required because the commissioner must know where and what will be mined under the authorization of the permit to mine in order to impose and enforce a reasonable and effective reclamation plan.

Identification of potential vegetative reference areas is required to give the applicant an opportunity to suggest areas which might be utilized to measure the success of revegetation activities. This is reasonable because the applicant should have the best working knowledge of the surrounding area where suitable reference areas might exist, and of sites where the applicant may have successfully performed revegetation of disturbed lands.

The location of drainage patterns of waters contacting reactive mine wastes is necessary because such waters have the potential of adversely impacting natural resources and therefore may need to be collected and treated.

The depiction of the status of:

- 1) mining;
- 2) watershed and hydrogeologic modifications; and
- 3) reclamation

at each mining landform or facility, throughout the proposed life of the operation, is required to inform the commissioner of the sequencing of such activities. This information is necessary and reasonable in order for the commissioner to determine:

- 1) if reclamation will be proceeding in a progressive manner;
- 2) when compliance monitoring of reclamation activities, by the commissioner, must be conducted;

and

- 3) when mining areas can be released and utilized for other purposes.

Subp. 8. This section requires submittal of a detailed operating plan for the first year of the mining operation. The contents of the plan are identified in detail under 6132.1300 of this statement of need and reasonableness. It is reasonable and necessary to require a detailed description of the first year's mining activities, since it is this information that will allow the commissioner to determine if the permittee is in compliance with the overall mining and reclamation plan.

## 6132.1200 Financial Assurance

The overall rationale behind this section is that there should be no possibility that public funds will have to be expended to correct accidents, reclaim lands, or rectify adverse effects resulting from a mining operation. To ensure the protection of public funds, a part of these proposed rules require that financial assurances be provided by the permittee prior to permit issuance. This requirement is becoming a common practice in most states. In fact, financial assurance is a major component of proposed federal guidelines for the regulation of mine wastes.

Subpart 1. This section addresses the possibility of an operator being unable to perform reclamation obligations. Two circumstances have been identified that might lead to the commissioner actually becoming responsible for performing reclamation. In each case it is reasonable for the commissioner ensure that arrangements exist to provide necessary financial assurance. The first circumstance necessitating and need for financial assurance involves the costs of any unfulfilled reclamation obligations, remaining in the event that a permittee unexpectedly ceases operations or becomes insolvent. Obviously such arrangements would have to be in place prior to the cessation of the operations. Therefore, such financial assurance would have to be in place from the first day of operations until all reclamation is complete.

The second situation that might necessitate the requirement of financial assurance would involve costs associated with a substantial non-compliance with the permit to mine. In the event it is determined that a permit violation exists, those actions needed to bring the operation back into compliance with the permit will have to be identified and estimates made of their costs. In the event the commissioner determines that existing financial assurance coverage would be insufficient to both correct the violation and to perform reclamation, that might be necessitated by a cessation of operations, then the commissioner will have to order the operator to provide additional assurance until permit compliance is achieved.

Subp. 2. Since it is possible that a mining operation could cease activities even during initial start up stages, a cost estimate of any reclamation activities that would need to be conducted is reasonable for the commissioner to require.

Because the initial estimate may only be accurate for a short period, it is also reasonable to require its update, a process that should be repeated on a regular basis, to maintain a reasonable level of assurance. An annual update and adjustment is required to coincide with other reporting requirements of the permit application submitted in an annual report.

It is very likely that the commissioner will not have the required staff, equipment, or management ability to perform the actual reclamation work. Therefore the cost estimates must consider that the commissioner will have to contract with others to perform the reclamation activities. The cost estimate must therefore reflect this, and also reflect administrative costs as they exist at the time of estimate preparation. It is additionally reasonable to require documentation of the source of estimated costs.

Because it may be necessary for the commissioner to react quickly to provided needed reclamation, it is reasonable to require that the financial assurance be liquid. Delays caused by waiting for the sale of assets, combined with inflating costs may jeopardize reclamation success.

Subp. 3. In the event that a permit violation occurs and the commissioner determines that the financial assurance that exists for the operation is not capable of covering all appropriate costs, it is reasonable that the commissioner order the preparation of a cost estimate of any activities necessary to bring the operation into compliance.

In the event that corrective action is extensive, taking a considerable time to complete, the initial estimate may only be accurate for a short period, it is therefore reasonable to require its update, a process that should be repeated on a regular basis, to maintain a reasonable level of assurance. An annual update is required to coincide with other reporting requirements of the permit application submitted in an annual report.

It is very likely that the commissioner will not have the required staff, equipment, or management ability to perform the actual corrective action work. Therefore the cost estimates must consider that the commissioner will have to contract with others to perform the activities. The cost estimate must therefore reflect this, and also reflect salaries and overhead costs as they exist at the time of estimate preparation. It is additionally reasonable to require documentation of the source of estimated costs.

Subp. 4. Because of the importance associated with ensuring that funding will always be available in the proper amount, this section is necessary to ensure:

- 1) that appropriate initial evaluation and annual updates of cost estimates occur;
- 2) that adequate assurance mechanisms are established;
- 3) that initial mechanisms, or their replacements, remain in existence until all reclamation is completed; and
- 4) that the assurances will be continually maintain even in the event that the permittee changes.

It is anticipated that the cost estimate information, submitted by the operator, may be beyond the capability of the commissioner to evaluate without the aide of experts in the fields of construction, building demolition, waste disposal, and several other specialized areas where accurate, up to date knowledge of costs, is only available through actual, day in and day out, hands on, working experience. It is therefore reasonable for the commissioner to seek such expertise. Because access to such expertise will expedite the commissioner's decisions, regarding acceptability of the operator's estimates, it is not anticipated that the operator will object to paying reasonable costs of such an evaluation.

This section requires the maintenance of continuous financial assurance, acceptable to the commissioner, in the amount equal to the estimated cost of implementing the contingency reclamation plan. It is reasonable to require that arrangements for financial assurance, in the amount equal to the initial contingency reclamation cost estimate, occur prior to permit approval. It is similarly reasonable to require that adjustments, corresponding to annual changes in the contingency reclamation cost estimates be made either upward or downward as necessary.

This section also requires the establishment and maintenance of financial assurance, acceptable to the commissioner, in the amount equal to the estimated cost of correcting a situation that has resulted in a substantial non-compliance with the permit to mine. It is reasonable to require that arrangements for financial assurance, in the amount equal to the initial corrective action cost estimate, be made when plans to correct the situation are approved by the commissioner. It is similarly reasonable to require that adjustments, corresponding to annual changes in the corrective action cost estimates be made either upward or downward as necessary.

This section contemplates that the permittee may at some time during the operation wish to cancel certain financial assurance mechanisms and replace these with others. This section allows this based upon approval of the commissioner.

To ensure that financial assurance is continually maintained, it is reasonable to require that alternative assurance, acceptable to the commissioner, be acquired prior to the point when an existing provider cancels the permittee's financial assurance mechanism.

Because the statute recognized the possibility that the permittee may change throughout the life of a mining operation, the commissioner was given the ability to approve assignment of the permit. It is reasonable that the commissioner's approval of an assignment be contingent upon the continual maintenance of financial assurance, to ensure that public funds will not have to be spent if the assignee is unable to perform.

At some point in time it is anticipated that the operation will cease. If all reclamation requirements have been met and no post closure maintenance is required, the permittee will be released from responsibility. At that point it is excepted that financial assurance will no longer be necessary. This section therefore describes the circumstances under which maintenance of the assurance will cease.

**Subp. 5. This section contains a list of factors which if met will constitute an acceptable financial assurance mechanism.**

Because the commissioner may be responsible for conducting reclamation or corrective action, in the event the permittee is unable or unwilling to do so, it is reasonable for the commissioner to require that the assurance be large enough to cover the costs.

It is also reasonable to require that the funds be available to the commissioner when needed, and not necessitate burdensome procedural or legal remedies to acquire.

The assurance must be binding, otherwise it could not be considered adequate.

Since one of the main conditions that could lead to a permittee being unable to perform reclamation or corrective action, is bankruptcy. Therefore it is reasonable to require that the financial assurance be available especially if bankruptcy should occur.

It is anticipated that financial assurance proposals, submitted by the operator, may be beyond the capability of the commissioner to evaluate without the aide of experts in the fields of insurance, banking, surety bonding, or any of several other specialized areas where accurate, up to date knowledge is only available through actual, day in and day out, hands on, working experience. It is therefore reasonable for the commissioner to seek such expertise. Because access to such expertise will expedite the commissioner's decisions, regarding acceptability of the operator's financial assurance, it is not anticipated that the operator will object to paying reasonable costs of such an evaluation.

**Subp. 6. This section identifies the general procedures the commissioner will follow in the event it is determined that the assurance may need to be forfeited. Specific detailed language defining the grounds for what determines the forfeiture, and the exact procedures for transferring the funds to the commissioner, will be contained in great detail in the documents that create the financial assurance. The purpose of this section is to provide a final means of correcting a situation that could lead to forfeiture, prior to the actual forfeiture. It is reasonable to try to resolve the problem before the financial assurance is actually forfeited.**

The process of initiating a forfeiture will begin with a warning notice of an impending forfeiture, with a description of what might be done to correct the situation.

Whether the actual forfeiture occurs will depend on whether the permittee takes corrective measures or not. If appropriate corrective actions are not taken in a timely manner the commissioner will take actions necessary to forfeit the financial assurance.

