Monitoring, Sampling, Drilling and Other Temporary Facilities or Operations

As needed on occasion, MCC will construct monitoring, sampling, drilling and/or other temporary facilities or operations, along with access to them, in order to supplement design or compliance data, as well as ventilation or other needs for the mine operations. As with all of MCC's permanent facilities and operations, these facilities will be constructed, operated and reclaimed in compliance with the Regulations of the CMLRB for Coal Mining, particularly Rule 2.05. All necessary clearances, such as cultural resource reviews by the State Historic Preservation Office, will also be provided.

Accesses to such facilities will typically be field-designed and constructed as described in the light-use road discussions above. No drainage alteration or relocation would typically be required for such construction. Temporary culverts would be used to provide access crossings, or low-flow fording or dry drainage crossings could be constructed in drainage areas of less than one square mile. These facilities will also be constructed more than 100' of a public road right-of-way (except where mine roads join these rights-of way). A temporary pipe was used to reroute the flow of South Prong Creek, in accordance with methods described in section 2.05.6(6)(f), when a 0.01 acre subsidence hole developed at the confluence of the North Fork of South Prong Creek and South Prong Creek on MCC's property. About 280' of temporary 6" PVC pipe was laid on the ground surface and a make-shift sump was constructed out of soils and tarps. The accumulated stream flows were then routed into the temporary diversion pipe until the streambed was repaired and reclaimed.

As stated in the "General Construction Procedures" discussions above, the "Hydrologic Protection During Construction" discussions below, and the "Reclamation Plan" discussions in section 2.05.4 of this permit document, the reclamation of all areas will be such that the areas will be stabilized, the hydrologic balance not impacted, topsoil salvaged, stored and replaced, and disturbed areas revegetated. The soils that are salvaged will be stockpiled in windrowed berms along the accesses and/or pads or stockpiled nearby. To reclaim these sites, the soils will be returned and compacted in most areas to the approximate original contours. Topsoil salvaged from the sites will be redistributed as evenly as possible over the recontoured areas and accesses. The soil surface will be scarified, if need be, and seeded with MCC's approved seed mixture per Table 37.

For soil and geotechnical borehole sampling, soil auger diameters are typically 10" and bedrock test holes are typically 4" in diameter. These boreholes will vary in depth, but are typically less than 50' deep. Ventilation boreholes, gas or water monitoring wells will also vary in diameter and depth. Specific information on the configurations of these facilities will be provided in subsequent revision applications that will be included in Exhibit 80 after approved. As further described in section 2.05.4(6) of this permit document, drill holes and other borings will be sealed, backfilled and reclaimed in accordance with Rule 2.05.4(2)(g). Soil and geotechnical boreholes are backfilled by returning rock cuttings and soil materials into the boreholes. Borehole and drill hole sealing is also aided by natural healing through soil bridging.

As stated in section 2.05.5 "Post Mining Land Uses", wildlife and livestock grazing will predominately be the post-mining land-use. As also discussed in that section, should these sites later be utilized as a coal refuse pile, the reclaimed area will also serve the same post-mining land use.

MCC may use prefabricated portable hinged bridges for temporary stream crossings. These bridges are fabricated from steel with a wood deck and center steel portion and are up to14' wide and 40' long. The bridges will typically be hauled on a tilt deck winch truck, or alternatively be skidded with an excavator or dozer. To set the bridge in place, an excavator and/or dozer will be used to position the bridge across the stream crossing. Depending on the topography of the creek crossing, road base and/or larger rock will be used on each end to build a ramp onto and off the bridge. An alternative would be to dig a notch at each end of the bridge so to place the deck level with the existing ground surface. The same equipment and processes will be used to remove the bridges and transport them to future locations.

Because most of these sites and accesses are located in remote areas and/or not on previously disturbed ground, alternative sediment control measures will be utilized, including best management practices such as straw bale dikes, silt fence, natural vegetative debris, excelsior or straw waddles, and/or sediment traps. If a sediment pond is in the vicinity of the site, drainage could be routed to the pond.

(4) Ponds, Impoundments, and Diversions

During the course of construction and operation of the mine facilities at West Elk Mine, every effort is made to minimize water pollution. It is MCC's intent to discharge water from sediment ponds, Small Area Exemptions, and from the mine in compliance with all applicable effluent limitations. To fulfill this commitment, all surface drainage from the affected mine area is collected and treated prior to being discharged from the permit area. All surface runoff from undisturbed areas is directed away from the affected mine area through diversion channels. Maps 54, 54A, and 54B show the distribution of sediment control structures at West Elk Mine. Map 54 and Map 54A identify the sub-watershed drainage basins, tributary drainage basin information, and ditch/culvert layouts in conjunction with the main surface facilities area and Lone Pine Gulch, respectively. Maps 1E, 2E and 3E in Exhibit 66 identify the watersheds in the Sylvester Gulch Facilities Area. Map 54B shows the ditch and culvert locations in conjunction with the Sylvester Gulch Facilities Area. The following sections deal with each specific hydrologic protection measure.

Hydrologic Studies and Methodology

Studies have been completed to estimate the peak runoff and flood volume for storms having specific recurrence intervals for the West Elk Mine area. Exhibit 44 is the Merrick and Company report used in the design of the original sedimentation ponds MB-1 (converted to FW-2)), MB-2, and MB-3, and associated ditches and culverts. This report was submitted to the State Engineer for the approval of these three original sedimentation ponds, as well as freshwater pond FW-1. Approval was received on February 3, 1981, and is included in Exhibit 45. Exhibit 66 contains the current designs for ponds MB-3. The Exhibit 43 and Exhibit 44 designs are no longer valid for ponds MB-2 or MB-3. Exhibit 66 contains an as-built drawing that reflects the addition of a dike in pond MB-1 to create a north and south cell. However, the drawings included in Exhibit 43 do accurately reflect other structures associated with pond FW-2 (formerly pond MB-1) including the primary and emergency spillway designs. Exhibit 66 also contains the design information for SG-1 located at the Sylvester Gulch Facilities Area. See Exhibit 46 for the original design specifications and for the current designs for MB-4, Unit Train Loadout Sedimentation Pond. Pond MB-4 was relocated in 1998 from the east side of the train load-out to an area west of the load-out between two sets of train tracks. The relocated sediment pond is constructed of concrete and is preceded by an oil skimmer and a sediment trap. New sediment pond MB-5E replaces sediment ponds MB-1, MB-2R and MB-5. Design criteria for the original pond MB-5 are contained in Exhibit 47, and designs for the new pond MB-5E are located in Exhibit 47A and in Exhibit 66. Pond MB-1 was converted to Freshwater pond FW-2 and Ponds MB-2, MB-2R, MB-5 and MB-6 no longer exist. Design criteria for the Refuse Pile Expansion (RPE) pond, designated the "RPE" pond, are included in Exhibit 70.

