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SEDIMENTATION PONDS AND OTHER TREATMENT FACILITIES

Design details and "as built" specifications for existing sedimentation ponds and treatment facilities are presented in Appendix K, "Drainage Control Plan: Ponds, Impoundments, Diversions."

(1) Temporary or Permanent Sedimentation Ponds

Sedimentation ponds, either temporary or permanent, will be used individually or in series.

(1)(a) Construction Timetable

All sediment control ponds will be constructed prior to disturbance of an associated area.

(1)(b) Pond Locations

All ponds and traps are located as near as possible to disturbed areas and out of major stream courses. Plate 8 (Volume 3) and Exhibit 1 (Appendix K) show locations of planned and existing ponds.

(1)(c) Sediment Storage Volume

Sediment control facilities will be designed to contain at least 0.02 ac.ft./ac. of disturbed area, excluding well-established reclamation, within the facility control area for sediment storage, unless site specific computations demonstrate otherwise. Alternate sediment volume computations, if any, will be submitted with individual design data for approval.

(1)(d) Baseline Survey

All sediment control ponds will be accurately surveyed immediately after construction in order to provide a baseline for future sediment volume measurements.

(1)(e) Construction

All sediment control ponds will be constructed as approved unless modified under ARM 17.24.642(7).

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(2) Pond Detention Time

SCM sedimentation ponds will provide for a minimum 24 hour detention time for the design event (10-year, 24-hour event.) Supporting documentation and drawings used to establish the required detention times will be included in the permit.

(3) Pond Dewatering

The water storage resulting from inflow will be removed by nonclogging dewatering devices or conduit spillways approved by the department and will have discharge rates to achieve and maintain the required theoretical detention time. The inlet to the dewatering devices will not be located at lower elevations than the maximum elevation of the sediment storage volume. All SCM sediment ponds are designed to retain at least 100% of the runoff volume of the 10-year, 24-hour precipitation event. Pond 1 is dewatered through primary and secondary spillway devices. Design details are contained in Appendix K.

(4) Short Circuit Prevention

SCM will design, construct and maintain sedimentation ponds to prevent short circuiting to the extent possible. Since all sediment ponds are designed as full retention ponds for the 10-year, 24-hour precipitation event, short circuits should not be an operational problem as simultaneous inflow and outflow will not occur.

(5) Outflow Through Emergency Spillway

There will be no outflow through the emergency spillway during the passage of the runoff resulting from the 10-year, 24-hour precipitation event or lesser events through the sedimentation pond.

(6) Sediment Removal from Ponds

Sediment will be removed from sedimentation ponds when the volume of sediment accumulates to 60% of the design sediment storage volume. With the approval of the department, additional storage may be provided for sediment and water above the total design requirement. If additional storage is provided and the design

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runoff storage and theoretical detention time are maintained, sediment removal may be

delayed until 40% of the required sediment storage remains. If possible, accumulated sediment removal will occur when settling ponds are dry in order to minimize adverse effects on surface waters, infiltration, vegetation and groundwater. Unsuitable sediment will be buried in the pit.

(7)(a) Emergency Spillway

Since all SCM sediment control ponds are sized (or will be sized) to retain the 10-year, 24-hour event, no outflow will result from a 10-year, 24-hour storm. All sediment control ponds will be designed with a combination of principal and emergency spillways or a single spillway to safely discharge the runoff from the 25-year, 24-hour precipitation event or larger event specified by the department, assuming the impoundment is at full pool for spillway design.

A single spillway will be constructed of non-erodible materials and designed to carry sustained flows, or be earth- or grass-lined and designed to carry short-term infrequent flows at non-erosive velocities where sustained flows are not expected. The elevation of the crest of the emergency spillway will be a minimum of one foot above the crest of the principal spillway for any ponds having two spillways. Emergency spillway grades and allowable velocities will be submitted to the department for approval. Sediment ponds meeting the criteria of 30 CFR 77.216(a) will be constructed with a spillway designed to pass the 100-year, 24-hour precipitation event.

(7)(b) Sedimentation Ponds with No Spillway

Sedimentation ponds with no spillway required will be constructed to provide containment of runoff from a 25-year, 24-hour precipitation event, or greater event specified by the department, provided that the impoundment does not meet any of the criteria of 30 CFR 77.216(a) or the Class B or C criteria for dams in USDA SCS Technical Release No. 60 (210-VI-TR60, October 1985, as revised through January 1991), "Earth Dams and Reservoirs", and provided further that adequate provisions are made for safe dewatering of the pond within an appropriate time

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after the design precipitation event occurs, using current, prudent, engineering practices.