**Subp. 7. In the event of failure by the permittee to acquire or to maintain financial assurance in an appropriate manner, it is reasonable for the commissioner to have the ability to take other actions, provided by statute, to help stop further non-compliance.**

#### 6132.1300 Annual Report

**Subpart 1. The requirements of this section, which will be updated each year throughout the life of the operation, are necessary to provide specific details of the exact activities that occurred during the preceding 12 months and those that will be conducted during the upcoming year. Because of the dynamic nature of mining it is reasonable to assume that at some time throughout the life of the operation there might be the necessity to deviate from the plans developed in the permit application. The annual update will allow both the permittee and the commissioner to evaluate whether there may be deviations from the permitted mining and reclamation plan. Such an evaluation is required to determine whether amendments to the permit to mine are necessary, thereby ensuring that permit conditions continue to be current and reflect changes in the mining plan. Duplicate copies are necessary for both the St. Paul and the Hibbing offices' uses. March 31st**



was selected as the due date, to ensure that the information and plans could be reviewed before the beginning of each upcoming spring reclamation planting season.

Subp 2. This section requires the permittee to provide an auditing of the mining and reclamation activities performed by the operator. The information supplied in this report will be used to monitor compliance with the rules, and the permit to mine, and is therefore necessary and reasonable to request. The specific information requirements parallel those of the mining and reclamation plans, and associated maps, provided in the permit application. The rationale for the requirements is the same as presented elsewhere in this statement, describing the need for the mining and reclamation plan.

Subp. 3. This section will provide the commissioner with detailed specifications on how mining and reclamation is planned to be conducted during the upcoming year. This information is reasonable to require to ensure that the commissioner will be made aware of any proposed modifications, dictated by changing technology, environmental conditions, economics, or other factors. The specific information requirements parallel those of the mining and reclamation plans, and associated maps, provided in the permit application. The rationale for the requirements is the same as presented elsewhere in this statement, describing the need for the mining and reclamation plan.

Subp. 4. Section 6132.1200 of the proposed rule, requires that there be no possibility of public funds being expended to reclaim mine lands. The purpose of this section is to establish the basis from which to estimate the size of the financial assurance that will be needed. The contingency reclamation plan identifies all reclamation activities that would need to be conducted at a mine site, in the event that the mining operation were to become insolvent, or is forced to cease activities. The plan must be periodically updated to compensate for the opening of new areas and the reclamation of completed sites. Because Minnesota Statutes, section 93.49 requires the commissioner to annually review the extent of each operator's financial assurance, it is reasonable that the contingency plan also be annually reviewed.

Subp. 5. Section 6132.1200 of the proposed rule, requires that there be no possibility of public funds being expended to take corrective actions that may be necessary to bring an operation into compliance with the rules. The purpose of this section is to establish the basis from which to estimate the size of the financial assurance that must be maintained. The corrective action plan identifies the status of activities that may be required, in order to reestablish compliance with the permit to mine, in the event that a violation occurs. Because Minnesota Statutes, section 93.49 requires the commissioner to annually review the extent of each operator's financial assurance, it is reasonable that the corrective action plan also be annually reviewed.

Subp. 6. Maps are required to help supplement the information presented in accordance with the preceding parts of this section. Maps often provide the most clear method of presenting such data and are therefore reasonable to require.

#### 6132.1400 Request of Release from Permit

Subpart 1. This section requires information which will be utilized by the commissioner in determining whether the permittee has complied with the requirements of these rules and the permit to mine, thereby allowing the commissioner to determine whether the permittee should be released, from all, or a portion of the mining area.

Subp. 2. Since this section provides a method for the permittee to be released from responsibility, it is reasonable to require that the permittee demonstrate that all requirements of the reclamation standards section of the rules and of the permit to mine have been met.

Ownership of the mining area and any remaining structures is required, in order to facilitate contact with the owner regarding the owner's understanding and acceptance of liability responsibilities associated with the area. It has been the experience of the commissioner, with mined lands on the iron range, that when

management responsibilities are not well understood, lands are often either not properly maintained or are allowed to become tax forfeited, thereby shifting the responsibility to the public. Because one of the reasons for requiring reclamation, is to prevent the public from having to accept liability for abandoned mined lands, it is reasonable and necessary to ensure that the persons taking on that responsibility, after mining ceases, fully understand their responsibilities.

Because the possibility that post closure maintenance may be necessary it is reasonable that the location, type, and schedule of maintenance be identified.

Since the proposed rules do not allow the release of areas requiring post closure maintenance, it is necessary that a complete discussion concerning the management of areas, on which such maintenance activities are required, be included in the request for release. This is reasonable, in order to eliminate the possibility of misunderstandings concerning post closure maintenance responsibilities.

To minimize the possibility that subsequent non-mining land use activities could adversely affect reclamation efforts, the rules require that notice be given to future land owners. It is reasonable that such a notice, stating that the lands have been mined and subsequently reclaimed, be affixed to the land records permanently maintained by the county recorder.

Finally, this section requires the submission of a map, to clearly show how the area has been reclaimed. This map, depicting the specific information detailed in this section, presents the as-built record of the mining and reclamation that was conducted, and is therefore a necessary and reasonable document to require in order to have a complete record of the mining and reclamation activities that occurred on the mine site.

## RECLAMATION STANDARDS

### 6132.2000 SITING

Subpart 1. This section expresses the policy of these rules, that the process of site selection shall be utilized to minimize impacts of mining. It is reasonable that with judicious site selection environmental impacts from mining can be reduced. Some who have commented on the draft of the proposed rules have suggested that when mine facilities are proposed to be located on sites possessing unusual foundation conditions such as floodplains, active seismic zones, Karst topography, and wetlands, that the rules should merely exclude that site from use for mining purposes. The commissioner has determined that this suggestion is based mainly on a reasonable concern of the commenters, regarding the storage of material having the potential for creating water quality problems. The siting section, however is designed to address all mine siting, not just those facilities that might contain reactive mine waste. As a result, the commissioner is not proposing such a prohibition. Instead the commissioner, who shares the concerns of the commenters with regard to reactive waste storage, has determined that the General Siting Criteria, of subpart 5, in conjunction with the individual requirements of appropriate engineering design, as contained in the sections that deal with: Reactive Mine Waste; Storage Pile Design; Tailings Basins; and Heap and Dump Leaching Facilities, are adequate to regulate construction of mine facilities that might be located on areas possessing unusual foundation conditions.

Subp. 2. This section contains a listing of areas in which no mining shall be conducted unless authorized by statute. In these areas, that have been formally designated by state or federal legislative actions, mining is prohibited because such activities are either specifically prohibited by the enabling legislation or the legislative directive on how the lands are to be used and managed is so restrictive that the disruptive nature of mining is incompatible. Moreover, the reclamation act directs the commissioner to identify areas or types of areas which cannot be satisfactorily reclaimed under the rules, and further, prohibits the commissioner from issuing permits to mine such unreclaimable areas.

Minnesota statute, section 84.523 subd. 3, prohibits mining within the BWCA except in the event of a national emergency declared by congress and approved by the legislature.

Minnesota statute, section 84B.03, subd. 1, prohibits mining within Voyageurs National Park.

Minnesota statute, section 86A.05, subd. 6, prohibits the use of minerals within state wilderness areas.

Federally designated wilderness areas are managed in a manner that would preclude the development of mining.

Minnesota statute, section 86A.05, subd. 5, directs that state scientific and natural areas be specifically managed for research, educational, or interpretive purposes and be protected from unnatural influences. On the basis of this directive it is reasonable to prohibit mining.

Minnesota statute, section 84.035 establishes a special type of scientific and natural area, called peatland scientific and natural area. The statute requires that, if as a result of metallic mineral removal, there will be a significant alteration or modification of the peatland water levels or flows, peatland water chemistry, plant or animal species or communities, or other natural features of the peatland scientific and natural area, all restrictions otherwise applicable to scientific and natural areas shall apply. On the basis of this directive, the commissioner could allow the siting of a mine, within a peatland scientific and natural area, only if the ore removal will not significantly impact the peatland. Minnesota statute, section 84.035 also provides for relaxation of restrictions in the event of a national emergency declared by Congress.

Minnesota statute, section 103G.223 requires the commissioner to identify a specific type of wetland, called a calcareous fen, that may not be drained, filled, or otherwise degraded, wholly or partially, by any activity, unless the commissioner, under an approved management plan, decides some alteration is necessary.

State parks are major recreational units, managed by the commissioner. The statutory directive, for park management, requires physical development within the park to be limited to facilities that complement natural features or promote use and enjoyment of recreational resources. Except for those parks developed because of their relation to mining, the siting of mining facilities within a state park is not in keeping with the stated legislative intent.

Subp. 3. This section contains a list of areas that either possess important natural and human resource values, or that surround those specially designated areas listed in subpart 2. Each of the areas listed in this subpart, is likely to involve the presence of people, therefore specified zones of non-disturbance between such areas and mining activities are required. These zones are meant to act merely as separations, serving as a buffer between inconsistent land uses, and reducing the intrusive effects of mining onto adjacent lands. The commissioner has concluded that there is no way to completely eliminate all evidence of the existence of mining, but that the separation of non-compatible uses, by means of the stated separations, is a reasonable alternative. Some commenters on the draft of the proposed rules have alleged that the distances required by the proposed rules would not be sufficient to meet air, water, and noise standards. Those standards, which are regulated by others, are beyond the authority of the commissioner. However, if it can be demonstrated that the only means of achieving such standards is by the use of separations greater than are proposed by this subpart, then the commissioner would support the separations required by such other regulators.

The "Minnesota Department of Natural Resources B.W.C.A.W. Mineral Management Corridor" was selected for inclusion in this subpart because it is an area that was designed by the Department to provide a reasonable separation between the BWCAW and lands upon which the state is willing to offer mineral leases. This corridor, in addition to providing separations for increased public health and safety and a desired land use compatibility, was also designed to prevent the direct overland flow of runoff water, that forms within the corridor area, from entering the BWCAW. This last feature of the corridor provides increased environmental protection to the waters of the BWCAW. It is reasonable to include this corridor because it provides the type of protection to the BWCAW that this section of the rules was designed to provide.