Hydrologic Design of Runoff Ponds

Five stormwater sediment control structures are used as settling ponds for stormwater runoff from the mine site. These ponds have been designed according to CDRMS regulations (see Exhibits 43, 47, 66, and 70).

These ponds have been constructed to contain an estimated three years of sediment storage volume and a runoff storage volume resulting from the 10-year 24-hour rainfall event. Sediment will be excavated, allowing for additional storage, when sediment has reached the maximum storage capacity. Sediment volumes are estimated by a quarterly visual evaluation. The smaller ponds, MB-3 and MB-4, are usually dry during a portion of the year and sediment levels, relative to the primary discharge structure elevations, can be visually determined. The larger ponds usually contain water and visual evaluations are less accurate. These ponds, MB-5E, SG-1 and RPE ponds, will be surveyed at least every three years to determine the actual sediment levels.

The CDRMS requirements for the emergency spillway sizing are 25-year, 24-hour storm flows, or 100-year, 24-hour storm flows, depending on the size of the structure. The spillways for MB-3 and MB-4 were sized based on the 25-year, 24-hour storm, while MB-5E and SG-1 were sized for the 100-year, 24-hour storm event in accordance with the requirements of the State Engineer. Drainage basins for the spillway sizing are shown on Map 54 and 54A, Sediment and Drainage Control Facilities. The RPE pond has been designed to completely contain the runoff from a 100-year, 24-hour storm event. Designs are included in Exhibit 70.

The 10-year, 24-hour storm runoff design was adopted in accordance with CDRMS regulations. The Revised Universal Soil Loss Equation (RUSLE) was used to predict the sediment yield from three years of runoff. MCC will maintain the ponds in compliance with the designs to effect discharge in compliance with effluent limitations. In some cases, MCC has installed concrete sediment traps above the pond inlets to facilitate sediment removal. These traps typically have inside dimensions of 24 feet in length, 10 feet in width, and 5 feet in depth, and can contain 600 $ft.^3$ of sediment.

A system of ditches and culverts has been designed to collect runoff from the 10-year, 24-hour or larger storm event and direct it to the runoff ponds. Although not required by CDRMS regulations, most of the haul and access roads located within the main mine facilities area are drained to sedimentation ponds. An exception is the Sylvester Gulch haul/access road; however, best management practices for stormwater treatment are utilized, and seven (7) short sections of 18" diameter HDPE half-pipe were installed to aid in stormwater sampling and flow measurements at six (6) existing stormwater culverts as shown on Map 54B. Modifications to the original mine pond and ditch systems can be found in Exhibit 48 and Exhibit 66. Ditches and culverts associated with the RPE area are contained in Exhibit 70. Ditches and culverts are shown on Maps 54, 54A and 54B.

Combined ditch flows are summarized for the system as they progress toward the runoff ponds. Ditch and culvert specifications are listed on Exhibit 66 tables. A summary table of inflows and volumes for each pond are also presented in the tables in Exhibit 66.

The hydrologic parameters for watershed and sub-watershed basins are summarized on Table 43 in Exhibit 66. Documentation of specific parameters such as curve number, rainfall and time of concentration are also found in Exhibit 66. This information for the RPE pond is located in Exhibit 70.

Miscellaneous Sediment Control Facilities

The railroad loadout facility has been treated independently of the other surface facilities. The loadout is located across the river from the other surface facilities and, therefore, must have its own sediment control. The sediment control is a pond designed (sized) for a 25-year, 24-hour storm event and to accommodate wash-down water from the train load-out facility. Pond MB-4 was relocated in 1998 from the east side of the train load-out to an area west of the load-out between the two sets of tracks. The relocated sediment pond is constructed with concrete and is preceded by an oil skimmer and a sediment trap. The current design detail for this pond can be found in Exhibit 66.

In 2024, construction took place to take the drainage area from the gravel access road (0.1 Acres), divert it into a trench drain at the base of the road and into an interceptor tank. The water collected in the tank is then be pumped to a second staging tank at the base of the TLO. From this point the water is pumped up to the overhead conveyor and gravity fed through pipes into the existing MB-3 sediment pond. The tanks and piping were designed for the 50-year 6-hour storm.

The RPE area has also been treated independently of the other surface facilities. The RPE area is located to the east of the lower refuse disposal area and east of Sylvester Gulch. The sediment pond has been designed to completely contain the runoff from a 100-year, 24-hour storm event. The design detail for this pond, the clean water diversion ditches, and sediment ditches can be found in Exhibit 70.

DCW-2, the ditch immediately south of the haul road above the Lower Refuse Pile, serves as the clean water diversion ditch for the Lower Refuse Pile (LRP). It diverts undisturbed runoff from flowing over the LRP area and diverts it to sediment pond MB-5E. Runoff from the Lower Refuse Pile is collected in perimeter ditches D2R-1, D2R-1a, and D2R-3, which are all sized for the 100-year, 24-hour storm event.

During construction of the West Elk Mine, a spring was located on the site where the substation was to be built. In order to stabilize the substation pad, a french drain system and collection pipe were constructed to dewater it. As shown in Exhibit 43 and on Map 54, a 6-inch PVC pipe collects the water and drains it into culvert C1-6A. MCC has designed and constructed several other french drains around the mine site, as approved by the CDRMS, to improve stability. These french drains are shown on Map 54. Sediment traps were constructed below the breaker building to pre-treat (i.e., settle) wash-down water prior to flowing down to pond MB-2R. The locations of these sediment traps are shown on Map 54. MCC also utilizes sediment traps above the inlets to ponds MB-3 and MB-4.

