Voluntary – 43 CFR 3809 Plan of Operations Form

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Royal Gorge Field Office
3028 East Main Street
Cañon City, Colorado 81212

Section 1: General Information

Pursuant to 43 CFR 3809.401(b)(1).

This form is designed to streamline the required information for a Plan of Operations with the BLM (43 CFR 3809.400) and to parallel the Colorado Division of Reclamation and Mine Safety (CDRMS) mining permit applications in hopes of streamlining the paperwork. Plans of Operation will most likely be subject to the CRDMS 110 or 112 permits. The 112 application encompasses more details of the operation and was chosen as a model for this BLM voluntary form. The applicant should be able to copy and paste similar information into each application, as well as each Exhibit in its entirety. CDRMS requirements and regulations can be found at http://mining.state.co.us/Programs/MineralMines/Rules/Pages/RulesRegs.aspx.

1. **General Information**

Applicant/Operator or company name:

Operation name (pit, mine, or site name):

Permitted acreage (new or existing site): acres

Change in acreage (+) acres

Total Acreage in Permit Area acres

2. **Type of mining operation**: ☐ Surface ☐ Underground ☐ In-situ
3. **General Description:** (local roads, nearest towns, landmarks, etc.)

Will this operation use designated chemicals, result in, or presently have acid mine drainage? ☐ Yes ☐ No

4. **Operator Information**

Operator Name:

Mailing Address:

City: State: ZipCode:

Phone #: Alternate Phone #:

Operator Tax Payer Identification Number:

5. **Claimant/Claim Information**, if applicable; if open minerals check here ☐

Primary Claimant:

Mailing Address:

City: State: ZipCode:

Phone #: Alternate Phone #:

Additional claimant name(s)

Claims Information: Please list the CMC numbers, claim names, and claim type (i.e. placer, lode, mill site, tunnel site) for all claims involved in the proposed operations.

CMC	Claim Name	Claim Type

6. **Inspection Contact:** Check here if same as applicant/operator above: ☐

Contact's Name: Title:

Company Name:

Street/P.O. Box:

City: State: Zip Code:

Telephone Number Fax Number

Section 2: Cultural and Paleontological Resources, & Fish, Wildlife, and Plant Habitats

Pursuant to 43 CFR 3809.420.

Cultural and Paleontological Resources:

1. Operators shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands.
2. Operators shall immediately bring to the attention of the authorized officer any cultural and/or paleontological resources that might be altered or destroyed on Federal lands by his/her operations, and shall leave such discovery intact until told to proceed by the authorized officer. The authorized officer shall evaluate the discoveries brought to his/her attention, take action to protect or remove the resource, and allow operations to proceed within 10 working days after notification to the authorized officer of such discovery.
3. The Federal Government shall have the responsibility and bear the cost of investigations and salvage of cultural and paleontology values discovered after a plan of operations has been approved, or where a plan is not involved.

Fish, Wildlife, and Plant Habitat:

1. The operator shall take such action as may be needed to prevent adverse impacts to threatened or endangered species, and their habitat which may be affected by operations.

Section 3: Operational and Baseline Environmental Information

Pursuant to 43 CFR 3809.401(c).

The BLM may require information to use in analyzing potential environmental impacts as required by the National Environmental Policy Act (NEPA) and to determine if your plan of operations will prevent unnecessary or undue degradation. Types of information required may include, but is not limited to, geology, paleontology, hydrology, soils, vegetation, wildlife, air quality, cultural resources, socioeconomic conditions, etc. If you have background information that may be pertinent to review this proposal please provide that data below.

Section 4: Financial Warranty

Pursuant to 43 CFR 3809.500-599.

A financial warranty must be provided for the cost of reclamation of the disturbance described in this Plan of Operations. The financial warranty must be submitted and accepted by the BLM prior to entry upon lands for the purpose of prospecting/mining in a manner greater than casual use. Information on the types of financial warranties permitted can be found in the regulations. (www.ecfr.gov; title 43, subpart 3809)

Section 5: Terms and Conditions for Plan Level Operations

Approval and Starting Work under a Plan of Operations:

1. BLM will review your plan of operations within 30 calendar days and will notify you that—
    a. Your plan of operations is complete, that is, it meets the content requirements of § 3809.401(b);
    b. Your plan does not contain a complete description of the proposed operations under § 3809.401(b). BLM will identify deficiencies that you must address before BLM can continue processing your plan of operations. If necessary, BLM may repeat this process until your plan of operations is complete; or
    c. The description of the proposed operations is complete, but BLM cannot approve the plan until certain additional steps are completed, including one or more of the following:
        i. You collect adequate baseline data;
        ii. BLM completes the environmental review required under the National Environmental Policy Act;
        iii. BLM completes any consultation required under the National Historic Preservation Act, the Endangered Species Act, or the Magnuson-Stevens Fishery Conservation and Management Act;
        iv. BLM or the Department of the Interior completes other Federal responsibilities, such as Native American consultation;

v. BLM conducts an on-site visit;
vi. BLM completes review of public comments on the plan of operations;
vii. For public lands where BLM does not have responsibility for managing the surface, BLM consults with the surface-managing agency;
viii. In cases where the surface is owned by a non-Federal entity, BLM consults with the surface owner; and
ix. BLM completes consultation with the State to ensure your operations will be consistent with State water quality requirements.