Subitems B. through G. of this subpart contain the remainder of the specially designated areas listed in subpart 2. The 1/4 mile distance from these areas, forming the no surface disturbance zone, was selected to be consistent with existing management areas adjoining other similarly important natural resources already afforded state and federal protection, most notably the national and state wild, scenic, and recreational rivers and their land use management zones. A 1/4 mile separation around peatland scientific and natural areas was not included within this section. Instead a different separation, as is listed in 6132.2000 Subp. 4., item C. will be required. The restrictions established for that zone of separation are more consistent with the provisions of Minnesota Statutes, section 84.035, which in some site specific cases (as are specified by 6132.2000 Subp. 2., item F.) could allow mining and some surface construction within the actual peatland scientific and natural area.

Historic sites, both national and state designated, have been identified as requiring the protection afforded by this subpart. It is reasonable that such sites will be visited by the public and therefore safety and compatibility are important factors.

As already mentioned state and national wild, scenic, and recreational rivers and their associated management areas are the types of natural resources for which this section was designed. The public is encouraged, by the designation, to utilize these sites, therefore public protection takes on added importance. It is reasonable to afford the same type of protection to that portion of the Upper Mississippi River for which the described management plan has been developed, since in accordance with Minnesota statute 93.47 Subd. 4., the rules shall conform to local land use planning.

Local units of government have also organized to produce a plan for how the North Shore of Lake Superior will be regulated. It is reasonable, that these rules acknowledge the public process used to develop this plan, and further that the proposed rules afford to the public who utilize the North Shore, the protections offered

by this subpart.

This section also includes areas characterized by substantial human activity such as commercial and residential areas, public transportation networks, and cemeteries. It is reasonable, because of the extreme disruptive nature of mining, to separate surface related mining activities, from the uses listed in this subitem. The distances selected are based on several factors, including existing experience along the iron range, the use of increased security around mining facilities located in close proximity to populated areas, and the numerous reclamation standards including: Buffers, Vegetation, Dust Suppression, Air Overpressure and Ground Vibrations from Blasting, Subsidence, and the various engineering requirements for specific mine facility designs that have been developed to address impacts on the public.

Subp. 4. This section contains a list of areas in which mining is prohibited, except when no feasible and prudent alternative to mining in such areas exists. The rationale for protecting these areas is that they possess high resource value, which should be protected from inconsistent development. However, from a natural resource standpoint, they are not as significant or rare as those areas listed under "Mining excluded" or "Surface disturbance prohibited," and as such, the prohibition of mining within these areas is not absolute. It is reasonable for the commissioner to review each proposal affecting such areas and base approval of the site on the extent of the impacts that will result. Further it is reasonable for the commissioner to require compensation for any resources lost.

Subp. 5. This section is included to require that those portions of a mining operation for which alternative locations exist, be sited in locations so as to minimize, to the extent that it is practical to do so, certain adverse environmental effects and possible injury and damage, particularly on certain areas identified as having special resource value. One method of achieving this is to site portions of a mining operation in areas previously used for mining purposes. If all other impacts are equal, it is more reasonable to redisturb a previously mined area than it is to disturb a new area. It is prudent, when a choice exists, to locate mine facilities where adverse environmental impacts and potential injury will be minimized.

Subp. 6. This section is included to require that when it is necessary to conduct mining operations that will result in the draining or filling of wetlands, regulated by the Wetland Conservation Act of 1991, that a replacement plan must first be approved pursuant to part 6132.5300, and that such replacement plan must consider measures that avoid and mitigate the drainage or filling. This requirement is necessary in order to comply with Minn. Stat., 103G.2242.

#### 6132.2100 BUFFERS

Subpart 1. A mining operation is essentially a land use which is often incompatible with other, non-mining types of land use. The incompatibility is attributable in large part to the scale on which a mining operation is conducted. Often, thousands of tons of ore is mined per day, requiring the removal, transport, and deposition of even greater amounts of waste material. The noise generated as a result of material movement is substantial. The landforms created as a result of disposal or storage of the waste material can be uncharacteristic in size and form, relative to the surrounding natural topography. the physical plant necessary to process the mined materials generally consists of various buildings which are of enormous size, even when compared to other industrial facilities. The purpose of adopting standards relating to the construction of buffers, as the goal statement describes, is to reduce or eliminate the obtrusive and nuisance-type impacts a mining operation can often have on surrounding land uses.

Subp. 2. Natural topography and vegetation, or a vegetated constructed landform similar to that occurring in nature, may be used as buffers. The requirement to use natural terrain or vegetated berms is required in order that the mining area will blend in with the surrounding landscape, thereby minimizing its visual and aesthetic impacts on adjacent areas. The use of natural topography and vegetation is preferable, because it requires no disturbance of land and represents no cost to the operator.

Initiation of the buffering is required prior to beginning operations. This is especially important since it may take some time for planted vegetation to become fully effective. The goals would not be served if mining preceded initiation of necessary buffering. Construction of buffers within a separation zone required by 6132.2000 Subp. 3. M. (to be maintained between mining surface disturbances and commercial and residential areas, cemeteries, and transportation networks) is allowed because such buffer construction is designed to resemble the natural landscape, and there is no need, from an aesthetic standpoint to maintain a setback between such buffer and the adjacent land use area.

#### 6132.2200 REACTIVE MINE WASTE

Subpart 1. As stated in its definition, reactive mine waste is material that has been shown through waste characterization studies to release substances that adversely impact natural resources. It is reasonable that the commissioner, who is responsible for managing natural resources, has as a goal, the prevention of such impacts.

Subp. 2. A. This section requires that a continuous program of waste characterization be conducted before, and during all phases of mining in order to identify all material that might have the potential of adversely impacting resources. This requirement is reasonable because nonferrous mineralized formations can have erratic mineralization patterns that can vary from one area to another. As a result of this situation, on-going analysis of the character of wastes being produced and stored on the surface is a necessity.

Subp. 2. B. This section requires that any facility constructed to contain reactive mine wastes be designed by professional engineers registered in Minnesota. This requirement is necessary and reasonable since it limits the designing to those persons whom the state has determined, through examination, are capable of performing engineering designs. The further requirements that the person be proficient in the design, construction, operation, and reclamation of reactive mine waste storage facilities, further limits the number of designers that would be acceptable to the commissioner. These requirements will ensure that only the most competent people will be designing these critical structures in Minnesota.

This section provides two requirements for dealing with reactive mine waste. To meet the first requirement, measures would have to be taken to prevent substances, that adversely impact natural resources, from forming within the mine waste. If no such substances are allowed to form, it can reasonably be expected that no impact will occur. In the event it is not possible to prevent the formation of unacceptable substances, a design must be presented that: 1) prevents substantially all water from contacting unacceptable substances within the mine waste; and 2) provides for the collection and treatment of water that is contaminated, because it can not be kept away. Both these methods have been used in the mining industry, in various degrees, to control adverse impacts on natural resources, and are therefore reasonable to require. Another method, that consists of merely collecting contact water and treating it in order to meet water quality discharge standards, without a substantial effort to minimize the amount of water contacting the waste, has been rejected. While this method may provide acceptable results during active operations, when the permittee is present, the potential for longterm failure of such a system, when the operator is no longer available to correct the situation, is too great. Because of the necessity to provide a permanent solution to the water quality concerns related to reactive mine wastes, the two required methods of storing these wastes are the only reasonable methods currently available.

Subp. 2. C. This section contains a list of design specifications that the commissioner has determined must be provided in order to assess the adequacy of the design. It is reasonable for the commissioner to require descriptions of all materials that will be used, and explanations of any special construction or operating practices that must be employed, since this information is essential to determining if the plan can be approved. The commissioner is also requiring the designer to maintain a presence beyond design preparation, by mandating scheduled inspections to be conducted by the designer throughout the permitted life of the facility, in order to ensure continued design compliance. This requirement is essential, since the designer will be most familiar with the rationale for the particular design, and should be able to assess

whether the facility is performing successfully. To further ensure compliance, the commissioner is requiring that the designer propose monitoring locations at which information can be collected to accurately measure success of the facility.

Subp. 2. D. This section recognizes that there may be parts of these proposed rules, that if implemented at a particular reactive mine waste facility, may not be completely compatible with the design. This rule merely states that, if this were the case, the design rather than the incompatible rule shall be given precedence.

#### 6132.2300 OVERBURDEN PORTION OF PITWALLS

Subpart 1. When orebodies are not deeply buried, the usual means of ore removal is by surface mining methods. This type of mining is safer for the mine workers, and is usually more cost effective, than conducting underground mining. However, it does leave large open pits, that because of their size and depth create safety concerns equal only to the most rugged and hazardous of natural landforms. The purpose of this section is to require that the near vertical walls, in the upper portion of such a pit (that occupied by the surface overburden), are sloped to a moderate angle, as early in the operation as possible. In addition to providing a surface that can be readily stabilized, this requirement provides a zone, that through selective vegetation, and fencing or signing, will help provide a warning to those entering the area.

Subp. 2. A. This section contains a series of requirements that more or less create a recipe for an acceptable pitwall slope. The specific heights, widths, and angles listed, are the outcome of studies and testimony presented at the public hearings on the iron ore and taconite reclamation rules that were conducted in 1979. However the most persuasive reason for the proposed rule is the experience of the department, gained as a result of administering the iron ore and taconite reclamation program over the last 12 years. The pitwall sloping that has been conducted at iron mines over the last twelve years has adequately met reclamation expectations.