General Requirements for Sedimentation Control Facilities

All storm drainage/sediment control ponds have been designed in accordance with the requirements of the *CMLRB Regulations for Coal Mining*. In addition, all inspection, construction and maintenance procedures conform to the requirements of these regulations. Flow meters have been installed on all mine water intakes and discharges to measure flows.

Sedimentation ponds MB-3, MB-4, MB-5E, SG-1 and RPE ponds have gated dewatering systems located above the sediment level. Refer to the designs in Exhibit 43, 47A, 48 and Exhibit 66. The dewatering system for SG-1 is shown in Exhibit 66.

Sedimentation Pond Operation

The following discussions describe significant features associated with and the operations of each of the sedimentation and water storage ponds located at the West Elk Mine. MCC typically collects a pre-discharge sample from the sediment ponds to determine if the discharge will be in compliance with MCC's NPDES permit, prior to opening the gate to discharge the pond. The pre-discharge sample is typically analyzed for total suspended solids.

MB-3

Sediment pond MB-3 is designed to accept storm water runoff and wash down water from the coal storage silos and stormwater from the gravel access to the train loadout. A sediment trap has been constructed above the inlet to MB-3. The pond was designed to contain three years of sediment, but MCC's experience has been that the pond has not required cleaning that often. This pond is also lined with a geotextile liner. There are two gated inlets at different elevations that serve as primary discharge. The emergency spillway is an open-channel, rock-lined spillway. MB-3 has been sized to contain the 25-year storm event and hold MCC's water storage right.

MB-4

Sediment pond MB-4 has been designed to accommodate storm water runoff and wash-down water from the train loadout facility. The sediment control system was redesigned and constructed in 1998 and 1999. The new system includes a concrete sediment trap, an oil skimmer, and a concrete sediment pond. In addition, an oil catchment trench was constructed to capture larger spills of hydraulic oil. Wash down water is piped directly to the sediment trap. The pond was designed to hold three years of sediment that could be generated during a storm event. The pond is designed to contain the runoff volume from a 10-year, 24-hour storm event. The primary discharge structure is a gated HDPE pipe. The emergency spillway is also a HDPE pipe, but is not gated.

In 2024, construction took place to take the drainage area from the gravel access road (0.1 Acres), divert it into a trench drain at the base of the road and into an interceptor tank. The water collected in the tank is then be pumped to a second staging tank at the base of the TLO. From this point the water is pumped up to the overhead conveyor and gravity fed through pipes into the existing MB-3 sediment pond. The tanks and piping were designed for the 50-year 6-hour storm.

MB-5E

Sediment pond MB-5E is designed primarily for stormwater runoff, but can also accept mine water discharges, and store some of MCC's adjudicated water storage rights. No mine water discharges from the F-seam portals have occurred since the mine water treatment pumps and ponds were constructed near the Sylvester Gulch dewatering pump station. This pond also accepts runoff from the treated discharge from the Wastewater Treatment Plant.

There are several sediment traps that water flows through prior to entering pond MB-5E. Two are near the breaker building to pre-treat (settle) wash-down water from the conveyors, reclaim tunnel, and other similar facilities. Others are located near the northeast and northwest corners of the LRP perimeter ditches and another is located before the large inlet pipe that directs flows to the pond.

MB-5E is comprised of two ponds (or cells) lined with a 4" to 6" clay liner. Long-term operating experience has shown that clay liners have proven to be much more durable for regular maintenance and pond cleaning activities with heavy equipment, as HDPE and geotextile liners easily tear and leak and are difficult and expensive to repair. Pond MB-5E was designed so that each pond cell can be operated independently. One cell of pond MB-5E is generally utilized to handle stormwater runoff while the other cell is closed and left empty and ready to accept stormwater when the other cell has filled or for water storage, if needed. When the open, active pond has filled to near the maximum fill level, the inlet to the empty pond is opened and the full pond inlet is closed. The full pond is then discharged as described below. When the sediment level reaches the cleanout level in one cell, the runoff flows are closed to that cell and opened to the other pond cell. The pond cell that is full of sediment can then be completely drained and sufficiently dried for cleaning. Access for operation and maintenance of the pond will be via a single-span bridge from State Highway 133.

The pond has been designed to store a three-year sediment volume. A 54-inch riser pipe serves as the upper, maximum level (primary) outfall in each cell of pond MB-5E, and contains two 12-inch gated drain pipes at different elevations in the riser pipe. To better manage the ponds for CDPS permit compliance, MCC typically does not allow the pond to fill and spill into the primary outfall riser pipe. Instead, after sufficient settling time, the top drain pipe (mid-pool level) is typically utilized first to discharge from the middle level of the pond, avoiding potential floating or settled debris. The bottom drain can then be opened to further lower the pond level to better empty the pond for cleaning. The emergency spillway is an open-channel, rock lined spillway. MB-5E is sized to contain the 100-year, 24-hour storm event, and/or MCC's water right for this pond.

SG-1

Sediment pond SG-1 was constructed in 1997 to accommodate storm water runoff from the pads associated with ventilation shafts #1 and #2, located in Sylvester Gulch. The pond was used to treat water from the construction of the shafts. The pond was designed to contain the 10-year, 24-hour runoff volume and hold three years of sediment. The pond is lined with HDPE. The principal spillway consists of a channel of filter rock that filters the sediment prior to entering a slotted HDPE pipe, which then becomes a solid pipe. The system is an effective means to treat the water and the discharge pipe has been designed to remain open. However, the valve is usually closed to control discharge from the pond. The emergency spillway is an open-channel, rock-lined spillway.

RPE Ponds

The RPE ponds were also constructed during 1997 to accommodate storm water runoff and possible leachate from the Refuse Pile Expansion (RPE). The RPE ponds are essentially one pond with two cells, similar to pond MB-1. Water from the sediment ditch enters Cell A (the eastern cell). Water can be treated in this cell and discharged directly to the river through piping that connects the cell to the primary discharge structure in Cell B, or the water can be transferred over to Cell B for further treatment if necessary. The primary discharge is through a gated pipe. The emergency spillway is a pipe that remains open. The pond has been designed to hold the runoff volume from a 100-year storm event and was designed to hold three years of sediment that could be generated during a storm event.

