

IN SITU MINING PERMIT APPLICATION REQUIREMENTS HANDBOOK

DRAFT



**Application Content Requirements - Adjudication and Baseline
Information.**

MARCH 2007

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IN SITU MINING PERMIT REQUIREMENTS

Introduction

All applications for an in situ mining permit shall include, at a minimum, the information and materials related to adjudication and baseline information required in W.S. § 35-11-428 and Land Quality Division (LQD), Noncoal Rules and Regulations, Chapter 11.

This document summarizes the materials required for an application for an in situ mining permit in the State of Wyoming.

Completeness Criteria

This document contains a criteria outline to be used in determining the “completeness” of permit applications by the LQD staff and in the preparation of applications by the operator.

Completeness as used in “completeness” review (and this criteria document) is defined by the Wyoming Environmental Quality Act, W.S. § 35-11-103(e)(xxii) which states “Complete application under W.S. § 35-11-103(e) means the application contains all the essential and necessary elements and is acceptable for further review for substance and compliance with the provisions of this chapter.” The “essential and necessary elements” are presented in the Completeness Criteria section of the In Situ Mine Permitting Requirements.

The completeness criteria presented in this document represent the information required by the statutes and regulations to obtain the Administrator’s decision for a complete ISL permit application. All items not specifically included in this “Completeness Criteria” section and that may be technically inadequate, inaccurate, or do not comply with all appropriate regulations are subject to review and comment under the “technical review” process. After declaring the permit application complete, it will be thoroughly evaluated during the technical review process using all applicable LQD and WQD Rules and Regulations pertaining to IS mine permit applications.

Organization

1. The information should be submitted on 8½ X 11 inch paper with standard margins. The paper should be durable of 20 pound bond and of good quality. All figures, tables, maps, etc., larger than 8½ X 11 inches should be folded to fit into the application and should be physically attached to the appropriate location of the application or placed in pockets labeled with the map or figure title.
2. All pages should include a header or footer with a submission or revision date.
3. Three (3) copies of the application are required.

The application consists of several distinct parts as described below: Adjudication, Appendix D Environmental Baseline Data, Mine Plan and Reclamation Plan.

Adjudication

1. Form 1-UIC: Application for Permit to Mine

One form must contain the original signature and an affixed legible corporate seal. The original form must be one continuous form, or if separate pages the applicant must initial and date the bottom of each page. Additional Form 1UICs may be copies.

2. Form 3: License to Mine Application

One form must contain the original signatures and have a legible corporate seal. The original form must be one continuous form or if separate pages the applicant must initial and date the bottom of each page. Additional Form 3s may be copies. A new Form 3 is not required for renewals or amendments unless the operator changes.

3. Reclamation Bond

a. Reclamation performance bond submitted in one or a combination of the following: original execution of a surety bond, cash, certified check, Federally Insured Automatically Renewable Certificate of Deposit, Letter of Credit, Government Securities, self-bonding. Contact the LQD for applicable rules and format. The performance bond may be submitted after the bond amount has been set by the District.

b. In the instance that a self-bond will be used as a performance bond, the bond must be included with the initial (permit) application package.

c. For individual instructions on filing reclamation performance bonds contact the LQD Bonding Specialist.

4. Certificate of Public Liability

A certificate of public liability is required that demonstrates the applicant has a public liability policy in force for the surface mining and reclamation operations for which this permit is sought or evidence that the applicant has satisfied other state and federal self-insurance requirements.

5. Appendix "A" (For lands within the permit area)

a. List of names, in alphabetical order, and last known addresses of:

- i. Owners of record of the surface rights within permit area.
- ii. Owners of record of the mineral rights within permit area.

b. Maps showing locations of ownerships above.

6. Appendix "B" (For lands adjacent [within one-half mile] to the permit area)

a. List of names, in alphabetical order, and last known addresses of owners of record of surface rights of lands within one-half mile to the proposed permit area.

b. Maps showing locations of the ownerships above.

7. Appendix "C" Legal Land Description of Proposed Permit Area
 - a. Tabulation of all lands in the proposed permit (or amendment) area, including all transportation corridors and facilities, etc., by legal (¼¼) section, township, range, county, and municipal corporation, if any, LQD Form C-1, one copy must contain an original signature)
 - b. Lands not described by the U.S. Public Land Survey terminology, must be described by a "bearing and distance" or "metes and bounds" description (LQD Form C-2, one copy must contain an original signature).
 - c. A certified statement from a licensed surveyor stating the metes and bounds of the permit area close.
 - d. For lands where the applicant claims no right to mine, a tabulation by legal description, of all those lands within the permit (or amendment) area.
 - e. List and map identifying the location of all lands in the permit area which also occur in other permit areas (i.e., dual permitted and/or license to mine areas), including the land use agreements (a.k.a, easements, encroachments, overstrip agreements, etc.) and all supporting legal documents.
8. Surface Owner Consent, including:
 - a. Instrument of consent from the resident or agricultural owner, if different from the mineral estate owner, granting permission to enter and commence surface mining, and also written approval of the applicant's mining and reclamation plans.
 - b. Instrument of consent from the surface landowner, if different from the owner of the mineral estate, including any lands privately owned but not covered by the provisions of W.S. §35-11-406(b)(xi), to the mining and reclamation plan.
9. Permit Fees
 - a. New permit applications or renewal applications require a minimum fee of \$100.00 plus \$10.00 for each acre within the permit area. The maximum fee is \$2,000.00.
 - b. Permit amendment applications require a fee of \$200.00 plus \$10.00 for each acre within the amended area. The maximum fee is \$2000.00.
 - c. Form 3. License to Mine: a \$25.00 license filing fee is required.
10. Appendix "E"
 - a. A new permit application shall show the following information on a U.S.G.S. topographic map base, clearly outlining and identifying the lands to be within the proposed permit and amendment area:
 - i. The permit and amendment area boundary (clearly identified).
 - ii. Lands to be affected over the life of the mine.