Subp. 2. B. Because of the extreme diversity of surface overburden, it is possible that other sloping specifications could provide acceptable reclamation. This requirement reasonably allows the mine operators to explore other means, while providing the commissioner with the information necessary to make future decisions.

#### 6132.2400 STORAGE PILE DESIGN

Subpart 1. A mining operation entails the substantial disruption of the physical environment of the mining area. In addition to the removal and movement of huge quantities of materials, there is construction of large landforms, referred to as "dumps," "stockpiles," or as in these rules, "storage piles." These structures contain the waste soil and rock encountered during the ore removal process, and those by-products of the ore beneficiating process (such as leached ore) not normally disposed of in a tailings basin. These landforms can often occupy areas as large as the mine opening itself. With any such land disturbance, the potential for environmental impacts and land use conflicts is high. The surface hydrology and drainage patterns of the mining area are often significantly disrupted. Erodable surfaces are created, leading to both air and water pollution. The terrain is drastically modified, and landforms of a scale and form uncharacteristic of the surrounding natural topography are created. This section of the rules gives direction on the factors that should be incorporated into storage pile design and construction, in order to minimize effects on natural resources, and facilitate effective reclamation of these structures.

Subp. 2. A. This section addresses specific standards that are to be applied to storage piles, without regard as to whether they will contain broken rock or surface overburden. If the structure will be placed upon areas with foundation characteristics that might adversely affect an improperly designed structure, this rule requires that a professional engineer registered in Minnesota evaluate the foundation and design the structure. The requirement that the storage pile be designed by a registered professional engineer is reasonable since it

limits the designing to those persons whom the state has determined, through examination, are capable of performing engineering designs. The further requirements that the person be proficient in the design, construction, operation, and reclamation of facilities on unstable foundations, further limits the number of designers that would be acceptable to the commissioner. These requirements will ensure that storage piles will be appropriately designed.

The rules also require the use of techniques commonly applied at construction sites to limit erosion and sedimentation. Such practices have been identified as "best management practices" by agencies such as the U. S. Agriculture Department's, Soil Conservation Service, for use on drastically disturbed areas. Because the techniques have been found to be effective and economical to incorporate into an operation, they are reasonable to require for erosion control.

This subpart recognizes the experiences observed by the department at mine sites and other drastically disturbed areas in Minnesota, where in spite of the creation of well designed and constructed artificial drainage structures, nature often develops its own means of providing drainage. When this inevitably occurs this rule requires that such flow paths be stabilized.

Finally, this section cautions that storage piles containing reactive mines wastes may require other design criteria to be developed in accordance with the provisions of 6132.2200.

Subp. 2. B. This section contains a series of requirements that more or less create a recipe for acceptable rock storage pile construction. The specific heights, widths, and angles listed, were selected based on the outcome of studies and testimony presented at the public hearings on the iron ore and taconite reclamation rules, conducted in 1979. Those rules specifically addressed stockpiled materials that are expected to be similar to the wastes that will be encountered at nonferrous metallic mining operations. Because of this similarity it is reasonable to again apply these rules. Additionally, the most persuasive support for the proposed rule is the experience of the department, gained as a result of administering the iron ore and taconite reclamation program over the last 12 years. The specifications for constructing rock stockpiles, have been demonstrated in the field to be reasonably attainable and to provide acceptable reclamation.

Subp. 2. C. This section deals with requirements specifically associated with surface overburden. The first part of the rule requires that if surface overburden is generated near completed benches and tops of rock, lean ore, or leached ore stockpiles, such surface overburden shall be placed upon those locations. The rationale for this requirement is that the surface overburden has been shown to enhance the ability of these locations to support the vegetation that is required to be established there. However, it has also been demonstrated to the commissioner that on certain types of rock, the vegetation requirements of these rules can be met with very little, and in some cases no application of surface overburden. Therefore this section allows the consideration of economics in determining whether the overburden must be placed upon rock piles, and does not include the mandate for a specific depth of surface overburden.

This section also contains a series of requirements that more or less create a recipe for acceptable surface overburden pile construction. The specific heights, widths, and angles listed, were selected based on the outcome of studies and testimony presented at the public hearings on the iron ore and taconite reclamation rules, conducted in 1979. Those rules specifically addressed surface overburden that is expected to be similar to that encountered at nonferrous metallic mining operations. Because of this similarity it is reasonable to again apply these same rules. Additionally, the most persuasive support for the proposed rule is the experience of the department, gained as a result of administering the iron ore and taconite reclamation program over the last 12 years. The specifications for constructing surface overburden piles, have been demonstrated in the field to be reasonably attainable and to provide acceptable reclamation.

Subp. 2. D. This section prohibits the covering of surface overburden with material that would inhibit the establishment of vegetation, or the future utilization of the surface overburden storage pile from future subsequent land uses.



Subp. 2. E. Because of the extreme diversity in the types of mine wastes that may be contained within a storage pile, it is possible that specifications other than those included in this section could provide acceptable reclamation. This requirement allows the mine operator to explore other means of designing and constructing storage piles, while providing the commissioner with the information necessary to make future decisions.

#### 6132.2500 TAILINGS BASINS

Subpart 1. Tailings are produced during the process of ore beneficiation. The ore is usually ground into the consistency of a fine sand, or powder, and the economic mineral portion is separated from the uneconomic mineral portion. The economic minerals are usually referred to as concentrate, while the remainder is called tailings. During the grinding of the ore, water is added to the process, to control dust, and to form a slurry that acts as a transport media to move the ground ore through the beneficiating process.

Most often the tailings are very fine and must be disposed of within a special disposal area called a tailings basin. The tailings basin not only provides a place for storing the waste, but also provides a quiescent location for clarifying the tailings water, so it can be recirculated back to the beneficiating plant for subsequent use. Sometimes a portion of the tailings can be coarse enough to be transported by mechanical means, such as by truck or conveyor belt. These tailings are sometimes stockpiled in storage piles, similar to the waste rock, lean ore, and leached ore regulated in accordance with 6132.2400. However, most often these coarse tailings are used to construct dams to form the tailings basin within which the fine tailings are stored.

With nonferrous mining, the portion of the ore that will become tailings usually far exceeds the volume of concentrate produced. The result is that the tailings basin often becomes the largest structure associated with a mining area, sometimes covering square miles of area. This section of the rules gives direction on the factors that should be incorporated into tailings basin design and construction, in order to facilitate effective reclamation.

Subp. 2. A. Because of the immense size of the tailings basin and the inherent risks associated with impounding great volumes of water and fine solids, the commissioner has determined that it is reasonable and necessary to require that tailings basin structures be designed and constructed only under the supervision of qualified experts. This rule therefore, requires that a professional engineer registered in Minnesota design tailings basins. This requirement is reasonable since it limits the designing to those persons whom the state has determined, through examination, are capable of performing engineering designs. The further requirements that the person be proficient in the design, construction, operation, and reclamation of tailings basins, further limits the number of designers that would be acceptable to the commissioner. These requirements will ensure that only the most competent people will be designing these critical structures in Minnesota.

Subp. 2. B. This section contains a list of design specifications that the commissioner has determined must be provided in order to ensure reclamation, and assess the adequacy of the design. The topographic, hydrologic, and foundation conditions at the site of the tailings basin will essentially dictate the specific techniques and practices that will be incorporated into the ultimate design. It is therefore reasonable for the commissioner to require a submission of the rationale for site selection in order to make informed decisions regarding design approval.

Similarly, it is also reasonable for the commissioner to require descriptions of all materials that will be used, and explanations of any special construction or operating practices that must be employed. This information is essential to determining if the plan can be approved, and will be necessary for the commissioner to have, in order to adequately inspected the structure to ensure compliance.

Because the tailings basin forms an impoundment of water and tailings, it is imperative that an appropriate

volume be maintained (often characterized by the "freeboard," a height between the free water elevation and the elevation of the top of the dam) within the basin, to hold waters that could result from excessive precipitation events. Some reviewers of the draft of these proposed rules have suggested that a specific design precipitation event, called the "Probable Maximum Precipitation" (PMP) event, be utilized in establishing the required freeboard for the basin. In most cases, this design event will be the most severe and therefore the best selection, however there may be other events such as extended wet periods that may present even more concern, especially if there are restrictions on the discharge of water from the basin. It is reasonable that the commissioner avoid establishing a specific design precipitation event through rule, but to judge the adequacy of the the tailings basin design based on the specific conditions of the site, and the results of applying several hydrologic evaluations to the ultimate design.

Because of the importance of maintaining the structure in a safe condition it is necessary and reasonable that the designer be required to suggest the most effective means of providing reclamation of the tailings basin and the tailings dams.

The commissioner is also requiring the designer to maintain a presence beyond design preparation, by mandating scheduled inspections, to be conducted by the designer, throughout the permitted life of the facility, to ensure continued design compliance. This requirement is essential, since the designer will be most familiar with the rationale for the particular design, and should be able to assess whether the facility is performing successfully. To further ensure compliance, the commissioner is requiring that the designer propose monitoring locations at which information can be collected to accurately measure success of the facility.

This section also cautions that tailings basins containing reactive mines wastes may require other design criteria to be developed in accordance with the provisions of 6132.2200.

Subp. 2. C. This section recognizes that tailings basins are often segmented, with individual segments operated intermittantly. While segmenting the basin can be beneficial in providing progressive reclamation, it can also provide large areas of open tailings during periods of inactivity. Such areas can be sources of dust, therefore this rule is necessary to ensure that the generation of dust is controlled. The practices that are proposed for use are those currently practiced at other mine sites in Minnesota.

## 6132.2600 HEAP AND DUMP LEACHING FACILITIES

Subpart 1. Leaching is a hydrometallurgical process that ionizes metals contained within certain minerals. Once the leaching solutions, have liberated the metal ions from the mineral matrix, they transport the ions way from the remaining mineral constituents. The metallized leaching solutions are collected in ponds, then pumped to beneficiating plants where the metallic ions are eventually converted into solid metal.