2. Pending final approval of your plan of operations, BLM may approve any operations that may be necessary for timely compliance with requirements of Federal and State laws, subject to any terms and conditions that may be needed to prevent unnecessary or undue degradation.
3. Following receipt of your complete plan of operations and before BLM acts on it, we will publish a notice of the availability of the plan in either a local newspaper of general circulation or a NEPA document and will accept public comment for at least 30 calendar days on your plan of operations.
4. Upon completion of the review of your plan of operations, including analysis under NEPA and public comment, BLM will notify you that—
   a. BLM approves your plan of operations as submitted (See part 3810, subpart 3814 of this title for specific plan-related requirements applicable to operations on Stock Raising Homestead Act lands.);
   b. BLM approves your plan of operations subject to changes or conditions that are necessary to meet the performance standards of § 3809.420 and to prevent unnecessary or undue degradation. BLM may require you to incorporate into your plan of operations other agency permits, final approved engineering designs and plans, or other conditions of approval from the review of the plan of operations filed under § 3809.401(b); or
   c. BLM disapproves, or is withholding approval of your plan of operations because the plan:
      i. Does not meet the applicable content requirements of § 3809.401;
      ii. Proposes operations that are in an area segregated or withdrawn from the operation of the mining laws, unless the requirements of § 3809.100 are met; or
      iii. Proposes operations that would result in unnecessary or undue degradation of public lands.

Per 43 CFR 3809.411 you must not begin operations until BLM approves your plan of operations and you provide the financial guarantee required under § 3809.551.

Section 6: Departmental Use Only

Case File #: Reviewed By:

Received on: _____ Response Due by: _____

Remarks:

Section 7: Maps & Exhibits

This list may be applicable to CDRMS Hardrock 110/112 exhibit requirements. However, only the highlighted exhibits will need to be submitted to BLM for processing of the Plan of Operations. If the operator has additional information regarding the non-highlighted exhibits that may assist in the review process, please feel free to provide that information.

EXHIBIT I – Legal Description and Location Map

EXHIBIT II – Site Description

EXHIBIT III – Pre-Mining and Mining Plan Map(s) of Affected Lands

EXHIBIT IV – Mining Plan

EXHIBIT V – Reclamation Plan

EXHIBIT VI – Reclamation Plan Map

EXHIBIT VII – Water Information

EXHIBIT VIII – Wildlife Information

EXHIBIT IX – Soils Information

EXHIBIT X – Vegetation Information

EXHIBIT XI – Climate Information

EXHIBIT XII – Reclamation Costs

EXHIBIT XIII – List of other permits and licenses required

EXHIBIT XIV – Geotechnical Stability

Note: The non-highlighted exhibits will be analyzed during the BLM NEPA process. Upon completion of this process, the operator will be able to use this information for coordination with CDRMS, as applicable.

EXHIBIT I

Legal Description and Location Map

This Exhibit may be applied to CDRMS Hardrock 110/112 Exhibit A, additional information may be required.

Legal Description

Principal Meridian	Township (North or South)	Range (East or West)	Section	Quarter Section (NE, SE, SW, NW)	Quarter Quarter Section (NE, SE, SW, NW)

County:_____

Land Status:

a. Surface Ownership: ☐ Private ☐ BLM ☐ USFS ☐ State Other _____

b. Mineral Ownership: ☐ Private ☐ Federal ☐ State Other _____

General Description: Include any additional information (nearby towns, etc.) that will help identify the project location.

Access: Please identify the intended access to work sites. Describe in writing and on the location map.

Primary Mine Entrance Location:

Maps & Drawings of Operations: A map showing information sufficient to determine the location of the affected land on the ground and existing and proposed roads or access routes to be used in connection with the mining operation. Names of all immediately adjacent surface owners of record shall also be shown. The operation location map shall be a standard 1:24,000 scale U.S. Geological Survey map. The location of the proposed operation shall be shown and labeled with the mine site name.