- iii. A digital file containing the proposed permit boundary in .DWG or shapefile format, preferably in NAD 1927 geographic projection.
- b. In addition, Appendix E shall contain the following information on maps, based upon public records, at a scale between 1" = 400' to 1000', as well as the additional lists as specified:
 - i. Location and names of all roads, railroads, rights-of-way, easements and utility lines.
 - ii. Drainage areas within and surrounding the (proposed) permit area, including all surface water features.
 - iii. List and map of owners of adjudicated and permitted water rights within and adjacent to the permit area.
 - iv. List and map of all water well owners within and adjacent to the permit area.
 - v. List and map of all Wyoming State Engineer Office (SEO) well permits inside and within three miles of the permit.
 - vi. Location, and listing of the ownership and use of all buildings on or adjacent to the proposed affected portions of the permit area.
 - vii. Probable limits of all previously disturbed or proposed disturbance by underground mining, and probable limits of all surface mining (active or inactive), on or adjacent to the land proposed to be affected.
 - viii. Map and list of the political boundaries of special districts such as water, police, fire, conservation; public and private parks; cemeteries and Indian burial grounds.
 - ix. List of all known drill holes and monitor wells of 4 inches or less than diameter that have not been registered with the State Engineers Office.

11. Listing of Other Permits or Construction Approvals

Provide a listing of activities to be conducted by the applicant which require permits or construction approvals and the status of those permits or construction approvals under the following programs:

- a. Hazardous Waste Management program under RCRA;
- b. UIC program under the Safe Drinking Water Act (as it pertains to wells other than Class III wells);
- c. WYPDES program under the Clean Water Act (CWA);
- d. Prevention of Significant Deterioration (PSD) program under the Clean Air Act (CAA);
- e. Nonattainment program under the CAA;
- f. National Emission Standards for Hazardous Pollutants preconstruction approval under the CAA;
- g. Dredge and fill permits under Section 404 of the CWA;

- h. U.S. Nuclear Regulatory Commission Source Material License; or
- i. Other relevant environmental permits, including State permits.

Appendix D, Environmental Baseline Data

1. Appendix D-1, Land Use

This appendix should briefly list, describe and map the historical and present land uses within the permit area. Use only the acceptable land use categories as outlined by the Wyoming Environmental Quality Act, located in W.S. § 35-11-103(e)(i).

2. Appendix D-2, History

This appendix should briefly describe the history of the permit as it relates to the regional historic setting. This appendix may utilize and/or refer to useful elements of the cultural resource inventory for the permit area. This appendix should encompass sites included on the National Register of Historic Places.

3. Appendix D-3, Archeology

This appendix should briefly describe the archaeological and paleontological resources of the permit and adjacent areas in a summary manner. The summary should not describe sites in detail or show their location.

The professionally conducted survey intending to fulfill the U.S. Secretary of Interior's Standards for Archaeology and Historic Preservation should be tabbed in this appendix or placed in a separate volume, so it can be filed separately under "restricted access".

For guidance in the preparation of Appendix D-3 please refer to LQD Guideline No. 11.

4. Appendix D-4, Climatology

A description of climatic conditions of the site in accordance with the requirements of Chapter 2, Section 2(a)(i)(C) and (D).

5. Appendix D-5 Geology

A description of the geology, including:

- a. Discussion, supported by maps, cross-sections and geologist's, driller's, and geophysical logs, which identifies: formations and aquifers; geologic features that could influence aquifer properties; and the areal and stratigraphic position of the production zone in relation to other geologic features within the proposed permit or Research and Development Testing License area; and
- b. A generalized map and cross-sections illustrating the regional geologic setting.
- c. A geochemical, lithological, and mineralogical description of the receiving strata and any aquifers that may be affected by the injection of recovery fluid.

- d. The NRC will require a discussion of regional and local seismology. Place the discussion of seismology in this section.
 - e. The geologic material submitted must be certified by a professional geologist or qualified professional engineer.
6. Appendix D-6, Hydrology
- a. Surface Hydrology
For surface waters within the permit area and on adjacent lands:
 - i. Names, descriptions, and a map of all such waters; and
 - ii. List and map of all adjudicated and permitted surface water rights.
 - b. Groundwater Hydrology
For groundwaters within the permit area and on adjacent lands:
 - i. The names (or numbers), descriptions, and a map of all wells installed for water supply or monitoring and all wells which penetrate the production zone. The description shall include: names of present owners, well completion data, producing interval(s), and variations in water level to the extent such information is available in the public records and from a reasonable inspection of the property.
 - ii. A list and map of all adjudicated and permitted groundwater rights.
 - iii. A list and map of all abandoned wells and drill holes, giving location, depth, producing interval(s), type of use, condition of casing, plugging procedures and date of completion for each well or drill hole within the permit area and on adjacent lands to the extent such information is available in public records and from a reasonable inspection of the property.
 - iv. A groundwater potentiometric surface contour map for each aquifer that may be affected by the mining process, including overlying and underlying aquifers in which monitoring wells are installed.
 - v. Aquifer characteristics for the water saturated portions of the receiving strata and aquifers which may be affected by the mining process, which may include, but is not limited to, aquifer thickness, velocity and direction of groundwater movement, storage coefficients or specific yields, transmissivity or hydraulic conductivity and the direction(s) of preferred flow under hydraulic stress in the saturated zones of the receiving strata. The extent of hydraulic connection between the receiving strata and overlying and underlying aquifers, and the hydraulic characteristics of any influencing boundaries in or near the proposed well field area(s) shall be determined and described
 - vi. Tabulated water quality analyses for samples collected from all groundwaters which may be affected by the proposed operation. Sampling to characterize the premining groundwater quality and its

variability shall be conducted in accordance with LQD Guideline 8 (Hydrology).

- c. Material submitted for this section must be certified by a professional geologist or qualified licensed engineer.

7. Appendix D-7, Soils

The following are required:

- a. A soil survey which maps and describes the general distribution of the soils within the permit area. A detailed soil survey and associated laboratory analysis may be required for soils on the affected lands.
- b. A description of the nature and depth of the topsoil that will be removed from the proposed affected land prior to disturbance by mining activities.

For guidance in preparation of Appendix D-7, please refer to LQD Guideline 1.

8. Appendix D-8, Vegetation

The following is required:

- a. A survey of vegetative cover and species diversity on the proposed affected land determined by scientifically acceptable sampling procedures, as described in Guideline 2, Vegetation.

9. Appendix D-9, Wildlife

The following is required:

- a. A list of indigenous vertebrate species by common and scientific names observed within the proposed permit area. Surface waters supporting fish that may be affected by the operation shall be sampled for benthic invertebrates and periphyton. As required in LQD NonCoal Rules and Regulations, Chapter 2, Section 1(f), the applicant shall consult with the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service prior to submission of a permit application to determine specific permitting requirements.

LQD Guideline No. 5, Wildlife, should also be consulted in preparing this section.

10. Appendix D-10, Wetlands

The Army Corps of Engineers must be contacted for specific instructions on what the Corps requires for wetland delineation and mitigation for the mining project.