FW-1

Freshwater Pond-1 (FW-1) was originally designed to store and provide two months storage capacity for potable and domestic water uses at the initial planned coal production rate of 250,000 tons per year. At the projected coal production rate of 8.2 million tons per year, approximately 3.0 days of water storage capacity is provided. This pond has a capacity of ten acre-feet, an embankment height of 19.5 feet, and a surface area of 1.10 acres. The pond is located on the natural bench above the valley floor at an approximate elevation of 6,290 feet.

Normal surface runoff has been kept from entering Freshwater Pond-1 (FW-1) by providing a ditch upstream of the pond to intercept and carry the Probable Maximum Precipitation (PMP) assumption "B" storm flow to the ditches that flow to sediment pond MB-5E.

FW-2

Freshwater pond FW-2 (formerly sediment pond MB-1) is a two-celled pond that provides secondary raw water storage volume for the mine's uses. Piping is in place to allow water from FW-2 to be pumped to FW-1 for mine water use. Water can also be routed to the pond from FW-1 with portable pumps and can be pumped back to FW-1 when needed to provide raw water for the mine or for treatment for potable uses. There are four pipes in the dike that separate the two cells to transfer water from the south cell to the north cell to maximize storage potential. The primary spillway is located in the north cell and raw water can be directed to sediment pond MB-5E for additional storage if needed. The emergency spillway is an open-channel, rock-lined spillway. FW-2 is lined with a HDPE liner that was installed in early 1998.

Spillway Designs

Spillways have been sized using the broad crested weir equation, $Q = CLF^{1.5}$. A coefficient "C", of 2.67 was assumed, as this is the low end of the practical range. Spillways are constructed of riprap or gabions. The design head for each spillway has been limited to 2.50 ft. FW-1 Pond has a service spillway to assure that small inadvertent flows entering the ponds are passed without relying on the emergency spillway. The individual plan sets in Exhibit 43, Exhibit 47, and Exhibit 66 includes all pertinent hydrologic and spillway data.

Stability Program Description

The stability analysis for the dams was performed using a slope stability computer program (SLOPE II) developed by Geo Slope Programming, Ltd., Regina, Saskatchewan. The Ordinary (Fellenius) Method and the Simplified Bishop Methods were used to compute stability factors of safety for each embankment's maximum cross-section.

Both methodologies use the method of slices and utilize the limit equilibrium theory to solve the factor of safety. The principal difference between the two methods is the treatment of interslice forces. The Ordinary Method assumes that interslice forces can be ignored, while the Simplified Bishop Method assumes that the interslice forces act horizontally. Merrick and Company's results indicated that the Ordinary Method yielded lower factors of safety in all cases. Consequently, for all subsequent trials on the given dam, only the Ordinary Method was used.

The computer program determines the factor of safety for slip circles of varying radii about specified points but does not automatically converge on the minimum factor of safety. In order to minimize cost, a coarse grid was initially established. The grid was then successively refined to converge on the minimum factor of safety. In most cases three to five interactions were required. Stability analysis for SG-1 was performed using a slope stability computer program entitled XSTABL5.105. The program utilizes Bishops and/or Janbus method for circular or non-circular failure.

Stability Analysis

Various soil states were investigated to determine the most critical condition for each embankment. The unconsolidated undrained condition, the consolidated undrained condition, and the consolidated drained condition were considered for all embankments. In the case of FW-1 and FW-2 (formerly MB-1), for the clay material embankment, the consolidated undrained stability was critical.

Both a static analysis and a seismic analysis were performed for each dam embankment. For the static analysis a fully saturated embankment was assumed. The seismic (or dynamic) analyses, assuming the same condition, in combination, are summarized in Exhibit 44. The final run for each analysis is included as a supplement to Exhibit 44.

Hydrologic Protection During Construction

Early in construction, prior to the disturbance of any area for surface construction, sedimentation ponds were constructed, and diversion channels to collect undisturbed surface runoff were constructed to meet specific design requirements. These channels were constructed coincidentally with the initial access road, and divert the runoff away from the disturbed areas. These structures were designed per Exhibit 44. Runoff is released from the sedimentation ponds only after sufficient settlement of suspended solids and satisfaction of the effluent standards has been achieved. Disturbance of the adjacent areas was held to a minimum. The NPDES permits were secured prior to discharging. See Exhibit 7 to this Mining and Reclamation Plan. Construction practices are geared to minimize erosion in all disturbed areas (Exhibit 43).

During construction of the ST-4 crushed coal stack-tube and storage area, drainage in the area was diverted into the enlarged MB-3 pond so that the former ponds MB-2 and MB-6 could be dried in preparation for the construction of the coal storage area.

Best Management Practices (BMP) were utilized during road construction associated with the Sylvester Gulch Facilities Area (PR07). BMPs were also utilized as the substation was constructed. Prior to the construction of the shafts site benches, a clear-water diversion ditch, designed to handle the peak flow from a 100-year, 24-hour storm event, was constructed. In addition, prior to removing vegetation and stripping topsoil at the shafts site benches, sediment pond SG-1 was constructed. The shafts site will naturally drain to the sediment pond, so life-of-mine sediment ditches may not be constructed immediately, but will be established as the site is developed.

Sediment contributions from drill sites constructed by MCC within the permit area will be minimized by clearing the smallest area possible, containing drilling water and cuttings in an appropriately-sized pit and reclaiming the site promptly upon completion. Reclamation would include grading the site, redistributing topsoil, scattering vegetative slash, seeding, and mulching, if necessary.

Figure 17 (Intentionally Left Blank)

Hydrologic Protection During Operation

Once construction of the mine facilities was completed and mining operations commenced, surface facilities site runoff was diverted into the surface site sedimentation ponds (see the Collection and Diversion Channels Section of this Chapter).
Any discharge of water from the ponds to the North Fork of the Gunnison River is in accordance with effluent limitations and monitoring requirements stipulated in the NPDES permit. See Exhibit 7 to this Mining and Reclamation Plan. Should monitoring data indicate a violation of any effluent limitation specified, MCC will notify the State, and proceed immediately to correct the violation. MCC will periodically conduct maintenance and install erosion control in channels to minimize contributions of sediment to streamflow or runoff outside the permit area.