Index map (*This Exhibit can be substituted for CDMS Hardrock112 Exhibit B*): Provide a general location map that demonstrates relationships to major roads, cities, etc.

EXHIBIT II

Site Description

This Exhibit may be applied to CDRMS Hardrock 110 Exhibit B, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

Items (a)-(c) below must be addressed to the extent necessary to demonstrate compliance with the applicable performance standard requirements of Rule 3. At a minimum, the Operator/Applicant shall include the following information:

(a) a description of the vegetation and soil characteristics in the area of the proposed operation. The local office of the Natural Resources Conservation Service (NRCS) may provide you with this information as well as recommendations for Exhibit D - Reclamation Plan;

(b) identify any permanent man-made structures within two hundred (200) feet of the affected area and the owner of each structure. Each structure should be located on Exhibit E - Map;

(c) a description of the water resources in the area of the proposed operation. Identify any streams, springs, lakes, stock water ponds, ditches, reservoirs, and aquifers that would receive drainage directly from the affected area.

EXHIBIT III

Pre-Mining and Mining Plan Map(s) of Affected Lands

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit C or a portion of Hardrock 110 Exhibit E, additional information may be required.

Please include an accurate topographic base map showing the location of the proposed project with this form. The prospector may submit a U.S.G.S 7.5 minute quadrangle or similar map of adequate scale.

One or more maps may be necessary to legibly portray the following information:

1. all immediately adjoining surface owners of record112(4)(c);
2. the name and location of all creeks, roads, buildings, oil and gas wells and lines, and power and communication lines on the area of affected land and within two hundred (200) feet of all boundaries of such area112(4)(e);
3. the existing topography of the area with contour lines of sufficient detail to portray the direction and rate of slope of the affected land112(4)(g);
4. the total area to be involved in the operation, including the area to be mined and the area of affected lands (see definition of "Affected Land")112(4)(f) ;
5. the type of present vegetation covering the affected lands112(4)(i); and in conjunction with Exhibit G - Water Information, Subsection 6.4.7, if required by the Office, further water resources information will be presented on a map in this section. 112(3)(c) and 115(409e)
6. Show the owner's name, type of structures, and location of all significant, valuable, and permanent man-made structures contained on the area of affected land and within two hundred (200) feet of the affected land.
7. In conjunction with Exhibit I - Soils Information, Subsection 6.4.9, soils information may be presented on a map in this section;
    a. Aerial photos, if available, may be included in this section.

1. Pre-mining map

2. Mining Plan Map
    a. Identifies the proposed prospecting site(s) or activity areas involving surface disturbance. Activity areas include, but are not limited to, all drill holes, mud pits, excavations, trenches, adits, shafts, tunnels, rock dumps, stockpiles, impoundments, prospecting roads, etc.; and
    b. Includes sufficient detail to identify and locate known prospecting features and facilities that may be affected and those that are not anticipated to be affected. This includes, but is not limited to, the location of all drill holes, mud pits, excavations, trenches, adits, shafts, tunnels, rock dumps, stockpiles, impoundments, prospecting roads, etc. Color photographs, adequately labeled (including date, orientation and location) may be included to document existing conditions.

EXHIBIT IV

Mining Plan *[Pursuant to 43 CFR 3809.401(b)(2)]*

This Exhibit may be applied to CDRMS Hardrock 110 Exhibit C or Hardrock 112 Exhibit D, additional information may be required. Additional information and/or mitigationmayl be included in the corresponding NEPA analysis for the proposed project.

1. Commodity:
   Primary _____ Secondary _____ Others _____

2. Period of Operation:

   Beginning: _____ Ending: _____

3. Will operations take place more than 180 days of the year? ☐ Yes ☐ No
4. General Schedule of Operations: Please describe the different parts of operation (Site Development, Operational Phases, Reclamation Phases). Describe each phase of the mining operation including design, operations, timeframe for completion, and reclamation. Include prleiminary/conceptual designs and cross-sections.
5. Access: Include information such as the type (haul, light vehicle, access), location(s), maintenance, upgrades, uses, temporary, permanent, etc. Indicate any part of the access that is in current existence and condition. Indicate these items on the location map(s) in Exhibits III. Include plans for power, water and support services.
6. Equipment: Please list all vehicles, equipment and devices that will be used during the life of the mine and reclamation.