Appendix D-10 must contain copies of the wetland delineation, descriptions of proposed disturbances, and mitigation information.

11. Appendix D-11, Background Radiological Surveys

This appendix must include a natural gamma survey of all lands within the proposed permit area.

For guidance on conducting this survey, please refer to the Nuclear Regulatory Commission guidance documents Regulatory Guide 4.14, Revision 1, Radiological Effluent and Environmental Monitoring at Uranium Mills Revision 1, NUREG-5849, Manual for Conducting Radiological Surveys in Support of License Termination, and NUREG-1575, Multiagency Radiation Survey and Site Investigation Manual.

Mine (Operations) Plan

1. Site Description and Facilities Layout

a. Description of Facilities

Provide a discussion of the proposed facilities including plant buildings, satellite buildings, header houses, impoundments, roads, power corridors, pipelines related to the mining operations, disposal wells and well fields.

b. Maps

Provide contour (topographic) map(s) which accurately locate and identify the permit area and show the location of any public highways, dwellings, utilities and easements within the permit area and adjacent lands in relation to all proposed affected lands and proposed activities associated with the operation including, but not limited to: plant site, chemical storage areas, well field areas, roads, temporary and permanent drainage diversions, impoundments, stockpiles for topsoil, ore product and waste, and all processing facilities.

The map(s) shall also clearly illustrate the location of monitoring wells required by Section 14 of Chapter 11.

2. Description of the Ore Bodies

a. Description of Production Zone(s)

Provide a description of the location within the permit area and show on a map where underground injection is to be authorized.

b. Chemistry of Mining

Provide a description of chemical reactions that may occur during mining as a result of recovery fluid injection and a description of the type of recovery fluid to be used. If the process is to be held confidential as a trade secret, provide a statement to that effect and request that these pages be removed from the permit and be retained in the confidential files.

Additional guidance in preparing this section may be obtained from LQD Guideline 4, Section III.C.4.

3. Well Field Design, Construction and Operation

a. Well Field Design

i. Monitor Wells

The following information shall be provided:

- (A) The completion details for all monitor wells; and
- (B) A detailed description of the typical proposed well completion procedures for injection and recovery wells, as required by Section 6 of LQD NonCoal Rules and Regulations, Chapter 11. At a minimum, the casing size and type, wellbore diameter, centralizers, screens, gravel pack, annular sealant properties, displacement technique, sealant setting time and under reaming must be described.

LQD Guideline 8, Appendix 4, provides additional guidance on monitor well construction.

b. Well Field Integrity

Describe the procedures utilized to verify that the injection and recovery wells are in communication with monitor wells completed in the receiving strata and employed for the purpose of detecting excursions.

LQD Guideline 4, Section III.C.5., should be used as a reference in developing well field integrity testing procedures.

c. Well Field Methods of Operation

Provide a description of the proposed methods of operation, including:

- i. Injection rate, with the average and maximum daily rates and the volume of fluid to be injected;
- ii. Injection pressures, with average and maximum injection pressures, as required by Section 11 of LQD Chapter 11;
- iii. Proposed stimulation program;
- iv. Type of recovery fluid to be used;
- v. Proposed injection procedure; and
- vi. Expected changes in pressure, native groundwater displacement and direction of movement of injection fluid.
- vii. Water balance calculations that demonstrate that the liquid waste disposal facilities (surface impoundments, land application, deep well injection) are adequate to process the proposed production and restoration efforts at any time.

d. Lixiviant Control

Describe the procedure(s) to assure that the installation of recovery, injection, and monitor wells will not result in hydraulic communication between the production zone and overlying or underlying stratigraphic horizons.

LQD Guideline 4, Section III.C.5, should be used as a reference in developing lixiviant control procedures.

- e. **Mining Schedule**
Provide a discussion and illustration of the proposed mining schedule, including:
- i. A list of the proposed well fields;
 - ii. A map(s) which shows the proposed sequence for mining of the well fields;
 - iii. A proposed time schedule for mining each well field; and
 - iv. The capacity of the water/waste water treatment systems and correlation of the capacity with the mining and restoration schedules.

- f. **Mechanical Integrity Testing**
Provide a schedule for and description of the procedures to demonstrate and maintain mechanical integrity of all Class III injection wells as required by Section 7 of Chapter 11.

The mechanical integrity testing plan must include quarterly reporting of mechanical integrity test results to the LQD.

NUREG-1569 Section 3.1.3 provides guidance in assembling a mechanical integrity testing plan.

- g. **Maintenance of Wells**
Provide a maintenance plan to ensure:
- i. Wells are sufficiently covered to protect against entrance of undesirable material into the well;
 - ii. The wells are marked and can be clearly seen; and
 - iii. The area surrounding each well is kept clear of brush or debris; and
 - iv. Monitoring equipment is appropriately serviced and maintained so the monitoring requirements in Section 14(a)(i) of Chapter 11 can be met.
- h. **Repair and Abandonment of Wells**
Provide a corrective action plan, for such wells which are improperly sealed, completed, or abandoned, consisting of such steps or modifications as are necessary to prevent movement of fluid into unauthorized zones as required by Section 13 of Chapter 11.
- i. **Well Field Data Package**
Prior to the circulation of and injection into a new well field, the following information must be submitted to the LQD for approval:
- i. Results of an aquifer test that shows the perimeter monitor wells are in communication with the production unit mineralized zone wells.

- ii. Potentiometric surface maps for the mineralized zones to be mined, the overlying aquifer(s), and the underlying aquifer(s) as developed from premining water levels.
- iii. Baseline water quality of the upper and lower aquifers and proposed monitor well upper control limits.
- iv. Map(s) depicting the location of the monitor wells and mineralized zone monitor wells and tables listing the construction details of each well.
- v. Average production unit baseline water quality.
- vi. Proposed restoration target values.
- vii. A map showing the area to be impacted by mining.

The well field data package should be submitted (in duplicate) in a three-ring binder.

- j. **Uranium Recovery Processing Facilities**
Provide a discussion of the processing facilities including the location and sizes of buildings including the foundations.

Discuss the storage and handling of chemicals to be used in the mining and groundwater restoration processes. NUREG-1569 can be referenced for the detail necessary for this section.

- k. **Access Roads**
Provide a discussion and description of all access roads leading to the proposed permit area and roads providing access within the permit area to plant, well field buildings, miscellaneous facilities and monitor wells.

The design and construction of any stream crossings should be discussed in this section. A basic hydrologic study demonstrating that crossing designs and culvert sizings are appropriate may be required.

The location of all major access roads must be provided on a map.