Management of the refuse disposal areas and sedimentation ponds to minimize water pollution are the major hydrological concern during operations. During operations, water will be discharged from the mine. The water from the mine is routed through the surface drainage system into the sedimentation ponds or discharged via the Lone Pine Pipeline or Sylvester Gulch Dewatering Facility. No appreciable amounts of water discharges from the portal tunnels. The discharge water is treated, if necessary, to meet water quality standards. Should more groundwater be encountered than anticipated, prior to discharge of excess mine water, an analysis of anticipated water quality and quantity and its effects on the receiving stream will be provided. The F, E and B coal seams are not of an acid- or iron-producing nature. The discharge from the mine has a minimal effect upon the existing hydrologic balance.

The loadout facilities consisting of the silo, loadout conveyor, and loadout building are designed to prevent negative impacts to the river. Transfer points at the silo and the loadout building are enclosed, and have dust suppression systems (water sprays). The loadout conveyor is in an enclosed gallery where it crosses the river and the CDOT highway bridge. The loadout building is totally enclosed and runoff from the area impounded within the limits of the facility where it is treated before discharging.

Impacts of Overtopping Hydrologic Structures

All diversion structures are designed for use throughout the life of the West Elk Mine. See Exhibit 44, Exhibit 47, and Exhibit 66 for details of the design of these structures, including stability analyses, where appropriate. The ditches have been designed and constructed to follow existing drainage routes. Overtopping the collection and diversion ditches would create localized flooding of the immediate area; however, damage would be minimal as flows would most likely enter the next downstream ditch or culvert and flow to the sediment pond. The future access road to the upper waste rock disposal area would be closed to traffic during such times. Since most of the ditches are lined with shotcrete or other such energy dissipaters, problems would be minimal.

~~Ponds MB-1 and MB-2R have been shown to safely pass through the spillways the runoff from a 100-year precipitation event into the North Fork of the Gunnison River. Overtopping impoundment structures would create erosion along the embankments and contribute to localized flooding. In the "greater than a 100-year flood precipitation event" the south bank of the North Fork would experience more damage from the river itself than from overtopping the ponds. Furthermore, the facilities on the south bank are above the floodplain elevation and should experience minimal damage.~~

Collection and Diversion Channels

Cross Section

The cross-section of a typical collection and diversion channel is shown in Exhibit 47 and the minimum ditch designs are shown in Exhibit 66. Exhibit 66 discusses the hydrologic design of ponds, channels, and culverts in the area of the surface facilities, including the Sylvester Gulch Facilities Area. The locations of the culverts used for collection and outfall may be found on the Plot Plans showing Hydrologic Structures in Exhibit 43 and drawings in pertinent Appendices. The hydrologic design of the RPE pond is located in Exhibit 70 and Exhibit 66.

Design Dimensions

The hydrologic criteria of the diversion and collection channels, are located in Exhibit 66. Exhibit 46, Exhibit 47, Exhibit 49, Exhibit 66, and Exhibit 70 contains all the construction specifications for Ponds MB-1 through MB-5, the SG-1 pond, and the RPE pond (note that MB-2 has been redesigned and is included in Exhibit 66 as MB-2R, and pond MB-6 no longer exists). The designs for the trash racks that may be installed on some culverts, 30 inches or less minimum cross-sectional dimension are in Exhibit 43. Acreages of drainage areas relating to certain diversion and collection channels are shown in Exhibit 66.

Culverts

Locations of culverts are shown on Map 54, Map 54A, and Map 54B. Details and the culvert specifications are found in Exhibit 66. Details and culvert specifications for the ditches and culverts at the RPE area are found in Exhibit 70 and Exhibit 66.
MCC may install "internal" culverts (i.e., located within the mine site drainage systems) to provide access. If added, the culverts would be sized equivalent to or greater than the next downstream ditch or culvert.

Sedimentation Ponds

Prior to the disturbance of the area for surface construction at West Elk Mine, four sedimentation ponds and associated collection structures were constructed to effectively retain runoff from the area to be disturbed. The other ponds were developed prior to the use of the old Bear Mine area; construction of the Lower Refuse Pile, formerly referred to as the U.S. Steel laydown area; construction of the Sylvester Gulch Facilities area; and construction of the RPE area.

Prior to construction, topsoil was salvaged from all construction areas, stockpiled, and/or applied to slopes and cuts as necessary for reclamation. Exterior slopes of sedimentation ponds at the main mine facilities were reclaimed with a fast growing vegetative cover after they were constructed in order to prevent excessive erosion of the embankments.

The cross-section of each sedimentation pond is given in Exhibit 66. Sedimentation pond designs are provided in Exhibit 42, Exhibit 43, Exhibit 44, Exhibit 46, Exhibit 47 and Exhibit 66. An emergency spillway has been provided for each pond, which will safely pass the peak runoff from a precipitation event with a 25-year recurrence interval or larger (100-year for FW-2 (formerly MB-1) and former pond MB-2R). The RPE pond has been designed to completely contain the runoff from a 100-year, 24-hour storm event. See designs for the RPE pond in Exhibit 70.

Small Area Exemptions

Small area exemption (SAE) demonstrations for the areas shown on Map 54, Map 54A, and Map 54B are provided in Exhibit 66. Discharges will meet State and Federal water quality requirements. No mixing with underground mine water occurs in these areas. Based on professional judgment, MCC believes that applicable effluent limitations will not be exceeded. Periodically, MCC will review the conditions of best management practices recommended by the small area exemption demonstrations and assure they are functioning.

Design

The specific size and capacity of any particular sedimentation pond are presented on Map 54 and Map 54B and are summarized in Exhibit 66. Stability analyses are presented in Exhibit 44. Exhibit 45 shows the approval by the Chief of Dam Safety, Division of Water Resources, of Ponds FW-1 and FW-2 (formerly pond MB-1).

Fresh Water Ponds

The design for the fresh water pond FW-1 is shown in Exhibit 43 and in Exhibit 44, Design Report. The fresh water pond FW-1 at West Elk Mine is approximately 10 acre-feet in

capacity. With the construction of pond MB-5E, the stormwater runoff control functions as well as water storage capacity of former sediment pond MB-1 are handled in pond MB-5E. This allowed the existing pond (formerly MB-1) to be converted and utilized as freshwater pond FW-2.