Site Development	General Type	Size	Quantity	Model Year
Site Operations	**General Type**	**Size**	**Quantity**	**Model Year**

Processing Operations	General Type	Size	Quantity	Model Year
Reclamation	**General Type**	**Size**	**Quantity**	**Model Year**
Other	**General Type**	**Size**	**Quantity**	**Model Year**

7. Soil, Waste, & Mineable Materials: Please indicate location of stockpiles on Exhibit III.

	Thickness (feet)	Quantity (tons)	Details on Use, Stockpiling, or Method of Disposal
Soil			
Overburden or Waste Rock			
Minable Material			

8. Exploration operations: include all proposed activities such as, but not limited to, seismic surveys, trenching, drill pads, sumps, roads, material storage site, water source, pipelines, generator/pump, storage containers, number of drill holes that will be left open at any one time, number of drill rigs that will be on site at any one time, etc. Indicate these items on the location map(s) in Exhibit III.

9. Operating Practices:
    a. Mining Methods: Identify the type or method of mining proposed and the quantity to be extracted including, but not limited to, dredging, high banking, cuts, pits, trenches, shafts, tunnels, adits, declines, air drilling, fluid drilling, blasting, etc. If drilling is involved provide details for mud pits, drill pads, and drill holes including, but not limited to, quanitity, average width, average depth, average length, and diameter and method for plugging (Refer to Colorado Division of Reclamation and Mining Safety (CDRMS) Rule 5.4 and State of Colorado regulations for required abandonment procedures).

Type or Method of Mining	Quantity of Material Removed (tons)	Estimated Area of Surface Disturbance (acres)
TOTAL		

    b. Underground Operations: Describe the proposed underground work including reopening of old workings, advancement of adits or shafts, trenches, pits, cuts, rock dumps, or other similar types of disturbance. Further describe dimensions if necessary:

Scope of Operation: Describe in detail the type and extent of the operation to be performed. Provide detailed information for any surface excavation or other land disturbance including roads, pits, trenches, waste piles, drill pads and collar areas of underground workings, ponds, etc. For placer type mining include the amount of material to be processed and dimension from each work location, and the dimension of test sites. Indicate the different types and locations of disturbance on the location map(s) in Exhibit III.

10. Use and Occupancy, *if applicable*:

    The following information must be included in the proposed Plan of Operations in order to comply with the 43 CFR 3715, Use and Occupancy Under the Mining Laws, when use or occupancy exceeds 14-days in a 30-day period. The definitions of terms are found in 43 CFR 3715.0-5. These regulations apply to public lands administered by the BLM. Please provide a written description of the proposed occupancy that describes in detail: (see 43 CFR 3715.3-2):

    a. How the proposed occupancy is reasonably incident;
    b. How the proposed occupancy meets the conditions specified in 43 CFR 3715.2 and 43 CFR 3715.2-1
    c. Where you will place temporary or permanent structures for occupancy;
    d. The location of and reason you need enclosures, fences, gates, and signs intended to exclude the general public;
    e. The location of reasonable public passage or access routes through or around the area to adjacent public lands; and
    f. The estimated period of use of the structures, enclosures, fences, gates and signs, as well as, the schedule for removal and reclamation when operations end.
    g. Indicate these items on the location map(s) in Exhibit III.

11. Hazmat: include information such as, but not limited to, type of generator, chemicals, fuels, quantities, disposal, storage, etc. If chemical processing plants are proposed in site operations, be sure to include tank capacities and operating solution volumes. Indicate locations of use and storage of hazardous materials on location map(s) in Exhibit III.

12. Rock Characterization and Handling Plans: Please include the following information and note N/A if something doesn't apply to the proposed operation. Depending on the proposal, these details may be minimal or very detailed.

    II. Materials Characterization Plan must encompass:
        1. Waste rock
        2. Ore
        3. Tailings
        4. Pit wall and floor rock
        5. Pit backfill rock (dry/wet scenarios)
        6. Cap/cover materials (identified site specific sources)

    III. Approach/Procedures for Characterization
        1. Statistical Approach to Characterization (define statistical adequacy) to include:
            a. Sample selection
            b. Number of samples
            c. Quantity of material
            d. Review by BLM/CDRMS
        2. Characterization Procedures
            a. Sample selection
            b. Identify by rock type/final disposition (ore, waste, pit wall, pit floor, backfill, etc)
            c. Record locations (both surface and at depth)
            d. Mineralogical analyses such as XRD, XRF, Petrology, Petrography, etc.
            e. Static testing – (required for ore, waste rock and tailings) such as Acid-Base Accounting, Net Acid/Alkaline Production, net carbonate value, etc.
            f. Kinetic testing (required for ore, waste rock and tailings but not for metallurgical ore recovery) such as Humidity cell/column leach

    IV. Cap/Cover Geotechnical Protocols (may include waste rock, spent leach, etc) to include:
        1. Grain Size
        2. Atterburg limits
        3. Initial moisture content
        4. Dry bulk density

5. Calculated porosity
6. Constant head analyses for saturated hydraulic conductivity test
7. Hanging column
8. Pressure plate
9. Unsaturated hydraulic conductivity
10. Proctor compaction

V. Infiltration Modeling needed, such as Heap Leach Draindown Estimation, Tailings Impoundment Draindown Estimation, cap/cover materials, etc.