- l. **Construction Considerations and Topsoil Handling**
Describe the procedure(s) used to protect the topsoil and subsoil, as required in Chapter 3, Section 2(c)(i) through (iii), from excessive compaction, degradation, and wind and water erosion where stockpiling of topsoil and subsoil is necessary. The Administrator may authorize topsoil to remain on areas where minor disturbance will occur associated with construction and installation activities including but not limited to light-use roads, signs, well fields, utility lines, fences,

monitoring stations, and drilling provided that the minor disturbance will not destroy the protective vegetative cover, increase erosion, nor adversely affect the soil resource.

Describe the topsoil salvage and conservation to be used during road construction, drilling mud pit excavation and pipeline installation.

m. Effluent Control Systems

i. Waste Disposal

Provide the composition of all known and anticipated wastes and procedures for their disposal. See NUREG-1569, Section 6.

If a Class I disposal well is to be used for disposal of waste solutions, see NUREG-1569, Section 6.1.3.(13) for guidance on information for this section. Information from the WQD Class I disposal well permit including the location, operation and maintenance of this well should be included as an addendum to the Mine Plan.

ii. Liquids and Solids

Discuss the handling of toxic and other hazardous materials and procedures for ensuring that all acid-forming, or toxic, or other materials constituting a fire or health and safety hazard encountered during or created by the mining process are promptly treated, confined, or disposed of in a manner designed to prevent pollution of surface water or groundwater, degradation of soils, or vegetation, or threat to human or animal health and safety. See Guideline 4, Section III.4.a, and NUREG-1569, Section 4.2, for guidance in responding to this section.

iii. Contaminated Equipment

Discuss the identification, handling, storage and ultimate disposal of radiologically contaminated equipment and supplies.

Refer to NRC Guidance Document NUREG-1569, Sections 4.3 and 5.7.6 for additional information.

n. Operations

i. Corporate Organization and Administration Procedures

Refer to NRC Guidance Document NUREG-1569, Section 5.1 for information on addressing this section.

ii. Management Control Program

Refer to NRC Guidance Document NUREG-1569, Section 5.2 for information on addressing this section.

- iii. Management Audit and Inspection Program
Refer to NRC Guidance Document NUREG-1569, Section 5.3 for information on addressing this section.
- iv. Qualifications
Refer to NRC Guidance Document NUREG-1569, Section 5.4 for information on addressing this section.
- v. Radiation Safety Training
Refer to NRC Guidance Document NUREG-1569, Section 5.5 for information on addressing this section.
- vi. Security
Place materials required by 10 CFR Part 20, Subpart I and NUREG-1569, Section 5.6 here.

The fencing of plant areas, ponds, well fields, storage areas and other areas should be described here. Refer to LQD Guideline No. 10 for further information on fencing.

- vii. Radiation Safety Controls and Monitoring
Place materials required by 10 CFR Part 20 and NUREG-1569, Section 5.7 here.
- viii. Environmental Monitoring Programs
Describe the environmental monitoring programs for surface and groundwater here.

Place materials required by 10 CFR Part 20, Subpart I and NUREG-1569, Section 5.7 here.

- o. Wildlife Mitigation
Provide a description of the mitigating measures developed from discussions with the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service as required per Chapter 2, Section 1(f), including protection of raptors from power lines.
- p. Quality Assurance Program
Describe the sampling and analysis plan required by Guideline 4, Attachment No.1.

Refer to NRC Guidance Document NUREG-1569, Section 5.7.9 for further information on addressing this section.

- q. Reporting Procedures
The procedures for reporting excursions and unanticipated events should as spills must be outlined in this section.

It is recommended that a listing of the various permit commitments requiring quarterly, semiannual and annual reporting be outlined in this section, also.

Restoration and Reclamation Plans

1. Groundwater Restoration
 - a. Restoration Processes
Describe the planned restoration processes and the sequencing of their application.
 - b. Groundwater Restoration Schedule
Provide a discussion and illustration of the proposed groundwater restoration schedule, including:
 - i. A list of the proposed well fields;
 - ii. A map(s) which shows the proposed sequence for restoration of the well fields;
 - iii. A proposed time schedule for each well field
 - iv. The capacity of the water/waste water treatment systems and correlation of the capacity with the mining and restoration schedules. Water balance calculations that demonstrate that the liquid waste disposal facilities (surface impoundments, land application, deep well injection) are adequate to process the proposed production and restoration efforts at any time.
 - c. Restoration of Groundwater Documentation
The operator will be required to provide the information necessary to demonstrate that the operation will achieve the standard of returning all affected groundwater to the pre-mining class of use or better using Best Practicable Technology as outlined in Chapter 11, Section 5(a)(ii).
2. Decontamination and Decommissioning
 - a. Disposal of Process Buildings, Equipment and Other Facilities
Describe the procedures for removing and disposing of structures used in conjunction with the mining operation.
 - b. Evaporation Pond Decommissioning
Describe the plans and procedures for decommissioning of evaporation ponds, including handling and disposal of contaminated materials.

- c. **Well Field Decommissioning**
Provide a plan for well repair, plugging, and conversion of wells as required by Section 8 of Chapter 11.
- d. **Soil Decontamination**
Describe plans for soil decontamination as outlined in NUREG 1569.
- e. **Decommissioning Health Physics and Radiation Safety**
Describe decommissioning health physics and radiation safety as outlined in NUREG 1569.

3. **Surface Reclamation**

- a. **Post Mining Land Use**
Describe the proposed post mining land uses and the procedures to be used to return the affected lands to those uses.
- b. **Process Facilities and Roads Reclamation**
 - i. **Estimated Topsoil Volumes and Replacement Depths**
Provide a brief description of estimated volumes of topsoil to be handled, stockpiled and proposed replacement depths.
 - ii. **Surface Reclamation**
Describe procedures for ground surface preparation, depth of topsoil replacement, erosion control and water conservation practices.
 - iii. **Contouring of Affected Areas**
Describe the recontouring of affected areas.
 - iv. **Contour Map**
Provide a contour map showing the approximate post-reclamation surface contours for affected lands and the immediate surrounding areas if the operation will substantially alter the premining contours.
 - v. **Restoration of Surface Drainage**
Describe procedures for reestablishing any surface drainage that may be disrupted by the mining operation.
 - vi. **Erosion Control Practices**
Describe the procedures used to reduce or prevent erosion. This should also include erosion prevention during plant construction and well field construction.

Relevant portions of the Water Quality Division Storm Water Discharge permit should be placed in this section.