(7)(c) Major Impoundments

For ponds meeting any of the criteria of 30 CFR 77.216(a) or the Class B or C criteria for dams in TR-60, sedimentation ponds will provide containment of runoff from the probable maximum precipitation of a 6-hour event, or greater as specified by the department, with no spillway required, provided that adequate provisions are made for safe dewatering of the pond within an appropriate time after the design precipitation event occurs, using current, prudent engineering practices.

(8) Foundations and Abutments

Foundations and abutments for sediment ponds will be designed to be stable during all phases of construction and operation and will be designed based on appropriate and adequate information on foundation conditions that is collected pursuant to ARM 17.24.315(1)(b) or (d), as appropriate.

(9) Freeboard

The minimum elevation at the top of the settled embankment will be 1 foot above the water surface in the pond with the emergency spillway flowing at design depth.

(10) Top Width

Unless otherwise approved by the department as adequate to maintain stability, the minimum top width of the embankment will not be less than the quotient of $(H+35)/5$, where H is the height of the embankment as measured from the upstream toe of the embankment.

(11) Side Slopes

The side slopes of the settled embankment will not be steeper than 3h:1v upstream and 2h:1v downstream, unless otherwise approved by the department.

(12) Soil Removal

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After soil is salvaged from the embankment foundation area pursuant to ARM 17.24.701 through 17.24.703, all other organic material will be removed and all surfaces sloped to no steeper than 1v:1h.

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(13) Construction on Sloping Surfaces

Where an embankment is to be placed on side slopes exceeding 1v:5h (11.3°), the existing ground will be scarified, stepped, or, if in bedrock, keyed in a manner which increases the stability of the fill.

(14) Embankment Materials

Embankment material will not contain organic matter, wet or frozen materials, coaly or carbonaceous materials, or any other material considered unsuitable by the department for use in embankment construction.

(15)(a) Placement of Embankment Materials

The placing and spreading of embankment material will be started at the lowest point of the foundation. The embankment will be brought up in horizontal layers of such thickness as is required to facilitate compaction and meet the design requirements of this rule. A lift will not be placed on the previous layer until the density as specified in the design approved by the department has been achieved throughout the previous layer.

(15)(b) Design Considerations

In selecting the method to be used for placing embankment materials, consideration will be given in the design to such factors as the foundation, geological structure, soils, static water level, high water level, type of construction, and equipment to be used.

(15)(c) Density Specifications

AASHTO or other comparable specifications approved by the department for the determination of the maximum dry density of soils will be applied during construction.

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(16) Safety Factor

Embankments will have a minimum seismic safety factor of 1.2 and a minimum static safety factor of 1.5 under any condition of loading likely to occur, or such higher factor as the department determines to be reasonably necessary for safety, protection of property, or preventing environmental harm

(17) Certification

All pond embankments will be designed and constructed in accordance with sound engineering and construction practices and certified by a licensed professional engineer experienced in the design of such structures.

(18) Erosion-Control Measures

Temporary erosion-control measures will be utilized as necessary during construction of sedimentation ponds to control sedimentation and minimize erosion until long-term erosion-control measures can be established.

(19) Vegetative Stabilization

The entire embankment, including the surrounding areas disturbed by construction, will be stabilized with a vegetative cover or other means immediately after the embankment is completed in order to protect against erosion and sudden drawdown. The active upstream face of the embankment where water will be impounded will be riprapped or otherwise stabilized. Areas in which the vegetation is not successful or where rills and gullies develop will be repaired and revegetated in accordance with ARM 17.24.711, 17.24.713, 17.24.714, 17.24.716 through 17.24.721, 17.24.723 through 17.24.726, 17.24.728, and 17.24.730 through 17.24.733. In some isolated locations, vegetative stabilization will not be used due to compaction or soil types used in the embankment construction that will prevent vegetative growth. If gullies or rills develop in these areas, SCM will repair the area in a manner to meet the design specifications and to prevent any additional erosion.