The process of leaching metals from mineralized material has been conducted for decades. Initially the process was confined to leaching metals from ore concentrates. This practice is still conducted within ore beneficiating and treatment facilities, at many locations. However, the leaching of unprocessed ore, piled into "Heaps" or "Dumps," placed upon the surface, is becoming an increasingly popular method of metal extraction.

The terms heap leaching and dump leaching have at times been used almost interchangeably. The main difference seems to be, that with heap leaching the material to be treated was intentionally placed in a particular location for treatment, whereas dump leaching has often been conducted on stockpiled material that had earlier been considered uneconomic to process, and the leaching was performed more as an afterthought.

During the late 1970's techniques for processing low grade gold ore, using heap leaching techniques, were developed by the U. S. Bureau of Mines. This technology has now been applied at hundreds of locations

worldwide, making the term heap leaching almost synonymous with gold ore processing. Both heap and dump leaching are however also utilized in the production of base metals. The leaching solutions vary depending on the metallic content of the ore: acids being used to produce base metals; and a variety of chemical solutions (but most commonly cyanide), for precious metals.

For the purpose of these rules, no differentiation has been made between heap and dump leaching because the impacts of either on the environment, if not properly controlled, would be devastating. This section of the rules gives direction on the factors that should be incorporated into heap and dump leaching designs and construction, in order to facilitate effective reclamation.

Subp. 2. A. Because heap and dump leaching requires the coordination of dams, ditches, high steeply sloped saturated stockpiles, impoundments of toxic and dangerous chemical solutions, pipes, pumps, and various pieces of highly technical equipment, all of which must be constructed atop an impermeable foundation to prevent spills from being released, the commissioner has determined that it is reasonable to require that heap and dump leaching facilities be designed and constructed only under the supervision of qualified experts. This rule therefore, requires that a professional engineer registered in Minnesota design heap and dump leaching facilities. This requirement is reasonable since it limits the designing to those persons whom the state has determined, through examination, are capable of performing engineering designs. The requirements that the person be proficient in the design, construction, operation, and reclamation of heap and dump leaching facilities, further limits the number of designers that would be acceptable to the commissioner. These requirements will ensure that only the most competent people will be designing these critical structures in Minnesota.

Subp. 2. B. This section contains a list of design specifications that the commissioner has determined must be provided in order to ensure reclamation and assess the adequacy of the design. The topographic, hydrologic, and foundation conditions at the site of a heap and dump leaching facility will essentially dictate the specific techniques and practices that will be incorporated into the ultimate design. It is therefore reasonable for the commissioner to require a submission of the rationale for site selection in order to make informed decisions regarding design approval.

The chemicals that make up the leaching solutions can be toxic and highly corrosive. Their impact on the environment could be devastating if they were released in an uncontrolled and untreated manner. This rule is therefore reasonable because it demands that techniques and practices be incorporated within the facility design to safely handle and appropriately dispose of the leaching solutions.

Heap and dump leaching facilities are usually designed with an impermeable membrane, often a synthetic (plastic) sheet, located directly beneath the mineralized ore that is being leached. The main purpose of this membrane is to facilitate an efficient and rapid collection of the leaching solutions that contain the metallic ions. A secondary purpose of the membrane is to help, along with other parts of the foundation, to keep the leaching solutions from leaving the facility. However, synthetic membranes are not totally impermeable, therefore the foundation beneath the membrane must prevent leaching solutions from reaching the natural environment.

It is reasonable for the commissioner to require descriptions of all materials that will be used, and explanations of any special construction or operating practices that must be employed, since this information is essential to determining if the plan can be approved, and will be necessary for the commissioner to have, in order to adequately inspected the structure to ensure compliance.

Because heap and dump leaching facilities include ponds to contain the leaching solutions, it is imperative that an appropriate volume be maintained (often characterized by the "freeboard," a height between the free water elevation and the elevation of the top of the dam) within the ponds, to hold the solutions and all additional waters that could result from excessive precipitation events. Some reviewers of the draft of these proposed rules have suggested that a specific design precipitation event called the "Probable maximum precipitation" (PMP) event be utilized in establishing the required freeboard for the basin. In most cases this

design event will be the most severe and therefore the best selection, however there may be other events such as extended wet periods that may present even more concern, especially since there are restrictions on the discharges from heap and dump leaching facilities. It is reasonable that the commissioner avoid establishing a specific design precipitation event through rule, but to judge the adequacy of the the heap and dump leaching design based on the specific conditions of the site, and the results of applying several hydrologic evaluations to the ultimate design.

Because of the toxic and corrosive nature of the chemicals used in leaching, it is essential that treatment to remove or render harmless all such chemicals occur when the process of active leaching has been completed. This rule ensures that the techniques and practices for accomplishing this requirement are incorporated into the design before the facilities are ever used.

The commissioner is also requiring the designer to maintain a presence beyond design preparation, by mandating scheduled inspections, to be conducted by the designer, throughout the permitted life of the facility, to ensure continued design compliance. This requirement is essential, since the designer will be most familiar with the rationale for the particular design, and should be able to assess whether the facility is performing successfully. To further ensure compliance, the commissioner is requiring that the designer propose monitoring locations at which information can be collected to accurately measure success of the facility.

Subp. 2. C. This section cautions that if the neutralized and detoxified leached ore still constitutes a reactive mine waste, other design criteria may be required to be developed in accordance with the provisions of 6132.2200.

#### 6132.2700 VEGETATION

Subpart 1. The result of mining activities is the creation of landforms and disturbed areas devoid of vegetation, which in turn is the potential cause of a number of adverse environmental consequences. The creation of unvegetated areas often causes air and water erosion, both of which have been, and occasionally continue to be in evidence near mining areas. Dry and unvegetated surfaces of tailings basins are easily erodable, and conditions similar to dust storms can periodically be observed on windy days in mining areas. Airborne particulates can cause several environmental and public health problems. Surfaces of slopes, such as storage piles and dams, are susceptible to water erosion, which can cause stream sedimentation and other water quality impacts downstream from the mining area. Water erosion can also endanger the structural stability of the facility being eroded. Natural vegetation provides wildlife habitat, and its removal from an area drastically alters the characteristics of the habitat. The removal or absence of vegetation limits the productivity of the area, from a land use standpoint.

The establishment of vegetation in on a drastically disturbed area returns stability to the land by helping to hold mineral soils in place. In addition, the initial planting of vegetation begins a soil building process that is essential to the ultimate survival of the more permanent vegetation that will be established on the site. The revegetation process also greatly expands land use options and enhances the aesthetic appeal of an area. This is particularly true in Minnesota, where unvegetated mining areas would be a major contrast to surrounding undisturbed areas. Forest growth, timber or crop production, and wildlife populations are functions of the type and quantity of vegetation.

The revegetation of created and disturbed areas serves two functions: The prevention or reduction of adverse environmental impacts; and the inherently beneficial aspects of vegetation itself, such as timber production, expended land use operations, and aesthetic appeal. The goals stated in this subpart are merely a response to the functions served by requiring the vegetation of disturbed and created surfaces.

Subp. 2. A. This section contains a list of the areas that have been identified by the commissioner as needing vegetation. This list was developed based on observations by the department at various mine sites, created

over the last century, along Minnesota's iron ranges. The commissioner's experience with enforcing reclamation rules at taconite mining operations over the past 12 years has demonstrated that the goals of this section can be achieved by providing revegetation at the specific sites listed in this subpart.

Subp. 2. B. It is reasonable to initiate vegetation as soon as is practical in order to receive its benefit as early as possible. The department's experience with enforcing the iron ore and taconite reclamation rules over the past 12 years has shown this requirement to be effective and has not placed an undue burden upon the operator.

Subp. 2. C. This section provides two uniquely different standards by which revegetation success will be measured. The first is directed at the initial establishment of vegetation designed to quickly stabilize the surface and begin the process of soil building on the site. The requirements that the area achieve a 90% cover and be free of gullies, is based on recommendations originally proposed by the Federal Office of Surface Mining, however, actual observations at Minnesota's taconite mining operations over the last 12 years also support the reasonableness of these requirements. The second standard is directed at the long term success of the vegetation. This requirement has, over the past 12 years of hands on experience, also proved to provide acceptable reclamation, while not unduly burdening the industry. Ample examples of successful revegetation, established at existing mine sites, are available to use as reference areas, by nonferrous mine operators.

#### 6132.2800 DUST SUPPRESSION

Subpart 1. Dust is generated during a number of phases and in a number of locations of a mining operation, such as blasting within the mine pit, truck traffic on haul roads, and from the surfaces of storage piles and tailings basins. For numerous reasons such as: Protecting mining equipment from excessive wear; the need to meet increasingly stringent air quality emission standards; and being good neighbors to nearby residents, Minnesota's taconite industry has been employing a number of dust control techniques at their operations.

Subp. 2. The requirements of this section identify acceptable techniques in controlling dust emissions. To the extent that the manner in which dust is controlled in a mining area affects the overall reclamation and possibly the subsequent use of the mining area, it is reasonable that certain control techniques are preferable over others. All of the techniques identified have been variously and commonly used by mining companies to effectively control dust emissions. They have been used with little or no environmental degradation as a consequence. On this basis, it is reasonable to require their use at those locations in a mining area where dust must be controlled. This list is not exclusive however, recognizing that other, perhaps as yet untested, techniques could be used as acceptable means of controlling dust.