- iii. **Revegetation Practices**
Describe the procedures for revegetation to return the affected lands to the proposed postmining land use and procedures for evaluation of revegetation success in accordance with Land Quality Division NonCoal Rules and Regulation, Chapter 3, Section 2(d).
 - (A) **Seed Mixtures**
Describe the seed mixtures to be used for both temporary stabilization and permanent reclamation.
 - (B) **Reseeding Methods**
Describe the proposed methods of seeding.
 - (C) **Management of Newly Seeded Areas**
Describe the management of newly seeded areas, both for temporary stabilization and permanent reclamation. Pay particular attention to protection of newly seeded areas from livestock grazing

4. General Reclamation Schedules
Outline the planned schedules for groundwater restoration and surface reclamation.

5. Evaluation of Reclamation Success
Describe how reclamation success will be evaluated, including submission to the Land Quality Division at the appropriate time of plans and methods for evaluation.

6. Reclamation Cost Estimates
Provide an estimate of costs for reclamation as computed in accordance with established engineering principles, including, but not limited to:

- a. Cost of removing and disposing of structures;
- b. Cost of topsoiling and reseeding all affected lands;
- c. Cost of groundwater restoration
This should include the costs of facilities, energy, materials, and chemicals used for groundwater restoration and any other associated expenses;
- d. Cost of capping, plugging, and sealing of all wells; and
- e. Costs for personnel working on reclamation-related activities.
The estimate should be based on the amount of affected lands, structures and affected groundwater for the first year of operations. Some costs and methods of estimating may be obtained by referencing LQD Guideline 12.

NUREG-1569. Appendix C, gives additional information on in situ bonding.

References

Land Quality Division NonCoal Rules and Regulations
Land Quality Division Guideline No. 1, Soils and Overburden
Land Quality Division Guideline No. 2, Vegetation
Land Quality Division Guideline No. 3, Radiological Survey
Land Quality Division Guideline No. 4, In Situ Mining
Land Quality Division Guideline No. 5, Wildlife
Land Quality Division Guideline No. 8, Hydrology
Land Quality Division Guideline No. 10, Fencing
Land Quality Division Guideline No. 11, Guideline for Reporting Cultural and
Paleontological Resources Within Mine Permit Areas
Land Quality Division Guideline No. 12, Bonding
Land Quality Division Guideline No. 18, Coal Compensatory Wetland Mitigation

Nuclear Regulatory Commission NUREG-1569, Standard Review Plan for In Situ Leach
Uranium Extraction License Applications

**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY (WDEQ)
LAND QUALITY DIVISION (LQD)**

**NONCOAL STATUTE AND RULE AND REGULATION CITATIONS FOR THE IN SITU
COMPLETENESS CRITERIA**

Organization

1. Layout of document: W.S. § 35-11-427 and W.S. § 35-11-428(a).
2. Format of document: W.S. § 35-11-427 and W.S. § 35-11-428(a).
3. Chapter 11, Section 2(c).

Adjudication File

1. Form 1-UIC: Application for Permit to Mine

W.S. § 35-11-406(a)(i), (ii), (iii), (vi)(B), (vi)(C) and (vi)(D), (x) and (xi); W.S. § 35-11-428(a).

2. Form 3: License to Mine

W.S. § 35-11-410.

3. Reclamation Bond

W.S. § 35-11-403(a)(ii); W.S. § 35-11-410(c); W.S. § 35-11-417.

3.a. W.S. §35-11-410(c); W.S. § 35-11-417; W.S. § 35-11-418

3.b. Chapter 6, Sec. 2(a); Chapter 11, Section 5(a)(xiii).

3.c. W.S. §35-11-410(c); Chapter 6, Sec. 2(a).

4. Certificate of Public Liability

W.S. § 35-11-406(a)(xiii); W.S. § 35-11-428(a).

5. Appendix "A" (For lands within the permit area)

W.S. § 35-11-406(a)(iv); W.S. § 35-11-428(a).

5.a. W.S. § 35-11-406(a)(iv); Chapter 11, Sec. 3(a), Sections 4(a) and 5(a); Form 1, Section 3(a).

a. W.S. § 35-11-406(a)(iv); Form 1-UIC, Section 3(a).

b. W.S. § 35-11-406(a)(iv); Form 1-UIC, Section 3(a).

5.b. W.S. § 35-11-406(a)(ix)(A); Form 1-UIC, Section 3.(b).

6. Appendix "B" (For lands adjacent [within one-half mile] to the permit area)

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- 6.a. W.S. § 35-11-406(a)(v) and (ix)(A)
 - a. W.S. § 35-11-406(a)(v) and (ix)(A); W.S. § 35-11-428(a); Chapter 2, Section 1(a) and (b); Form 1-UIC, Section 3(b)(i).

- 6.b. W.S. § 35-11-406(a)(v) and (ix)(A); W.S. § 35-11-428(a);

7. Appendix "C"

W.S. § 35-11-406(a)(vi); W.S. § 35-11-428(a).

- 7.a. W.S. § 35-11-406(a)(vi)(A); W.S. § 35-11-428(a); Form 1-UIC, Section 3(c)(i); Form C-1.
- 7.b. W.S. § 35-11-406(a)(vi)(A); W.S. § 35-11-428(a); Form 1-UIC, Section 3(c)(i); Form C-2.
- 7.c. W.S. § 35-11-406(a)(vi)(A); W.S. § 35-11-428(a).
- 7.d. W.S. § 35-11-406(a)(vi)(A); W.S. § 35-11-428(a); Form 1-UIC, Section 3(c)(ii).
- 7.e. W.S. § 35-11-406(a)(ix); W.S. § 35-11-428(a); Form 1-UIC, Section 3(c)(iii).

8. Surface Owner Consent

- 8.a. W.S. § 35-11-406(b)(xi).
- 8.b. W.S. § 35-11-410(b)(xii).

9. Permit Fees

- 9.a. W.S. § 35-11-406(a)(xii).
- 9.b. W.S. § 35-11-406(a)(xii).
- 9.c. W.S. § 35-11-410(b)(vi).

10. Appendix "E"

W.S. § 35-11-406(a)(viii) and (ix); Chapter 2, Section 2(a); Form 1-UIC, Section 3(e).