(20) Sedimentation Ponds Meeting Criteria of 30 CFR 77.216

If a sedimentation pond meets any of the criteria of 30 CFR 77.216(a), the following additional requirements will be met:

(20)(a) Principal and Emergency Spillways

An appropriate combination of principal and emergency spillways that will discharge safely the runoff resulting from a 100-year, 24-hour event, or a larger

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event specified by the department, assuming the impoundment is at full pool for spillway design, will be provided;

(20)(b) Control of Conduit Seepage

Appropriate measures will be provided to control seepage along conduits that extend through the embankment; and

(20)(c) MSHA Criteria

The criteria of MSHA as published in 30 CFR 77.216 and ARM 17.24.315 will be met.

(21) Sedimentation Ponds Meeting Class B or C Criteria, TR-60

Sedimentation ponds that meet TR-60 Class B or C criteria will comply with the following additional requirements:

(21)(a) Freeboard Hydrograph Criteria

For freeboard, the freeboard hydrograph criteria listed in the “Minimum Emergency Spillway Hydrologic Criteria” table in TR-60; and

(21)(b) Safe Discharge of the Design Event

For safely discharging the design precipitation event, the emergency spillway hydrograph criteria in the “Minimum Emergency Spillway Hydrologic Criteria” table in TR-60, or greater event as specified by the department.

(22) Design and Inspection by Licensed Professional Engineer

All ponds with embankments will be designed and inspected regularly during construction under the supervision of, and certified after construction by, a qualified licensed professional engineer experienced in the construction of impoundments.

(22) (a) Certification

After construction, inspections will be made and reports filed with the department, pursuant to in the same manner as for dams and embankments under ARM 17.24.642(4). Inspection and certification reports must be submitted until the embankments are removed.

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(22)(b) Certification of Safe Pond Dewatering

For ponds designed and constructed pursuant to ARM 17.24.639(7)(b) or (c), the certification will also indicate that safe dewatering of the pond will occur within an appropriate time after the design precipitation event occurs, using current, prudent engineering practices.

(23) Periodic Inspections

All ponds with embankments will be examined for structural weakness, erosion, and other hazardous conditions, and reports and recommendations for modification will be made to the department in accordance with 30 CFR 77.216-3. With the approval of the department, dams not meeting the criteria of 30 CFR 77.216(a) or the Class B or C criteria for dams in TR-60 will be examined at least four times per year. If an examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the department of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the department will be notified immediately. Copies of all inspection reports will be kept at the mine for department perusal. Quarterly inspection reports will be forwarded to the department annually as part of the Annual Report of Hydrologic Monitoring.

(24)(a) Criteria for Removal of Sedimentation Ponds and Other Treatment Facilities

Sedimentation ponds and other treatment facilities will not be removed:

- (i) sooner than 2 years after the last augmented seeding within the drainage, unless otherwise approved by the department in compliance with ARM 17.24.633.
- (ii) until the drainage entering the pond has met the applicable state and federal water quality requirements for the receiving stream; and
- (iii) until evidence is provided that demonstrates that the drainage basin has stabilized to the extent that it was in the undisturbed state.

(25) Other Treatment Facilities

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When a sedimentation pond is removed, the affected land will be regraded and revegetated in accordance with ARM 17.24.711, 17.24.713, 17.24.714, 17.24.716 through 17.24.718, 17.24.721, 17.24.723 through 17.24.726, and 17.24.731. If the department approves the retention, a sedimentation pond will meet all the requirements for permanent impoundments of ARM 17.24.642 and 17.24.650.

(26) Other Treatment Facilities

(26)(a) Other treatment facilities, if used by SCM, will be designed to treat the 10-year, 24-hour precipitation event unless a lesser design event is approved by the department as per rule ARM 17.24.633.

(26)(b) Other treatment facilities, if used by SCM, will be designed in accordance with the applicable requirements of (1) through (21) of this rule.

(27) Potential Instability or Erosion of the Impounding Structure

Runoff from areas above a structure impounding coal waste or runoff from the surface of a facility and that may cause instability or erosion of the impounding structure will be diverted into stabilized diversion channels designed to meet the requirements of ARM 17.24.635 and 17.24.637 and designed to safely pass the runoff from a 100-year, 6-hour design precipitation event.

(28) Excavated Sediment Control Impoundments

(28)(a) Excavations which are sediment control structures during or after the mining operation will have stable perimeter slopes. Where surface runoff enters the impoundment area, the sideslopes will be protected against erosion. An excavated sediment pond requires no spillway and must be able to contain the 10-year, 24-hour precipitation event, and conform with (1), (2), (4), (6), (18), (22)(a), (24) and (27).

(28)(b) These excavations which are sediment control structures will be certified initially by a qualified licensed professional engineer.