Both FW-1 and FW-2 store water that is pumped from the North Fork of the Gunnison River. These freshwater ponds supply raw water for potable use, dust suppression, and the fire suppression system. These ponds were constructed from suitable site materials and have engineered earth-fill embankments with 3H to 1V sideslopes. The pond is lined with a semi-impermeable clay liner. Pond FW-1 specifications are contained in Exhibit 49. Exhibit 44 contains design considerations and data. The original FW-2 design is similar in construction to FW-1. The location of the original FW-2 pond (in the approximate location of MB-5E is shown in Exhibit 43. The original design of FW-2 is contained in Exhibit 44, but is no longer planned to be constructed.

(5) Topsoil

Whenever technically feasible, topsoil and subsoil on sites of proposed surface facilities will be stripped and placed in appropriate stockpiles before any construction occurs. Map 53, Map 53A, and Map 53B show the location of West Elk Mine's topsoil and subsoil stockpiles. These stockpiles are appropriately signed and will be maintained according to applicable regulations for the life of the mine or until used for reclamation. Handling of topsoil is more thoroughly discussed in Section 2.05(4). When a topsoil stockpile is expected to remain inactive for more than one year, it is seeded with the permanent or temporary seed mix (described in Section 2.05.4.). This seeding will protect the stockpiles from wind and water erosion.

(6) Overburden

Because West Elk Mine is an underground mine and not a surface mine, no overburden is removed, handled, or stored. Spoil from developing underground workings is handled as coal mine waste. Therefore, the discussion of refuse disposal in Section 2.05.3(8) also applies to all spoil generated during these developmental activities.

(7) Coal Handling Structures

At West Elk Mine, coal handling structures consist of belt conveyors, three run-of-mine stacking tubes with an underground conveyor reclaim system, a double-roller crusher, screening plant, rotary breaker, a coal preparation plant and associated coal handling facilities, two silos, a crushed coal stack-tube with an underground conveyor reclaim system, a dozer trap reclaim system, and a railroad loadout facility. Map 53 shows the locations of these coal handling structures. Each facility or group of facilities is described below.

Conveyors

Run-of-mine coal is transported from the longwall production and continuous miner development sections to the various surface facilities by a system of belt conveyors. A 60-inch mine conveyor carries coal from the mine portal to the stacking tubes. At a speed of 900 feet per minute, the capacity of this conveyor is approximately 3,500 tons per hour. The conveyor belting is covered by a semi-circular corrugated galvanized metal cover. Primary and secondary walkways were constructed along the conveyor. The conveyor structure is steel. A reclaim feeder was installed on the run of mine belt near the portals in 1987.

From the stacking tubes, the 54-inch underground conveyor reclaim system transports the coal to a double-roller crusher. This conveyor has a capacity of 1,500 tons per hour and will travel at 550 feet per minute. The crushed coal is transported to the screening plant on a 60-inch high-angle conveyor belt with a capacity of 1,500 tons per hour. Product-sized coal that passes through the screens is transported to the silo conveyor belt (S-1) on a 48-inch, 1,500 tons per hour conveyor belt. Over-sized material is transported to the rotary breaker on a 48-inch high-angle conveyor with a capacity of 300 tons per hour. Product-sized material that passes through the rotary breaker is transported to the silos on conveyor S-1, and oversized material is dropped into the reject bin.

Conveyor TC-1 is a 350-foot long, 36-inch wide conveyor belt designed to convey ROM coal material from a dozer/loader-fed hopper near the run-of-mine (ROM) coal stack tube ST-1 stockpile to the TC-1/PR-2 Transfer Tower. The ROM coal material is transferred from the TC-1 conveyor to the PR-2 conveyor within an enclosed portion of this tower. The Transfer Tower & Scalping Station will be approximately 20 feet wide, 40 feet long and 50 feet tall, and will house a single 8' wide by 24' long vibrating screen to remove the oversize coal material and drop it into a concrete walled pit at ground level. ROM coal material that passes through the screen will be directed onto plant feed conveyor PR-2. Conveyor PR-2 is a 2,000-foot long, 48-inch wide conveyor designed to convey ROM coal material from conveyor TC-1 via the Transfer Tower and Scalping Station to the Preparation Plant located on the LRP mine facilities bench. This conveyor follows the ground for approximately half its length and is elevated using bent (open structural-steel support) structures of varying length for the other half of its length.

The S-1 conveyor belt to storage Silo No. 1 and Silo No. 2 has been upgraded from a 42-inch to 48-inch width belt. The conveyor belting is covered by a semi-circular corrugated galvanized metal cover. Primary and secondary walkways were constructed along the conveyor. The conveyor structures are steel.

Crushed (product-sized) coal stack-tubes, storage areas and reclaim systems are fed by a 48-inch conveyor from the top of Silo No. 2 to the top of the ST-4 stack-tube. The conveyor belt has a capacity of 1,500 tons per hour. As described below, a 48" reversible conveyor can convey product coal to and from stack tube ST-5. Product coal is also conveyed from the preparation plant via two side-by-side 36" conveyors to ST-5. A dozer trap and 48-inch reclaim conveyor located west of the silos, has the capacity to reclaim coal from the silo pad of 1,500 tons per hour.
A 72-inch belt conveyor carries coal from the storage silos to the over-the-track train loadout. This conveyor has a capacity of 6,000 tons per hour and runs at a speed of 850 feet per minute. Total length is approximately 600 feet. The conveyor is covered by a semi-circular corrugated galvanized metal cover. The portion of the conveyor that crosses the North Fork of the Gunnison River and State Highway 133 is completely enclosed. Primary and secondary walkways were constructed along the conveyor. The conveyor structure is steel.