#### 6132.2900 AIR OVERPRESSURE AND GROUND VIBRATIONS FROM BLASTING

Subpart 1. Before rock and ore can be removed from the ground, they must be fractured and broken into pieces of a manageable size. This is accomplished by blasting. Blasting is an recurring procedure, the frequency of which depends on the quantities of material being mined, as well as, the size of area blasted, strength of the explosives used, the mining sequence, and other variables, and therefore varies from mining operation to mining operation.

Blasting at Minnesota's iron ore and taconite mining operations, when done in close proximity to residential areas, has created problems and conflict in the past. Property has occasionally been damaged as a result of blasting at mining operations in Minnesota, generally in the form of cracked foundations, plaster, or windows.

Some who have reviewed the draft of the proposed rules have questioned why an ephemeral procedure, such as blasting, is included in a rule that deals with reclamation. The reasons that it has been included are: 1) blasting has been demonstrated to have occasionally caused structural damage, and such damage is likely to

have a permanent impact, 2) in 1979 requests were made by local units of government for the commissioner to consider the inclusion of rules for blasting, and 3) Minnesota Statutes, section 93.47 Subd. 3, in part requires, "To the greatest extent possible, within the authority possessed by the commissioner, the rules so promulgated shall substantially comply with or exceed any minimum, mineland reclamation requirements which may be established pursuant to a federal mineland reclamation act." Regarding the last point, the federal government currently has no reclamation regulations that would apply to nonferrous metallic mining. However, when the iron ore and taconite rules were being adopted the federal government was in the process of adopting rules to direct the reclamation of coal mining in this country. These federal rules were carefully reviewed in 1979, and those parts which the commissioner felt might have applicability, in the event that the federal government were ever to regulate metal mines, were included in the state's reclamation rules. One such section was the regulation of blasting. In fact the standards that the commissioner ultimately adopted are exactly the same as that included in the federal rules.

There are two fundamental concerns related to blasting at mining operations: Air overpressure, the effects of which are expressed as airborne shock waves, including the actual sound of the blast; and ground vibration, the shock waves that travel through the ground. Both air overpressure and ground vibration can cause property damage.

This section expresses the prudent concept that injuries to the public should not be allowed to take place. Additionally, it is reasonable to regulate blasting activities to prevent damage to property.

Subp. 2. A. (1) is identical to the corresponding standard of the federal rules relating to the reclamation of surface coal mine lands. The upper limit of 130 decibels is based on experimentation conducted and field data collected by the United States Bureau of Mines, and represents the point above which structural damage begins to occur. The scale frequency band sensitivity range of 6 to 200 cycled per second is also based on U.S. Bureau of Mines data. Six cycles per second represents the reliable lower limit of measuring equipment. Energy above 200 cycles per second, resulting from blasting operations, does not cause structural damage

Subp. 2. A. (2) requires open pit mine operators to monitor their blasting. This is necessary to determine compliance with the blasting standards. The requirement to place blast monitoring stations adjacent to structures located nearest the blast, is based on the reasonable assumption that if structural damage were to take place, it would, in most cases, take place at such structure. It is also reasonable for the commissioner to require additional monitoring, beyond such location, if complaints are received.

Subp. 2. A. (3) requiring an open pit mine operator to keep a blasting log is necessary if complaints relating to blasting are received and must be investigated. The informational requirements would provide data to allow the reason for the condition causing the complaint to be determined, and would further provide the basis for any necessary modification of the blasting. Since mining companies routinely maintain a record containing similar information, this requirement is not onerous or unreasonable. The basis for requiring that the log be kept for at least six years is that if complaints are received, this is a reasonably long period for which the records can be evaluated to determine the existence and extent of any past problems and whether the permittee has been conducting blasting in an appropriate manner.

Subp. 2. A. (4) is designed to prohibit open pit blasting when a condition exists such that blasting could endanger the public health and welfare. Since such conditions would exist only temporarily, it is reasonable to prohibit blasting until the condition passes. This is also standard current mining practice.

Subp. 2. A. (5) limits open pit blasting to daylight hours, again, a standard mining practice today. This is designed so that the period when most of the human population is sleeping is not disrupted by blasting.

Subp. 2. B. (1) is identical to the corresponding standard of the federal rules relating to the reclamation of surface coal mine lands. The upper limit for the peak particle velocity, of one inch per second, is based on experimentation conducted and field data collected by the United States Bureau of Mines, and represents the

point above which structural damage begins to occur.

Subp. 2. B. (2) The requirement that production blasts be monitored using a seismograph, that measures three mutually perpendicular peak particle velocities, is required because the use of such an instrument is the only way to directly determine the magnitude of the ground vibrations resulting from a blast.

Subp. 2. B. (3) This part requires mine operators to monitor their blasting to determine the extent of ground vibration. This is necessary to determine compliance with the blasting standards. The requirement to place blast monitoring stations adjacent to structures located nearest the blast, is based on the assumption that if structural damage were to take place, it would, in most cases, take place at the nearest structure. It is also reasonable for the commissioner to require additional monitoring, beyond such location, if complaints are received.

Subp. 2. B. (4) The blasting that is conducted at an underground mine is significantly different than that conducted at an open pit operation. Air overpressure will be confined to the underground working and will not be perceptible at the surface, except perhaps right at the mine opening. The blasts are much smaller, not providing the energy that would generally cause ground vibration concerns, however to verify this, the proposed rules do require ground vibration monitoring in the event of complaints. Because of the differences between surface and underground mining the necessity that an underground mine operator maintain a blasting log is not required unless the commissioner determines, based on experience at the site, that it is necessary, to investigate complaints. If complaints are received, the informational requirements of the blasting log would provide data to allow the reason for the condition causing the complaint to be determined, and would further provide the basis for any necessary modification of the blasting.

Subp. 2. C. This requirement provides for the availability of blast monitoring data during reasonably long period for which the records can be evaluated to determine the existence and extent of any past problems and to determine whether the permittee has been conducting blasting in an appropriate manner. The data supplied through such monitoring is important in determining the degree to which blasting may have caused damages, and is therefore important and reasonable to require.

#### 6132.3000 SUBSIDENCE

Subpart 1. This section addresses surface displacements resulting from slumping and subsidence. Slumping is generally defined as the failure or collapse of the surface of a slope, such as along the crest of an open pit. Subsidence is the sinking, gradual or sudden, of the ground surface overlying an underground mine. These ground movements can create very hazardous conditions and cause significant property damage. Minimizing such conditions is prudent.

Subp. 2. This section lists requirements that must be taken to minimize the impacts caused by subsidence, through utilization of techniques and practices that reduce the potential for subsidence. This is accomplished by requiring mine openings and supporting structures to be designed in a manner that considers the strength and ability of the rock to sustain such openings. In the event that subsidence can not be avoided, in spite of the use of appropriate designs, it is reasonable to require that monitoring be performed to determine the location and degree to which subsidence is occurring, in order to determine its extent and the degree to which mitigation must be conducted. The mitigation practices that are listed in this section are those normally taken in such cases to protect the public and natural resources.

#### 6132.3100 CORRECTIVE ACTION

Subpart 1. Because of the many requirements and complexities of these rules, operators may occasionally be out of compliance. This section addresses this situation, describing what is expected of a permittee, and giving direction on how to accomplish corrections. It is reasonable to require that as soon as a violation is

observed, appropriate notices be given and planning of the correction, or actual corrective action, be undertaken.

Subp. 2. A. The purpose of this section is to help maintain a dialogue between the commissioner and the permittee, during which any problems that would lead to a non-compliance, or an actual violation, can be discussed and corrective action taken before the problem increases in magnitude. The commissioner will make frequent inspections and promptly notify the permittee of any violations, so that corrections can be made in a timely manner.

Subp. 2. B. At the point when a violation is identified, it is reasonable to assume it will be corrected or that appropriate plans are made to effectuate the correction. Immediate corrective action is reasonable to expect for violations that do not require substantial planning or that are not dependent upon special weather conditions, such as an appropriate planting season. It is conceivable that corrective actions may be complicated and require engineering review and planning. This section requires that such planning not be delayed. The two week requirement is considered by the commissioner to be an appropriate period to have an initial review of the situation completed and corrective action plans either developed or a schedule for their development identified. This time period closely corresponds to and complements a period, established by Minnesota Statute, section 93.481 subd. 4, that allows the permittee at least 15 days to take actual corrective action, in the event of a breach of the permit to mine or the law, before the commissioner can take actions to revoke or modify the permit. The specific details of the plan are necessary in order for the commissioner to assess viability of the corrective action, and to ensure that appropriate funding will be available in the event the permittee is not able to complete the corrections.

Subp. 2. C. When there is an immediate threat to human safety and natural resources it is reasonable to require that corrective actions be taken immediately to minimize the threat, and then report to the commissioner, as soon as possible.

Subp. 2. D. It is reasonable for the commissioner to identify procedures that are available to the commissioner to ensure reclamation success. This rule emphasizes that the commissioner will use all procedures provided by statute to keep the mine area in compliance with these rules and the permit to mine.

#### 6132.3200 CLOSURE AND POST CLOSURE MAINTENANCE

Subpart 1. This section recognizes that at some point mining activities will cease, either temporarily or permanently, and there will be a significant reduction in the presence of the permittee at the site. Therefore, it is reasonable that the rules identify the reclamation activities and accomplishments that must be completed and maintained, in order to ensure that the area remains in compliance with the rules. Freedom from maintenance, is an overall goal of these rules. Past experience and observation by the commissioner, at former mining operations in Minnesota, has indicated that the permittee will want to have as little ongoing involvement with the site as practical, once the operations cease. Likewise, the commissioner wants to limit any future public responsibility in the event that the lands revert to the state through tax forfeiture, as has been the past experience with some mine sites.

Subp. 2. A. This section requires that the commissioner be informed when operations will cease, either temporarily or permanently. This requirement is reasonable because many of the reclamation requirements are triggered by cessation of the ongoing operations.