VI. Waste Rock Management Plan

1. Work plan history with geochemical and geotechnical summaries.
2. Operating/post reclamation management of the waste rock dumps (WRDs)
3. Describe mining sequence of rock types/volumes/final disposition (see section III.2 above).
4. Describe how potentially acid generating (PAG) rock will be selectively mined, segregated and managed to preclude exposure to air and water. Need to address metals mobility/accumulation for both PAG and non-PAG materials (see section III.5.c).
5. For each benign and PAG WRD facility, include a text description for: toe elevation, crest elevation, ultimate height, reclaimed slope, plan dimensions, tonnage capacity and acres. Provide a summary table for volumes by facility for life-of-mine (LOM).
6. Supplement the text with plan and cross sectional drawings showing: plan views and related alluvial/cover stockpile locations, cross sectional views showing operational and post reclamation slopes, grades, toe and crest elevations, existing ground slope and cap thicknesses for LOM.
7. For pit backfill scenarios, include the same text and supporting drawings previously described, describe any amendment requirements. Provide information on the total volume to be backfilled with rock type and its origin, final backfill elevation and rebound ground water elevation.
8. Tailings impoundments, heaps, ore stockpiles, topsoil stockpiles should include the same text and supporting drawings previously described.

13. Quality Assurance Plan: Please provide a systematic monitoring and evaluation of the various aspects of the project including, but not limited to, what is being monitored, parameters for monitoring, frequency of monitoring, who will conduct the monitoring, monitoring equipment, etc.

14. Spill Contingency Plan: Please provide the plan for handling and remediating potential spills of hazardous materials and petroleum products. (Note – The operator is responsible for notifying the BLM authorized officer in the event of a spill and complying with state and federal regulations on spill handling, cleanup, and reporting.)

15. Monitoring Plan **[***Pursuant to 43 CFR 3809.401(b)(4)]*

Monitoring plans may incorporate existing State or other Federal monitoring requirements to avoid duplication. The scope of monitoring depends on the location and complexity of the operation. Generally, exploration activity may require some monitoring, while mining activities may require various levels of comprehensive monitoring plans.

The monitoring plan must be designed to meet the following objectives:

a. To demonstrate compliance with the approved plan of operations and other Federal and State environmental laws and regulations;
b. To provide early detection of potential problems; and
c. To supply information that will assist in directing corrective actions should they become necessary.

Where applicable, the monitoring plan must include: details on type and location of monitoring devices; sampling parameters and frequency; analytical methods; reporting procedures; and procedures to respond to adverse monitoring results. Examples of monitoring programs which may be necessary include surface- and ground-water quality and quantity, air quality, revegetation, stability, and noise levels.

16. Interim Management Plan **[***Pursuant to 43 CFR 3809.401(b)(5)]*

Include a plan describing the management of the project area during period of temporary closure, including periods of seasonal closure, to prevent unnecessary or undue degradation.

The interim management plan must include, where applicable, the following:

a. Measures to stabilize excavations and workings;
b. Measures to isolate or control toxic or deleterious materials (see also the requirements in 43 CFR 3809.420(c)(12)(vii));
c. Provisions for the storage or removal of equipment, supplies, and structures;
d. Measures to maintain the project area in a safe and clean condition;
e. Plans for monitoring site conditions during periods of non-operation;
f. A schedule of anticipated periods of temporary closure during which you would implement the interim management plan, including provisions for notifying BLM and other involved agencies of unplanned or extended temporary closures; and
g. In cases of temporary or seasonal closure, you must provide adequate maintenance, monitoring, security, and financial guarantee, and BLM may require you to detoxification of process solutions.

17. Water Management Plan
    a. Specify how much water will be used in conjunction with the operation and the source of this water. Please include any necessary permits in Exhibit XIII.

    b. Describe any associated drainage and runoff conveyance structures to include sufficient information to evaluate structure sizing. Describe what measures will be taken to minimize disturbance to the hydrologic balance, prevent off-site damage, and provide for a stable configuration of the reclaimed area consistent with the proposed future land use. Describe the measures used to divert upland drainage away from the site both during and after operation. This must include design details demonstrating the capacity of ditches and impoundment structures to contain operating solutions and the volume of water generated by a one hundred (100) year 24-hour rainfall event.

    c. Specify how you will comply with applicable Colorado water laws and regulations governing injury to existing water rights.

d. Describe anticipated relationship to surface water and groundwater (proximity to streams, penetration of ground water aquifers, known water depth of lenses, major watershed, storm water plan per CDPHE regulations, etc.). Describe how mining will affect the quantity and quality of the surface or groundwater and the methods to be used to minimize disturbance to the surface and groundwater systems including, but not limited to, dewatering, sediment containment, chemical treatment systems, storm water run-off controls, and groundwater points of compliance.

e. Specify whether the deposit/ore will be processed on site. Processing includes crushing, screening, washing, concrete or asphalt mixing, leaching or milling. If the deposit/ore will be processed, then describe the nature of the process, facilities and chemicals utilized. The process area and any structures must be described in Exhibit III.