- 10.a. W.S. § 35-11-406(a)(viii) and (b)(v); Form 1-UIC, Section 3(c)(iv).
 - a. W.S. § 35-11-406(a)(vi); Chapter 2, Section 1(c); Form 1-UIC, Section 3(e).
 - b. W.S. § 35-11-406(a)(vi)(C) and (a)(ix); Chapter 11, Section 4(a)(i), (ii), (iv) and (ix); Form 1-UIC, Section 3(e)(i).
 - c. W.S. § 35-11-406(a)(vi)(A); W.S. § 35-11-428(a)
- 10.b. W.S. § 35-11-406(a)(ix); Chapter 2, Section 1(c) and Section 2(a)(i).
 - a. W.S. § 35-11-406(a)(ix); Form 1-UIC, Section 3(e)(iii).
 - b. W.S. § 35-11-406(a)(ix); Form 1-UIC, Section 3(e)(ii).
 - c. W.S. § 35-11-406(a)(vii); Chapter 11, Section 3(a)(x) and (xi).
 - d. W.S. § 35-11-406(a)(ix); Chapter 11, Section 3(a)(xi)(A) and (B); Form 1-UIC, Section 3(e)(iii).
 - e. W.S. § 35-11-406(a)(ix); Chapter 11, Section 3(a)(xi)(A) and (B).
 - f. W.S. § 35-11-406(a)(ix)(B); Form 1-UIC, Section 3(e)(vi).
 - g. W.S. § 35-11-406(a)(ix); Form 1-UIC, Section 3(e)(iv).
 - h. W.S. § 35-11-406(a)(ix)(D).

11. Listing of Other Permits or Construction Approvals

Chapter 11, Section 3(a)(ii).

- 11.a. Chapter 11, Section 3(a)(ii)(A).
- 11.b. Chapter 11, Section 3(a)(ii)(B).
- 11.c. Chapter 11, Section 3(a)(ii)(C).
- 11.d. Chapter 11, Section 3(a)(ii)(D).
- 11.e. Chapter 11, Section 3(a)(ii)(E).
- 11.f. Chapter 11, Section 3(a)(ii)(F).
- 11.g. Chapter 11, Section 3(a)(ii)(G).
- 11.h. Chapter 11, Section 3(a)(ii)(H).
- 11.i. Chapter 11, Section 3(a)(ii)(I).

Appendix D, Environmental Baseline Data

1. Appendix "D-1" - Land Use.

W.S. § 35-11-428(a)(i); W.S. § 35-11-428(a)(iii)(B); Chapter 2, Section 2(a)(i)(A).

2. Appendix "D-2" - History of the Area.

W.S. § 35-11-428(a)(iii)(B); Chapter 2, Section 2(a)(i)(A).

3. Appendix "D-3" - Archeological and Paleontological Resources.

W.S. § 35-11-428(a)(iii)(B); Chapter 2, Section 2(a)(i)(A); Chapter 2, Section 2(a)(i)(J).

4. Appendix "D-4" - Climatology.

W.S. § 35-11-428(a)(iii)(C); Chapter 11, Section 3(a)(vii).

5. Appendix "D-5" - Topography, Geology, and Overburden Assessment.

W.S. § 35-11-428(a)(ii); Chapter 11, Section 3(a)(viii).

- a. W.S. § 35-11-428(a)(ii); Chapter 11, Section 3(a)(viii)(A) .
- b. W.S. § 35-11-428(a)(ii); Chapter 11, Section 3(a)(viii)(B).
- c. W.S. § 35-11-428(a)(ii); Chapter 11, Section 3(a)(viii)(C).

6. Appendix "D-6" - Hydrology.

W.S. § 35-11-428(a); Chapter 11, Section 3(x), (xi), (xii), (xiv) and (xv).

- a. Chapter 11, Section 2(a)(x).
 - i. W.S. § 35-11-428(a)(i); Chapter 11, Section 3(a)(x)(A).
 - ii. W.S. § 35-11-428(a)(i); Chapter 11, Section 3(a)(x)(B).
- b. Chapter 11, Section 2(a)(xi).
 - i. Chapter 11, Section 3(a)(xi)(A).
 - ii. Chapter 11, Section 3(a)(xi)(B).
 - iii. Chapter 11, Section 3(a)(xii).

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- iv. Chapter 11, Section 3(a)(xiii).
 - v. Chapter 11, Section 3(a)(xiv).
 - vi. Chapter 11, Section 3(a)(xv).
7. Appendix "D-7" - Soil Assessment.
- W.S. § 35-11-406(b)(viii); W.S. § 35-11-428(a)(i); Chapter 11, Section 3(a)(iii) and (iv).
- a. Chapter 11, Section 3(a)(iii).
 - b. Chapter 11, Section 3(a)(iv).
8. Appendix "D-8" - Vegetation Inventory.
- a. W.S. § 35-11-406(b), W.S. § 35-11-428(a)(i), Chapter 11, Section 3(a)(v).
9. Appendix "D-9" - Wildlife.
- W.S. § 35-11-406(a)(vii); Chapter 11, Section 3(a)(vi).
10. Appendix "D-10" - Wetlands.
- W.S. § 35-11-103(c)(x) through (xvi); W.S. § 35-11-308 through 311.
11. Appendix "D-11" – Baseline Radiological Surveys
- W.S. § 35-11-129(a)(i)

Mine (Operations) Plan

- 1. Site Description and Facilities Layout: W.S. § 35-11-406(b)(ii), (v) and (vii); W.S. § 35-11-428(a)(iii)(C), (D), (F) and (G).
 - 1a. Description of Facilities: W.S. §35-11-428(a)(iii)(C), Chapter 11, Section 4(a)(i)
 - 1b. Maps: W.S. § 35-11-428(a)(iii)(B) and (D), Chapter 11, Section 4(a)(i) and (ii)(B);
- 2. Description of the Ore Bodies: W.S. § 35-11-428(a)(ii)(B); Chapter 11, Section 3(a)(viii)(A) and (B), (ix), (x), (xiv), Chapter 11, Section 4(a)(ix).
 - 2.a. Description of the Ore Zone(s): W.S. § 35-11-428(a)(ii)(B); Chapter 11, Section 3(a)(viii)(A) and (B), (ix), (x), (xiv), Chapter 11, Section 4(a)(ix).
 - 2.b. Chemistry of Mining: W.S. § 35-11-428(a)(ii)(B), Chapter 11, Section 4(a)(ii)(B); Chapter 11, Section 4(a)(x)(D), Chapter 11, Section 4(a)(xi)(A)(III), Chapter 11, Section 4(a)(xviii).
- 3. Well Field Design, Construction and Operation: W.S. § 35-11-406(b); W.S. § 35-11-428(a)(iii)(A), (C) and (F); Chapter 11, Section 4.(a)(xiv).
 - 3.a. Well Field Design: 35-11-406(b); W.S. § 35-11-428(a)(iii)(A), (C) and (F); Chapter 11, Section 4.(a)(xiv).
 - 3.a.i. Wellfield Design: W.S. § 35-11-428(a)(iii)(A),); Chapter 11, Section 4.(a)(xiv).