ROM Stack Tubes, Underground Conveyor Reclaim System, and Crushers

Construction of three stack tubes and an underground conveyor reclaim system was begun during 1991 and became operational in July of 1992. The approximately 100,000 to 120,000 tons of run-of-mine coal storage provided by these tubes is needed to handle the higher longwall production volumes. The storage area was expanded by moving a portion of the main topsoil stockpile to the south, creating an additional 60,000 to 88,000 tons of coal storage area. Run-of-mine coal is fed directly to these tubes. Bulldozers push the coal into the hoppers feeding the underground reclaim system and into the crusher. The stacking tube facility consists of three stacking tubes ranging in height from 91 to 94 feet and constructed of reinforced concrete. On top of each stack tube is a transfer structure. The transfer structures are approximately 38 feet tall, open steel structures. The facility also includes a 60-foot tall feed conveyor drive tower and a 42-foot high crusher building. Both of these are open steel structures. An as-built construction description is provided in Exhibit 68.

Screening Facility

Construction of a screening facility was begun in 1992 and became operational in February of 1993. The facility is used to separate over-sized material (typically consisting of rock) from the product-sized coal. The screening facility consists of an open steel structure with a maximum height of 84 feet and three associated conveyors. A 1,500 tons per hour high-angle conveyor transfers material to the screening plant from the crusher, product-sized coal is transported to the silo conveyor belt on a 1,500 tons per hour conveyor and a 300 tons per hour high-angle conveyor transports over-sized material to the rotary breaker. An as-built construction description is provided in Exhibit 68.

Coal Preparation Plant and Associated Coal Handling Facilities

After mining began in the E-Seam of the West Elk Mine, geologic conditions proved to be more variable than anticipated. Seam thickness deviation and sandstone intrusions into the coal seam caused higher than expected levels of ash in the run-of-mine coal. As a result, MCC constructed a coal preparation plant and associated coal handling facilities to reduce the ash levels and increase the heat content of its coal product in order to meet its current coal supply obligations on a consistent basis.

The Coal Preparation Plant (“the Plant) is located on the existing LRP mine bench. The Plant building is steel-sided and completely encloses the washing and coal handling equipment. The Plant separates the ROM coal material into salable coal products and coal refuse. The salable products are blended in the plant as required to meet customer specifications. The refuse material is conveyed by 550-foot long, 36-inch wide conveyor PP-4 into a 300-ton truck loading bin at the RPE coal refuse area. The truck loading bin loads off-highway trucks for distribution to the coal refuse pile. Conveyor P-6, a 200-foot long, 36-inch wide stacking conveyor and the fines stockpile on the LRP allow for temporary storage of up to approximately 5,000 tons of coal and/or coal fines product. If needed, the fines can be used for later blending to meet coal quality specifications, or can be transported to the RPE for disposal, depending on the quality of the fines. Refer to Exhibit 81 for more specific information.

Water will be supplied to the Preparation Plant via a new 8-inch diameter buried HDPE pipeline. The coal preparation plant is a closed-loop system designed to produce no effluent. As a precaution, a buried HDPE discharge water pipe was installed to flow to a sediment trap on the south east corner of the bench and flow to an existing LRP perimeter drainage ditch.

The Plant Control and Lab building is a two-story steel-sided building on the south side of the plant building. The preparation plant controls and operating facilities are housed on the top floor and third-party-operated laboratory facilities are housed on the bottom floor. These lab facilities replace the lab facilities formerly located near crushed coal stack-tube ST-4.

Storage Silos

Two silos provide temporary storage for product coal. These silos provide the storage capacity needed to accommodate MCC's production schedules and use of unit trains for shipping product coal from West Elk Mine. The reinforced concrete silos provide about 24,000 tons of product coal storage capacity. The silos were designed to reduce the hazard of spontaneous combustion by minimizing dead storage areas within the silo compartments.

Crushed Product Coal Stacktubes and Underground Reclaim

A 48-inch width conveyor belt transports crushed product-sized coal from the top of Silo No. 2 to stack-tube ST-4. This stack-tube is approximately 106 feet in height and is constructed similarly to the run-of-mine coal stack-tubes. The transfer structure on the top and the reclaim tunnel and conveyor belt underneath the area are also similar in construction to the run-of-mine coal stack-tube facilities. A dozer trap and reclaim system, located just west of the silos, is similarly constructed, as well.

Product-sized coal will be conveyed from the Coal Preparation Plant on conveyors P3 and P5 to stack tube ST-5. Conveyor P-4, a 200 foot long, 48" wide conveyor designed to move product coal from conveyor P-3 to stack tube ST-4. P-4 can also be reversed to move product coal from product conveyor S-3 to ST-5. Product coal conveyor P-5 is designed to discharge only to ST-5. The R-5 reclaim conveyor and tunnel will be extended to a point east of ST-5 to provide for reclaim to the existing unit train loading conveyor.

Loadout Facility

MCC uses a pre-weigh, over-the-track type of loadout facility at West Elk Mine. In this facility, a surge bin receives the coal from the loadout conveyor. The coal is then transferred to a weigh bin. Finally, the weigh bin drops a measured amount of coal into a railroad car via a chute. The capacity of this system is 6,000 tons per hour. Two, double-walled (self-contained secondary containment) polyethylene tanks are located west of the loadout building to contain antifreeze (diethylene glycol) for treatment of coal and railcars for winter shipment. One 12-foot diameter tank contains approximately 15,000 gallons of antifreeze to spray on the coal as it is loaded. Another 12-foot diameter tank contains approximately 9,800 gallons of a thicker antifreeze to treat the railcars prior to loading. A concrete clean-up bunker is located to the east of the loadout building. The bunker is used to clean-up coal that occasionally spills during the loading process. The spilled coal is loaded into a truck and hauled to the main mine site.

(8) Coal Processing Waste and Non-Coal Processing Waste

Production of Waste or Refuse Material

MCC generates waste or refuse during underground construction activities and mining. Underground construction activities include building ventilation overcasts or undercasts, ventilation shafts or tunnels, access slopes, and roadways or haulage ways. Mining produces refuse material from the roof and floor surrounding the coal seam, as well as low quality coal. This low quality coal is at times not marketable and becomes reject coal requiring disposal. Should a suitable market emerge at a later time, any accessible reject coal may be recovered and used (or "recycled") from the disposal area, processed and shipped as coal product. This recycling maximizes the coal production from the mine while minimizing the amount of material requiring permanent disposal and optimizing the life of the disposal areas.