EXHIBIT V

Reclamation Plan [*Pursuant to 43 CFR 3809.401(b)(3)]*

This Exhibit may be applied to CDRMS Hardrock 110 Exhibit D or Hardrock 112 Exhibit E, additional information may be required. Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

1. A plan for reclamation to meet the standards in 43 CFR 3809.420 is required with this application. If multiple state/federal agencies are involved in the proposed operation, one reclamation plan must be included in your submittal to the agencies that meets the requirements of both sets of regulations.

The reclamation plan should include, but is not limited to, a description of the equipment and devices, practices you propose to use, a timeline for completion, etc. Also address wildlife and riparian habitat mitigation (as applicable). Features and designs outlined below should be incorporated into Exhibit VI.

a. It is suggested that a photographic record of the pre- mining, post-mining, and post-reclamation conditions be kept by the prospector. These photos should be taken from the same location and by the same method to clearly show the pre-site conditions of the land and the reclamation efforts. Upon completion of reclamation and request for bond or surety release, the photos may be considered as evidence of adequate reclamation, and thus, be able to act more quickly on the request for release.
b. Per 43 CFR 3809.420 you are required to reclaim concurrent with mining as is feasible. Please describe the general methods, steps, and timing of both interim and final reclamation. Include slopes or gradients to be used during interim and final stages. Provide the technical criteria used to determine the gradient and stability of slopes created or affected by the mining operation.

c. Provide a description of the native vegetation of the area to be disturbed, including tree, shrub, and grass communities of the area. Color photographs, sufficient to adequately represent the ecology of the site and adequately labeled (including date, orientation and location), may be used to help support a written description.

d. Describe the estimated topsoil depth and how topsoil will be salvaged, stockpiled, managed during operations, and redistributed for the re-establishment of vegetation at final reclamation. Specify approximate redistribution depth.

e. Describe how portals, adits, shafts, ponds, excavations, drill holes or other disturbances will be reclaimed (refer to the State of Colorado for specific reclamation performance standards that may apply). The removal/ stabilization of buildings, structures and facilities should be addressed, as applicable. You may wish to contact other State and Federal Agencies for closure specifications. Indicate if there are any facilities, roads, ponds, etc. to be left after final reclamation. The location of these features should be noted in Exhibit VI. Describe how roads will be reclaimed or returned to their pre-prospecting/mining (or better) condition.

f. Describe any reclamation that is necessary because of in-stream mining.

g. Toxic and Deleterious Materials, *as applicable*

   i. Provide the methods for reclaiming any waste rock, ore, and other stock piles (including original underlying topography, operational slope, and proposed reclaimed slope).

ii. Provide the methods for reclaiming any tailings impoundments and dams (including fluid management disposal).

iii. Provide the methods for reclaiming any heap leach pads and ponds (including fluid management disposal).

h. Please describe the post mining land use. Identify if the reclamation will have an effect on future mining in the area or an effect on public safety.

i. List the seed mixture to be used in the re-establishment of vegetation. For assistance with formulating seed mixtures and rates, contact the local NRCS.

VII. Provide Plant name and seeding rate

Plant Name	Seeding Rate (PLS/Acre)	Method of Seeding

If the soil is deficient in nutrients to be an adequate seedbed, please indicate and detail the use of fertilizer or other amendments. If mulch is to be used, please describe the type, rate, and method of application.

j. Please provide a description of post closure management to include activities, monitoring, timelines, etc.

EXHIBIT VI

Reclamation Plan Map

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit F or a portion of Hardrock 110 Exhibit E, additional information may be required.

Please provide a map depicting final reclamation of the affected area.

i. Show the gradient of all reclaimed slopes (horizontal: vertical) sufficient to describe the post mine topography;
ii. Indicate where vegetation will not be established and the general area(s) for shrub or tree planting;
iii. If ponds are a part of the Reclamation Plan, outline the final shore configuration of the ponds and shallow areas if the future land use is for wildlife;
iv. State the average thickness of replaced overburden by reclamation area or phase; and
v. State the average thickness of replaced topsoil by reclamation area or phase.