- 3.a.i.(A) Monitor Well Completion Details: Chapter 11, Section 4.(a)(xiv)(A) and Section 6(a)-(h).
- 3.a.i.(B) Well Completion Procedures: Chapter 11, Section 4.(a)(xiv)(B) and Section 6(a)-(h).
- 3b. Well Field Integrity: W.S. § 35-11-428(a)(ii)(B), W.S. § 35-11-428(a)(iii)(A) and (F); Chapter 11, Section 4(a)(xi), (xii) and (xiii)
- 3c. Well Field Methods of Operations: W.S. § 35-11-406(b), W.S. § 35-11-406(b)(xvi); W.S. § 35-11-428(a)(iii)(A), (C), (D), (F); Chapter 11, Section 4(a)(x).
 - 3.c.i. Injection rate: Chapter 11, Section 4(a)(x)(A).
 - 3.c.ii. Injection pressures: Chapter 11, Section 4(a)(x)(B).
 - 3.c.iii. Proposed stimulation program: Chapter 11, Section 4(a)(x)(C).
 - 3.c.iv. Recovery fluid: Chapter 11, Section 4(a)(x)(D).
 - 3.c.v. Proposed injection procedure: Chapter 11, Section 4(a)(x)(E).
 - 3.c.vi. Expected changes in pressures: Chapter 11, Section 4(a)(x)(F).
 - 3.c.vii. Water balance calculations: Chapter 11, Sections 4(a)(ii)(D) and 4(a)(vi)
- 3.d. Lixiviant Control: W.S. § 35-11-428(a)(iii)(A), Chapter 11, Section 4(a)(x), (xii), (xiii), (xvii) and (xx).
- 3.e. Mining Schedule: W.S. § 35-11-406(b); W.S. § 35-11-406(b)(xix); Chapter 11, Section 4(a)(i)(C);
 - 3.e.i. W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(C); Chapter 11, Section 4(a)(ii)(A).
 - 3.e.ii. W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(A), (C), (D), (F); Chapter 11, Section 4(a)(ii)(B).
 - 3.e.iii. W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(A), (C), (D), (F); Chapter 11, Section 4(a)(ii)(C).
 - 3.e.iv. W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(A), (C), (D), (F); Chapter 11, Section 4(a)(ii)(D).
- 3.f. Mechanical Integrity Testing: W.S. § 35-11-406(b)(ix); W.S. § 35-11-428(a)(iii)(F); Chapter 11, Section 4.(a)(xvi); Chapter 11, Section 7(a)(i)-(vi).
- 3.g. Maintenance of Wells: W.S. § 35-11-406(b)(xiii); W.S. 35-11-428(a)(iii)(F); Chapter 11, Section 4(a)(xxii).
 - 3.g.i. Chapter 11, Section 4(a)(xxii)(A).
 - 3.g.ii. Chapter 11, Section 4(a)(xxii)(B).
 - 3.g.iii. Chapter 11, Section 4(a)(xxii)(C).
 - 3.g.iv. Chapter 11, Section 4(a)(xxii)(D).
- 3.h. Repair and Abandonment of Wells: W.S. § 35-11-406(b)(iv) and (ix); W.S. § 35-11-428(a)(iii)(A) and (F); Chapter 11, Section 4(a)(xvii), Chapter 11, Section 8(a)-(i).
- 3.i. Wellfield Data Package: W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xii), (xiii), (xiv) and (xv).
 - 3.i.i. W.S. § 35-11-428(a)(iii), Chapter 11, Section 4(xi), (xii) and (xiii).
 - 3.i.ii. W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xiii).

- 3.i.iii. W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xv), Chapter 11, Section 4(ix).
- 3.i.iv. W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xiii), Chapter 11, Section 4(xiv)(A).
- 3.i.v. W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xv), Chapter 11, Section 4(xv), Chapter 11, Section 14(a).
- 3.i.vi. W.S. § 35-11-428(a)(iii), Chapter 11, Section 3(xiii), Chapter 11, Section 4(a)(ii)(B)

- 3.j. Uranium Recovery Processing Facilities: W.S. § 35-11-406(b)(ix) and (xiii), W.S. § 35-11-428(a)(ii)(C), (D), Chapter 11, Section 3(xiii), Section 4(a)(iv), (vi), (vii) and (ix).

- 3.k. Access Roads: W.S. § 35-11-406(b)(viii), (xiii) and (xv), W.S. § 35-11-428(a)(i) and (iii)(C) and (D),

- 3.l. Construction Considerations and Topsoil Handling: W.S. § 35-11-406(b)(viii), (xiv) and (xv), W.S. § 35-11-428(a)(i) and (iii)(C) and (D), W.S. § 35-11-428(a)(iii)(C), (D) and(G), Chapter 11, Section 4(a)(i), (iii) and (vii).

- 3.m. Effluent Control Systems: W.S. § 35-11-406(b)(ix) and (xiii), W.S. § 35-11-428(a)(ii)(C) and (F), Chapter 11, Section 4(a)(vi) and (vii).
 - 3.m.i. Waste Disposal: W.S. § 35-11-406(b)(ix) and (xiii), W.S. § 35-11-428(a)(iii)(C) and (F), Chapter 11, Section 4(a)(vi) and (vii).
 - 3.m.ii. Liquids and Solids: W.S. § 35-11-406(b)(ix) and (xiii), W.S. § 35-11-428(a)(iii)(C) and (F), Chapter 11, Section 4(a)(vi) and (vii).
 - 3.m.iii. Contaminated Equipment: W.S. § 35-11-406(b)(ix) and (xiii), W.S. § 35-11-428(a)(iii)(F).