Subp. 2. B. Several pieces of information must be submitted when an operator plans to temporarily cease operations. Information regarding the reasons for shutdown, anticipated length, and plans for how the mine site will be maintained, are necessary in order for the commissioner to determine whether it is reasonable to believe that the shutdown is temporary, or if the operator should be required to implement plans to permanently reclaim the area. The remainder of the subpart details the requirements that must be



implemented under a temporary shutdown. These requirements are needed to ensure compliance with the permit, in the event the temporary shutdown becomes permanent.

Subp. 2. C. This section outlines the options available to the commissioner after reviewing a proposal made by an operator to temporarily cease operations. Because the commissioner is responsible for ensuring that reclamation of a mine site is accomplished, the determination of whether a shutdown is indeed temporary, or has the potential to become permanent, is important and must be made with a full understanding of the situation.

Subp. 2. D. Extension of the temporary shutdown approval may be sought if the factors that led to the initial shutdown are not resolved within the time anticipated. If this were to occur the commissioner would have to determine if an extension is reasonable or whether the operator should be required to implement permanent closure plans for the mining area. The information required in this subpart will help evaluate the physical status of the site to determine if it has deteriorated during the temporary shutdown and whether it can be maintained during the period for which the extension is being sought.

Subp. 2. E. When the operator determines that operations will permanently cease, the contingency reclamation plan which describes the activities necessary to bring the operation into compliance with the reclamation rules and the permit to mine, must be implemented. The remainder of this subpart establishes the time limits for accomplishing the various reclamation activities in order to provide adequate protection of the public and to ensure a prompt closure of the site.

Barriers and other safety precautions must be established at underground openings and around open pits, very quickly after shutdown, to prevent attractive nuisances and hazards to the public.

Debris and mobile equipment are generally easy to remove. If these are not necessary for the support of reclamation activities, they should be removed in a short period, so that these too do not become attractive nuisances.

A longer period has been allowed for the removal of the remaining stationery structures within the mine site. Based upon the commissioner's experience with the closure of other mine areas, if closure is allowed to linger beyond a three year period, it is difficult to bring closure to a conclusion.

Three years is also the allowable period to integrate basins back into the existing watershed. This has proven to be reasonable with the closure of other mine areas in Minnesota, since it often takes a season or two of experience, after the original contouring of a site, in order to fine tune the various water control structures that may be necessary.

This section also addresses the subject of continued maintenance. Although this is not the most desirable means of providing for the reclamation of a mining area, it may be the only means available to ensure that the reclamation requirements will continue to be met after operations cease. When continued maintenance of an area is necessary, it is reasonable that the commissioner be provided with the information necessary to evaluate the proposal, to appraise the ongoing success of the activities that are proposed, and to determine if appropriate levels of funding will be available to support the efforts.

It is reasonable that in the event continued maintenance is necessary, the responsibility remain with the permittee until such time as the maintenance is determined to be no longer necessary. This rule ensures that such responsibility is maintained by withholding release from the permit, on those parts of the mine area that require continued maintenance.

## ADMINISTRATIVE PROCEDURES

### 6132.4000 PROCEDURES FOR OBTAINING A PERMIT TO MINE

Subpart 1. Minnesota Statutes, section 93.491 requires that anyone wishing to engage in mining must first obtain a permit to mine. This section requires that a preapplication conference and site visit be conducted in order for the commissioner and the applicant to discuss the proposed project; to determine the degree of detail for the information that will be required for application submission; to outline procedures that must be followed relative to the permit to mine, as well as other permits, authorizations, and data submissions that are required; and to identify the best means of informing and involving the public in the decisions that will be made regarding the proposed operation. Based on this conference, a permit application in sufficient detail to allow adequate consideration, must be filed with the commissioner. To properly satisfy the statutory requirement of publication, and to insure that the commissioner is well informed and prepared for public inquiries, the application should be submitted and approved as adequate prior to publication. A copy of the advertisement should then be submitted to the commissioner along with affidavits of publication within seven days following the final publication, a reasonable time to allow the commissioner to make a determination of compliance with statutory requirements as early in the process as possible.

Subp. 2. A. Minnesota Statutes, section 93.481, Subd. 2, provides for an optional hearing to be held upon receipt of objections from certain specified parties. This section identifies the period, as specified in the statute, during which the objections will be accepted.

Subp. 2. B. The information required will allow the commissioner to determine if the person objecting meets the statutory requirements of Minnesota Statutes, section 93.481, Subd. 2, or raises an issue relating to the proposal over which the commissioner has jurisdiction, and whether holding a hearing might potentially resolve the objection.

Subp. 2. C. This section identifies the procedure that the commissioner will follow upon receipt of objections. If the individual filing the objection meets either of the first two criteria listed in this section, the statute dictates that a hearing be conducted. The commissioner has determined that an additional criterion be added to those listed in statute, in order to aid in determining if factors exist, over which the commissioner has jurisdiction, that have not been adequately addressed through the permit application. It is reasonable to add the last criteria to ensure that all factors related to the proposal will be addressed.

Subp. 2. D. This section identifies the process the commissioner will follow in trying to resolve the issues identified by persons meeting the criteria established in subpart 2. C. The commissioner has determined that it is reasonable and may be more effective to try to resolve the objections directly between the applicant and the objector before arranging for a hearing. This may save time and expense, and still reasonably resolve the problem. If differences can not be so resolved, a hearing will be conducted in accordance with subpart 3.

Subp. 2. E. This section deals with the eventuality that the individual objecting is unable to show how the mining operation would impact them or can not identify facts about the proposal over which the commissioner has jurisdiction. In this event it is reasonable for the commissioner to inform the individual of this decision, and proceed with processing the permit application.

Subp. 3. A. This section identifies three circumstances under which a hearing would be held. The first is when valid objections are received, and the commissioner is unable to directly resolve the differences between the applicant and the objector.

The second reason that the commissioner would hold a hearing would be if it was determined that special conditions should be incorporated into the permit in order to satisfy problems or conditions that were not resolved to the commissioner's satisfaction in the permit application. Since discussions regarding such problems and conditions will certainly be discussed well before a final submission of the application, this

situation would only arise if the applicant and the commissioner could not resolve the situation. In such a case it is reasonable to hold a hearing in order to resolve the differences.

The final reason for conducting a hearing would be that the commissioner determines a permit can not be issued. It is more reasonable and efficient for the commissioner to order a hearing before denying the permit.

Subp. 3. B. This section contains the specifications that the commissioner will follow to initiate the hearing process. The process will be conducted by an administrative law judge assigned by the Office of Administrative Hearings, following the schedules and notification requirements of Minnesota Rules Chapter 1400.5600. Specific details have been incorporated into the proposed rules to compensate for differences between the Chapter 1400.5600 rules and the requirements of Minnesota Statutes, sections 93.44 through 93.51.

The requirement of mailing individual notices to the applicant, any objectors to the permit application, and the local units of government is reasonable, to ensure that these all have an opportunity to be heard.

An advertisement, of the notice of the hearing, is required to be published in the same local newspaper that was earlier used to publish the notice that an application for a permit to mine was being sought. This requirement maintains consistency in order to keep local individuals, who may be affected by the operation, informed about the status of the mining and permitting activities.

Subp. 3. C. This requirement maintains consistency with the statutory requirement that the commissioner conclude deliberations on a permit application within 120 days after holding a hearing. The administrative law judge is required to report findings to the commissioner within 30 days following close of a hearing, therefore allowing 90 days for the commissioner to make a final decision will reasonably allow the statutory time limits to be met.

Subp. 4. This section provides a process for approving a permit, within the time limit established by statute, when the conditions that would otherwise mandate a hearing do not exist.

Subp. 5. This section addresses the commissioner's review of the annual report submitted by the permittee, describing progress on activities conducted under a permit to mine. The document will contain a report of the preceding year's activities and a projection of how operations will be conducted during the upcoming year. Since mining is a very dynamic activity it is possible that actual mining may proceed differently than may have originally been planned. It is reasonable for the commissioner to compare what has, or will soon be occurring, with plans on which permit approval was based. This section identifies possible actions available to the commissioner to either acknowledge when the report shows compliance, or to direct the permittee on how to remain in, or reestablish compliance.

#### 6132.4100 VARIANCES

Subpart 1. Pursuant to Minnesota Statutes, section 93.48, variances from the rules may be allowed, upon application therefor, if the variance is consistent with the general welfare. The commissioner has determined that the general welfare is reasonably served if the proposed alternative to the rule is directed toward the attainment of the goals expressed in the rules, and it can be demonstrated that the alternative will perform as well or better than the prescribed rule. In addition, it is reasonable to require the applicant to demonstrate that the prescribed rule is burdensome, especially if the proposed alternative is not superior to the rule it is designed to replace.

Subp. 2. To initiate the variance process, the commissioner must be provided with an application containing sufficient information to make the statutory determination. It is conceivable that some requests for variance could have a significant impact on natural resources and the public. If this were the case it would be

reasonable for the commissioner to require that the applicant for such a variance, publish a notice in the local newspaper in the same manner as is required when there is an application for a permit to mine. However, for those variance applications which propose minor deviations from the rules or which are unlikely to cause great impacts, such public notice is not reasonable or necessary.

To resolve the decision of whether or not to require publication of a notice, this rule states that the commissioner, upon receipt of a variance request, will first determine whether the proposal constitutes a substantial change from the requirements of these rules. If the changes are substantial, the request will be treated in the same manner as if it were an application for a permit, including the mandatory notice publication and the possibility of holding a public hearing. When the changes are not substantial the commissioner will make the decision on the acceptability of the variance without notice, or need for hearing.