EXHIBIT VII

Water Information

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit G, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

Describe anticipated relationship to surface water and groundwater (proximity to streams, penetration of ground water aquifers, known water depth of lenses, etc.).

If the use of water is required, describe the location of source and quantity to be used. Please include any necessary permits in Exhibit XIII.

Provide additional information including, but not limited to, major watershed, all known aquifers, floodplain proximity, storm water plan per CDPHE regulations, etc.

EXHIBIT VIII

Wildlife Information

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit H, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

1. The Operator/Applicant shall include in this Exhibit, a description of the game and non-game resources on and in the vicinity of the application area, including:
    a. a description of the significant wildlife resources on the affected land;
    b. seasonal use of the area;
    c. a description of the general effect during and after the proposed operation on the existing wildlife of the area, including but not limited to temporary and permanent loss of food and habitat, interference with migratory routes, and the general effect on the wildlife from increased human activity, including noise.

EXHIBIT IX

Soils Information

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit I, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

1. The Operator/Applicant shall indicate on a map (in Exhibit III) or by a statement, the general type, thickness and distribution of soil over the affected land. Such description will address suitability of topsoil (or other material) for establishment and maintenance of plant growth.

EXHIBIT X

Vegetation Information

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit J, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

1. The Operator/Applicant shall include in this Exhibit a narrative of the following items:
    a. descriptions of present vegetation types, which include quantitative estimates of cover and height for the principal species in each life-form represented (i.e., trees, tall shrubs, low shrubs, grasses, forbs);
    b. the relationship of present vegetation types to soil types, or alternatively, the information may be presented on a map; and
    c. estimates of average annual production for hay meadows and croplands, and carrying capacity for range lands on or in the vicinity of the affected land, if the choice of reclamation is for range or agriculture.
2. The Operator/Applicant shall show the relation of the types of vegetation to existing topography on a map in Exhibit C. In providing such information, the Operator/Applicant may want to contact the local Soil Conservation District.

EXHIBIT XI

Climate Information

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit K, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

Provide a description of the significant climatological factors for the locality which could apply to the environmental analysis for this Plan of Operations. Additional information may be required for CDRMS permit as discussed in Paragraph 6.4.21(13) of the CDRMS Hardrock/Metal Mining Rules.

EXHIBIT XII

Reclamation Costs [Pursuant to 43 CFR 3809.552]

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit L, additional information may be required.
Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

The reclamation cost estimate must ensure:

1. the estimated costs as if BLM/CDRMS were to contract with a third party to reclaim the operations according to the reclamation plan, including construction and maintenance costs for any treatment facilities necessary to meet Federal and State environmental standards.
2. The Cost of Equipment Rental, Operation and Labor Appropriate for the Geographic Area, or;

Enter those values in the cost estimate that are appropriate to this project. Attach sources/information used in cost estimate (examples: Caterpillar Performance Handbook, contractor's estimate, etc.).

A. Earthwork/Recontouring	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Exploration	$	$	$	$
Exploration Roads & Drill Pads				
Roads				
Drill Hole Abandonment				
Pits				
Underground Openings				
Process Ponds				
Heaps				
Waste Rock Dumps				
Tailings				
Foundation & Buildings Area				
Lay down/storage yards, Etc.				
Drainage & Sediment Control				
Other				
Mobilization/Demobilization				
Subtotal "A"				
B. Revegetation/Stabilization	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Exploration	$	$	$	$
Exploration Roads & Drill Pads				
Roads				
Drill Hole Abandonment				
Pits				
Underground Openings				
Process Ponds				
Heaps				
Waste Rock Dumps				
Tailings				

Foundation & Buildings Area				
Lay down/storage yards, Etc.				
Drainage & Sediment Control				
Other				
Subtotal "B"				
C. Detoxification/Water Treatment/Disposal of Wastes	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Interim Fluid Management	$	$	$	$
Process Ponds/Sludge				
Heaps				
Transport and Disposal of Waste				
Tailings				
Surplus Water Disposal				
Monitoring				
Other				
Subtotal "C"				
D. Structure, Equipment and Facility	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Foundation & Buildings Area	$	$	$	$
Other Demolition				
Equipment Removal				
Fence Removal				
Pipe & culvert Removal				
Powerline Removal				
Transformer Removal				
Rip-Rap, rock lining, gabions				
Other Misc. Costs				
Other				
Subtotal "D"				
E. Monitoring	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Reclamation Monitoring & Maintenance	$	$	$	$
Ground and Surface Water Monitoring				
Subtotal "E"				
F. Construction Management & Support	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Construction Management	$	$	$	$
Road Maintenance				
Other				
Subtotal "F"				
G. Operation & Maintenance Costs	**Labor[(1)]**	**Equipment[(2)]**	**Materials**	**Total**
Subtotal A through F	$	$	$	$
H. Indirect Costs (see text below for further information)				