- 3.n. Operations: W.S. § 35-11-406(a)(i); Chapter 11, Section 2.(g).
 - 3.n.i. Corporate Organization and Management: W.S. § 35-11-406(a)(i); Chapter 11, Section 2(g)(i), (ii) and (iii)
 - 3.n.ii. Management Control Program: Chapter 11, Section 2(g)(ii)(B).
 - 3.n.iii. Management Audit and Inspection Program: Reference the proper NRC guidance document.
 - 3.n.iv. Qualifications: Reference the proper NRC guidance document.
 - 3.n.v. Radiation Safety Training: Reference the proper NRC guidance document.
 - 3.n.vi. Security: W.S. § 35-11-406(b)(xiii)
 - 3.n.vii. Radiation Safety Controls and Monitoring: W.S. § 35-11-406(b)(ix), W.S. § 35-11-428(a)(i) and (iii)(F) and (G), Chapter 11, Section 4.(a)(vii).
 - 3.n.viii. Environmental Monitoring Program: W.S. § 35-11-428(a)(iii)(F), W.S. § 35-11-430(b), Chapter 11, Section 4(a)(xv), Chapter 11, Section (14)(a)(i)-(iii), Chapter 11, Section 15(a)-(e).

- 3.o. Wildlife Mitigation: W.S. § 35-11-406(b)(xiii), W.S. § 35-11-428(a)(i) and (a)(iii)(F); Chapter 11, Section 4(a)(viii).

- 3.p. Quality Assurance Program: Chapter 11, Section 14(a)(i)(A) and (C), Chapter 11, Section 15(a)(i), Chapter 11, Section 16(a)(i)

- 3.q. Reporting Procedures: W.S. § 35-11-428(a)(iii)(F), W.S. § 35-11-430(b), Chapter 11, Section 14(a)(i)-(v), Chapter 11, Section 15(a)-(e).

Restoration/Reclamation Plan

1. Groundwater Restoration: W.S. § 35-11-406(b)(xix), W.S. § 35-11-428(a)(iii) and (iii)(H), Chapter 11, Section 5(a)
 - 1.a. Restoration Processes: W.S. § 35-11-428(a)(iii)(H)
 - 1.b. Groundwater Restoration Schedule: W.S. § 35-11-406(b)(xix), W.S. § 35-11-428(a)(iii)(B), (E), (G) and (H); Chapter 11, Section 5.(a)(i).
 - 1.b.i. List of proposed well fields: Chapter 11, Section 5(a)(i)(A).
 - 1.b.ii. Map of restoration sequence: Chapter 11, Section 5(a)(i)(B).
 - 1.b.iii. Proposed time schedule: Chapter 11, Section 5(a)(i)(C).
 - 1.b.iv. Capacity of water/wastewater systems: Chapter 11, Section 5(a)(i)(D).
 - 1.c. Restoration of Groundwater Documentation: W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(B), (E), (G) and (H); Chapter 11, Section 5.(a)(ii).
2. Decontamination and Decommissioning: W.S. § 35-11-406(b)(xix); W.S. § 35-11-428(a)(iii)(F); Chapter 11, Section 5(a)(iii); Chapter 11, Section 8.(a)-(i).
 - 2.a. Disposal of Process Buildings, etc.: W.S. § 35-11-406(b)(iv) and (xix), W.S. § 35-11-428(a)(iii)(G) and (H); Chapter 11, Section 5.(a)(i)(B), (C), (D), (iv)-(xii).
 - 2.b. Evaporation Pond Decommissioning: W.S. § 35-11-406(b)(iv) and (ix) and (xi); W.S. § 35-11-428(a)(iii)(G) and (H); Chapter 11, Section 5.(a)(iv), (viii) and (ix)
 - 2.c. Well Field Decommissioning: W.S. § 35-11-406(b)(iv) and (xix), W.S. § 35-11-428(a)(iii)(G), W.S. § 35-11-406(b)(iv) and (xix), xiii), Chapter 11, Section 8(f)-(h).
 - 2.d. Soil Decontamination: W.S. § 35-11-406(b)(ix)(xiii) and (xix), W.S. § 35-11-406(b)(iv) and (xix), G), Chapter 11, Section 5.(a)(viii) and (xi).
 - 2.e. Decommissioning Health Physics: See relevant NRC documents.
3. Surface Reclamation: W.S. § 35-11-406(b)(i),(viii)(ix), (xv) and (xix), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(iv)-(xii).
 - 3.a. Postmining Land Use: W.S. § 35-11-406(b)(i), (ii), (iv), (viii) (ix), (xiii), (xiv) and (xix), W.S. § 35-11-428(a)(iii)(A) and (G), Chapter 11, Section 5(a)(iv)-(xiii).
 - 3.b. Process Facilities and Roads Reclamation: W.S. § 35-11-406(b)(i), (ii), (iv), (viii), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(iv)-(xii).
 - 3.b.i. Estimated Topsoil Volumes and Replacement Depths: W.S. § 35-11-406(b)(viii), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(ix).
 - 3.b.ii. Surface Reclamation: W.S. § 35-11-406(b)(i),(viii)(ix), (xv) and (xix), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(iv)-(xii).
 - 3.b.iii. Contouring of Affected Areas: W.S. § 35-11-406(b)(ii), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(v), (vi), (viii)-(xi).

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- 3.b.iv. Contour Map: W.S. § 35-11-406(b)(ii), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(v).
- 3.b.v. Restoration of Surface Drainage: W.S. § 35-11-406(b)(ii), (xiv) and (xv), Chapter 11, Section 5(a)(v)-(vii) and (xii).
- 3.b.vi. Erosion Control Practices: W.S. § 35-11-406(b)(ii), (viii), (xiii), (xiv) and (xv), W.S. § 35-11-428(a)(iii) (E) and (G), Chapter 11, Section 4(a)(iii) and (xxi), Section 5.a.(xi).
- 3.b.vii. Revegetation Practices: W.S. § 35-11-406(b)(xv), W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(xi) and (xii).
 - 3.b.vii.(A) Seed Mixtures: W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(xii).
 - 3.b.vii.(B) Reseeding Methods: W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(xii).
 - 3.b.vii.(C) Management of Newly Seeded Areas: W.S. § 35-11-428(a)(iii)(G), Chapter 11, Section 5(a)(xi) and (xii).
- 4. General Reclamation Schedules: W.S. § 35-11-406(b)(xix), W.S. § 35-11-428(a)(iii)(G) and (H), Chapter 11, Section 5(a)(i)(C), (vi), and (xii).
- 5. Evaluation of Reclamation Success: Chapter 11, Section 5(a)(xii).
- 6. Reclamation Cost Estimates: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii).
 - 6.a. Cost of Removing Buildings: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii)(A).
 - 6.b. Costs of topsoiling and reseeding: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii)(B).
 - 6.c. Costs of groundwater restoration: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii)(C).
 - 6.d. Cost of capping, plugging and sealing of all wells: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii)(D).
 - 6.e. Costs of personnel: W.S. § 35-11-428(a)(iii)(J), Chapter 11, Section 5(a)(xiii)(E).