Although underground construction activities and mining constitute the primary sources of refuse material, some refuse is generated from other mine activities. Other sources of refuse material are contaminated coal spillage, razed mine and site development materials, sediment pond dredgings, soils contaminated with non-hazardous materials (e.g. petroleum products) and limited mine development or coal processing wastes from neighboring operations, if comparable in characteristic to West Elk Mine's refuse. These additional sources make up a very small percentage of the total amount of refuse produced at West Elk Mine.

Refuse Disposal

During the operational life of the mine to date, refuse has been disposed of in several permitted locations. They include the Bear No. 2 Mine portal bench, the Blue Ribbon Mine bench stabilization and backfill, and West Elk Mine's portal bench mine supply storage area fill and the run-of-mine stack tubes coal storage area fills. Coal refuse was once stockpiled in the initial waste rock storage area (maintenance shop bench), but all refuse or waste was removed before construction of the earthen fill to make a pad for the shop. Coal refuse is transported from the mine on the run-of-mine belt and/or is hauled with equipment out of the main portal. This refuse may be temporarily stockpiled in the screening plant reject bin or on the stack-tube bench, and on the portal bench or in the nearby concrete bunkers, respectively. Coal refuse is also generated from the screening plant and from the Coal Preparation Plant (CPP). The amount of coal refuse produced is variable. The refuse materials that accumulate in temporary storage areas are hauled by truck to the permanent refuse disposal area.

Four permanent refuse disposal areas and one development waste pile are permitted at West Elk Mine. Initially, refuse was temporarily stockpiled in an area formerly called the U.S. Steel laydown area. This area was enlarged and converted to a permanent refuse pile called the Lower Refuse Disposal Area or Lower Refuse Pile (LRP). A permanent refuse pile is also permitted for the meadow above the portal bench. This area is referred to as the Upper Refuse Disposal Area (URDA). Although this upper refuse disposal area has been approved for construction, it has not yet been constructed. Construction of the URDA will occur in the future, if needed. All construction information about these two disposal areas is contained in Exhibit 50 (URDA) and Exhibit 51 (LRP).

As MCC projected that the Lower Refuse Pile would reach its maximum storage capacity in 1997, a third refuse disposal area was designed. The Refuse Pile Expansion (RPE) area was designed and prepared to the east of the Lower Refuse Pile and east of Sylvester Gulch. As described in Exhibit 51, refuse disposal at the LRP ceased before reaching the maximum designed storage capacity, because all refuse disposal was being handled in the RPE area (as of October 1998). Refuse disposal at the RPE will also cease before reaching it maximum designed capacity to accommodate a refuse bin for the RPE East area described below. The design information and baseline data for the RPE area are contained in Exhibit 70.

With projections for the RPE area to reach its maximum designed capacity by the end of 2010, MCC completed design and engineering of the RPE East refuse disposal area, located within No Name Gulch, approximately one mile southeast of the WEM main portals. Refuse to be disposed in this area will primarily be generated from the CPP and will be conveyed to a refuse bin located east of Sylvester Gulch on top of the RPE. After the refuse bin is in place and the RPE East (RPEE) area is operational, the RPEE will be MCC's primary permanent refuse disposal area. Approximately 150,000 cubic yards of compacted refuse may be temporarily stockpiled on the RPE and/or LRP when the RPEE is inaccessible (e.g. inclement weather, poor ground conditions, etc.) and will be later hauled to the RPEE for permanent disposal. Approximately five to six, 20-yard truckloads per hour (when CPP refuse is being generated) will be hauled from the refuse bin to the RPEE. An average of 300,000 tons per year of coal refuse is expected to be compacted into the refuse pile, with a maximum of 500,000 tons anticipated in any given year. Detailed engineering and designs of the RPE East area, including haul roads and drainage features, is included in Exhibit 82. . Approximately 150,000 cubic yards of coal may also be temporarily stored on the RPE and LRP as needed to manage inventory and shipping requirements.

The Lone Pine Gulch Development Waste Pile contained approximately 17,000 cubic yards of material generated from the development of the Lone Pine Gulch fan intake and return entries. Designs for this pile are contained in Exhibit 42A. This development waste pile was completed, soil-covered and seeded in the fall of 1995. The facility was decommissioned and the Lone Pine facilities, including the development waste pile, in 2005.

Although most of the refuse material generated at West Elk Mine will end up in the refuse disposal areas, some non-coal waste may be disposed of in one of two other ways. First, some non-combustible materials may be placed in abandoned mine workings. Second, suitable materials may be crushed and used for graveling roadways in the mine. Overall, relatively little material will be disposed of using these alternate methods.

All disposal areas and the development waste pile were designed and are maintained according to CMLRB regulations. As such, they are not located near underground mine air shafts, tipples, or other surface installations. The refuse disposal areas are also constructed and operated in compliance with MSHA regulations, including signs posted with the assigned MSHA identification number and other necessary information. The signs are posted next to the entrance to each of the disposal areas per MSHA regulations.

Refuse Production During Permit Term

All coal refuse generated during this permit term will be disposed in the permanent refuse disposal areas described above.

(9) Return of Coal Mine Waste to Abandoned Workings

MCC does not return coal mine waste generated from the mine to its abandoned mine workings at West Elk Mine. All coal mine waste is disposed of in the permanent refuse disposal areas described above.

(10) Return of Coal Processing Waste to Abandoned Workings

MCC does not return coal processing waste generated at West Elk Mine to the underground workings. All coal processing waste is disposed of in the permanent refuse disposal areas described above.

(11) Disposal of Non-Coal Waste

Temporary disposal of non-coal waste (trash, garbage, lumber or other items identified in Rule 4.11.4) is in a solid waste compactor which is located in one of the concrete bins near the portal area. The location of these bins is identified on Map 53 as "Dumpster and Materials Storage Bunker Area." The compactor system is designed to handle all West Elk Mine solid waste including spools, pallets and some metals. There are several trash barrels/small dumpsters for employee use in the facilities area, but these are relocated when full to the compactor. The roll-off unit for the compactor is picked up by a contracted disposal firm when it is full, and replaced with another unit. Final disposal of non-coal waste is at the Delta County Landfill, a State approved facility.

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