1. Engineering, Design and Construction (ED&C) Plan (6.1)	
4. Bond (6.2)	
5. Contractor Profit (6.3)	
6. Contract Administration (6.4)	
Subtotal Add-on Costs	
GRAND TOTAL	

RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES

1. Federal construction contracts require Davis-Bacon wage rates for contracts over $2,000. Wage rate estimates may include base pay, payroll loading, overhead and profit. (NOTE – Depending on type of operations, it may be issued as a service contract.)
2. The reclamation cost estimate must include the estimated plugging cost for holes utilizing the most reliable assumption of total depth.
3. Miscellaneous items should be itemized on accompanying worksheets.
4. Management plans for hazardous material to include petroleum products
5. Any mitigation measures required in the Plan of Operations must be included in the reclamation cost estimate. Mitigation may include measures to avoid, minimize, rectify and reduce or eliminate the impact, or compensate for the impact.
6. Fluid management should be calculated only when mineral processing activities are involved. Fluid management represents the costs of maintaining proper fluid management to prevent overflow of solution ponds through premature cessation or abandonment of operations. Calculate a minimum six month direct cost estimate which includes power, supplies, equipment, labor and maintenance.
7. Details in reference to section "H – Indirect Costs" of the table above.
   (1) Engineering, design and construction (ED&C) plans are often necessary to provide details on the reclamation needed to contract for the required work. To estimate the cost to develop an ED&C plan use 4. 8% of the operations and maintenance cost. Inclusion of a line item for the development of an ED&C plan may not be necessary for small operations, such as notice-level exploration. With small, uncomplicated reclamation efforts contracting may be able to proceed without developing an ED&C plan.
   (2)Federal construction contracts exceeding $100,000 require both a performance and a payment bond (Miller Act, 40 USC 270et seq.). Each bond premium is figured at 1.5% of the O&M cost. Enter the sum of both premium costs on this line, as applicable.
   (3) For Federal construction contracts, use 7% of estimated O&M cost for the contractor's profit.
   (4) To estimate the contract administration cost, use 6 to 10% of the operational and maintenance (O&M) cost.

Comments:

EXHIBIT XIII

List of other permits and licenses required

This Exhibit may be applied to CDRMS Hardrock 112 Exhibit M or Hardrock 110 Exhibit F, additional information may be required.

Please list any and all permits associated with the proposed operations:

Issuing Agency	Permit Type	Permit #	Date of Expiration

EXHIBIT XIV

as applicable

Geotechnical Stability

This Exhibit may be applied to CDRMS Hardrock 110/112 Geotechnical Stability Exhibit, additional information may be required. Additional information and/or mitigation may be included in the corresponding NEPA analysis for the proposed project.

1. On a site-specific basis, an Applicant shall be required to provide a geotechnical evaluation of all geologic hazards that have the potential to affect any proposed impoundment, slope, embankment, highwall, or waste pile within the affected area. The Applicant may also be required to provide a geotechnical evaluation of all geologic hazards, within or in the vicinity of the affected lands that may be de-stabilized or exacerbated by mining or reclamation activities.
2. On a site-specific basis, an Applicant shall be required to provide engineering stability analyses for proposed final reclaimed slopes, highwalls, waste piles, embankments, and ore leach facilities. An Applicant may also be required to provide engineering stability analyses for certain slope configurations as they will occur during operations, including, but not limited to, embankments and ore leach facilities. Information for slope stability analyses may include, but would not be limited to, slope angles and configurations, compaction and density, physical characteristics of earthen materials, pore pressure information, slope height, post-placement use of site, and information on structures or facilities that could be adversely affected by slope failure.
3. Where there is the potential for off-site impacts due to failure of any geologic structure or constructed earthen facility, which may be caused by mining or reclamation activities, the Applicant shall demonstrate through appropriate geotechnical and stability analyses that off-site areas will be protected with appropriate factors of safety incorporated into the analysis. The minimum acceptable safety factors will be subject to review by BLM, on a case-by-case basis, depending upon the degree of certainty of soil or rock strength determinations utilized in the stability analysis, depending upon the consequences associated with a potential failure, and depending upon the potential for seismic activity at each site.
4. At sites where blasting is part of the proposed mining or reclamation plan, the Applicant shall demonstrate through appropriate blasting, vibration, geotechnical, and structural engineering analyses, that off-site areas will not be adversely affected by blasting