Some commenters who reviewed drafts of these proposed rules have questioned what constitutes a substantial change, and whether the commissioner should have the power to make such decisions without some sort of public involvement. The concept of allowing the commissioner to make decisions, based on substantial change, has its basis in Minnesota Statute, section 93.481 Subd. 3, which specifically addresses the issue of publishing notices, when amendments to a permit to mine are requested by a permittee. Since variances and amendments both constitute a deviation from the norm, it is reasonable that both should be treated in the same manner, and that both follow the process established by statute.

No clear direction was given by the statute on what constitutes a substantial change. It would be reasonable however to include: 1) proposals that would result in a major departure from what would normally occur, if the rules were followed; 2) proposals that would result in impacts occurring at greatly different times or places than would otherwise normally be expected; and 3) proposals where the commissioner feels that the professional expertise in the various disciplines held by the Department of Natural Resources' staff could be augmented by input of the public.

Subp. 3. The proposed rules acknowledge the possibility that a variance may be submitted at the same time as an application for a permit to mine. This rule requires that information about the variance request be inserted into the notice publication of the permit to mine, in order that the public is aware of the variance request.

#### 6132.4200 Amendments

Subpart 1. Pursuant to Minnesota Statutes, section 93.481, subd. 3., an amendment to the permit to mine may be allowed upon application therefor, if the commissioner determines that all lawful requirements are met.

Subp. 2. Minnesota Statutes, section 93.481, subd. 3. also requires the commissioner to make a determination regarding whether the proposed amendment constitutes a substantial change to the permit to mine. In accordance with the statute, when the change is substantial, the person proposing the amendment must publish a notice of the amendment in the same manner as for a new permit. For the purposes of this section a substantial change shall be considered to occur when the proposed amendment: 1) would result in a major departure from what would normally occur, if the approved permit were followed; 2) would result in impacts occurring at greatly different times or places than would otherwise be expected; and 3) requires expert analysis, that the commissioner feels is unavailable within the department, and input of the public would be helpful.

When the change is not substantial and the commissioner determines the all lawful requirements will be met the amendment will be granted.

#### 6132.4300 Modification of Permit to Mine

Pursuant to Minn. Stat., sec. 93.481, subd. 4., modification of the permit to mine is a procedure available to the commissioner, when it becomes necessary to change the permit to mine in order to resolve a previously unforeseen problem or situation, and all other means of cooperatively working with the permittee have not resolved the disagreement. It is necessary for the commissioner to have the ability to require changes in order to protect persons or property from damage as a result of the permittee's unwillingness to rectify a problem. It is reasonable that the commissioner utilize a process that includes a public hearing, in order to establish the facts that will support the commissioner's findings and decision on the content of the ultimate order for modification.

#### 6132.4400 Cancellation

Pursuant to Minn. Stat. sec. 93.481, subd. 4., cancellation is a procedure where the commissioner and the permittee mutually agree that a permit to mine will no longer be valid. This process will only be utilized if the permittee is unable to begin a project for which a permit has been issued, and any development work that may have begun has not resulted in the need for reclamation, or any necessary reclamation has been completed. This procedure is reasonable because it will bring to conclusion a permit to mine when both the permittee and the commissioner agree that the permit is no longer necessary and that all obligations of the permit have been satisfied.

#### 6132.4500 Suspension of Permit to Mine

Pursuant to Minn. Stat. sec. 93.481, subd. 4., suspension is a procedure where the commissioner requires the cessation of mining in order to prevent the operation from causing or enhancing a situation that endangers humans, natural resources, or property, and all other means of cooperatively working with the permittee to resolve the conditions causing the danger have failed. It is necessary for the commissioner to have the ability to require cessation of the operation, in order to prevent damage or injury that may occur as a result of the permittee's inability or unwillingness to otherwise rectify a problem. It is reasonable, in an emergency, that the commissioner have the ability to promptly suspend an operation for a short period of time, without the need for a public hearing. However, if the commissioner determines that it would be necessary to extend the suspension of the permit for a longer period, it is reasonable that a public hearing be conducted in order to establish the facts that will support the commissioner's decision to require an extended suspension.

#### 6132.4600 Revocation of Permit to Mine

Pursuant to Minn. Stat. sec. 93.481, subd. 4., revocation of the permit to mine is a procedure available to the commissioner when it becomes necessary to end a permit to mine, in order to resolve a previously unforeseen problem or situation, and all other means of cooperatively working with the permittee have not resolved the disagreement. It is necessary for the commissioner to have the ability to revoke a permit in order to protect persons or property from damage that may occur as a result of the permittee's unwillingness to rectify a problem. It is reasonable that the commissioner utilize a process that includes a public hearing, in order to establish the facts that will support the commissioner's decision.

#### 6132.4700 Assignment

Pursuant to Minn. Stat. sec. 93.481, subd. 5., assignment of the permit to mine is a procedure available to the commissioner when it is reasonable to transfer the permit to mine from one person to another. Before allowing the transfer, it is reasonable and necessary that the commissioner be assured that all reclamation requirements will be met.

#### 6132.4800 Release of Permittee

Release is a process by which a permittee's obligations under the permit can be ended. It is reasonable, that at some point following the cessation of mining, permit obligations can be ended if it can be satisfactorily demonstrated that all requirements of the permit have been met. This section recognizes the possibility that the commissioner and the permittee may not agree on the facts regarding release, and therefore establishes a process by which a public hearing can be held to determine the facts.

#### 6132.4900 Publication

This section describes the process by which the public is to be officially informed of the various procedures, associated with a permit to mine, that require decision making by the commissioner. It is reasonable that the commissioner require the publication of the information listed in the section, in order that the public be informed of the extent of the activities proposed, and the rights that the public possesses with regard to its role in the decisionmaking process. The time limits and number of publications of notice that are contained in the proposed rule are consistent with the requirements of Minn. Stat., section 93.481, subdivisions 1 and 2.

#### 6132.5000 Hearing Procedures

Minnesota Statutes, section 93.50 provides that any person aggrieved by any order, ruling, or decision of the commissioner may appeal such order, ruling, or decision in the manner provided in chapter 14., the portion dealing with contested case hearings. The proposed rule identifies those portions of the Minnesota Rules, governing the activities of the Office of Administrative Hearings, that will be used to conduct the contested case hearing. The proposed rule recognizes that portions of parts 1400.5100 to 1400.8500, dealing with public notice time limits, will be dictated by Minn. Stat., secs. 93.44 to 93.51 rather than parts 1400.5100 to 1400.8500.

#### 6132.5100 Civil Penalties

If any person violates the statutes, rules or any permit condition, Minn. Stat., sec. 93.51 allows the commissioner to assess fines of up to \$1,000 per day for any such violation after notice and a period of not less than 15 days for correction. Such fines should apply to each separate occurrence of each violation since such violation could be so numerous and widespread that their economic benefit would outweigh a single such fine. Fines are assessed to deter future violations especially those which are particularly egregious. Thus the commissioner, in determining the amount up to the \$1,000 statutory maximum, should consider the severity of the violation and the magnitude of potential or actual economic gains resulting therefrom so that the fine will act as a deterrent.

#### 6132.5200 Inspection of Mining Area

In order to properly enforce these rules and the law, it is reasonable that the commissioner must have the authority to inspect those portions of the mining operations and necessary records relevant to such enforcement.

#### 6132.5300 Wetland Mitigation and Replacement Procedures

This section is inserted into these rules as a result of the requirements of Minn. Stat., sec. 103G.222, that prohibits any person, conducting activities under the authorization of a permit to mine, from draining or

filling wetlands without first obtaining approval of the commissioner. In accordance with this statute, approval is to be based upon a mining and reclamation plan that incorporates the same principles and standards for wetland impact mitigation and replacement, found in the rules for wetland value replacement plans, promulgated pursuant to Minn. Stat., sec. 103G.2242.be affected by mining.

EXPERT WITNESSES APPEARING ON BEHALF OF THE DEPARTMENT

The department will supplement testimony by its own professional staff with expert testimony by the following individuals:

**Victoria J. Bryan**  
Reclamation Bonding Specialist

Department of the Interior  
Office of Surface Mining  
1020 15th Street  
Denver CO 80202

Victoria Bryan will supplement the department's testimony on financial assurance for mining. In this capacity, she will discuss her own experience with administering the financial assurance program for coal mining in the context of the requirements of the department's Nonferrous Metallic Mineral Mineland Reclamation Rules.

**Andrew MacG. Robertson, Ph.D., P. Eng.**  
Principal

Steffen, Robertson and Kirsten  
Consulting Engineers  
Suite 800  
580 Hornby Street  
Vancouver, B.C. V6C 3B6  
CANADA

Dr. Robertson will supplement the department's testimony on mitigation of impacts associated with base and precious metal mining, particularly of sulfide ores. In this capacity, he will discuss his own experiences with mitigation of acid mine drainage in the context of the requirements of the department's Nonferrous Metallic Mineral Mineland Reclamation Rules.

**Richard Lawrence, Ph.D.**  
Chair in Mining and Environment

Department of Mining and Mineral Process Engineering  
University of British Columbia  
6350 Stores Road  
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CANADA

Dr. Lawrence will supplement the department's testimony on mine waste characterization and prediction of mine waste drainage quality. In this capacity, he will discuss his own experience with the prediction of waste material leachate quality in the context of the requirements of the department's Nonferrous Metallic Mineral Mineland Reclamation Rules.



**Terry Mudder, Ph.D.**  
Corporate Consultant

Times Limited  
15311 N.E. 90th Street  
Redmond, WA 98052

Terry Mudder will present testimony on the use and management of cyanide in the mineral mining and processing industry. In this capacity, he will draw upon his own experience as consultant and project manager for waste water treatment systems developed for the mining industry of the U.S. and Canada.

