



**Braun Environmental, Inc.**

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September 29, 2016

Mike Cunningham  
Division of Reclamation and Public Safety (DRMS)  
1313 Sherman Street, Room 215  
Denver, Colorado 80203

**RE: Responses to July 11, 2016 Comments, Bulger Basin Placer M-1985-22, Park  
County, Colorado**

Dear Mr. Cunningham:

As you and I had discussed on the phone earlier in the day, I am attaching responses to your comments in the July 11, 2016 Adequacy Review Letter. Each comment is listed and followed by a specific response. I have included to copies of both a Mine Plan Map and Reclamation Map, each produced at a scale of one inch equals one hundred feet. The package is also being sent via email.

I was hoping that we could find a suitable base map that had been published that might save the client some time and money, but our search was unsuccessful and it was necessary to build one from scratch. Thanks for the extension time necessary to allow us to construct the map. Call me if you have any questions or need any additional information.

Sincerely,  
BRAUN ENVIRONMENTAL, INC.

C. A. Braun, P.E.

A handwritten signature in black ink, appearing to read "C. A. Braun". The signature is stylized with a large, looped "C" and a trailing flourish.

cc. S. Tunstall

enc.

CAB/rl

**Response to July 11, 2016 Letter from Michael Cunningham Adequacy Review No. 1**  
**By: C. A. Braun, September 29, 2016**

**This document is formatted to present the DRMS comment (in italics) followed by the response.**

Comments 1 and 2: *Please provide the Division with revised copies of the Mining Plan Map and Reclamation Plan Map*

- a. Show the name of the Operator.*
- b. Must be prepared and signed by a registered land surveyor, professional engineer, or other qualified person.*
- c. Give date prepared.*
- d. Identify and outline the area that corresponds with the 49 acre permit area.*
- e. Shall be prepared at a scale that is appropriate to clearly show all elements that are required to be delineated by the Act and Rules. The acceptable range of map scales shall not be larger than 1 inch = 50 feet nor smaller than 1 inch = 660 feet.*
- f. Maps shall also include a map scale, north arrow, map title and appropriate legend.*

Response: Mining Plan Map and Reclamation Plan maps have been prepared to the DRMS requirements listed.

Comment 3: *The Mining Plan Map must legibly portray the following:*

- a. All immediately adjoining surface owners of record.*
- b. The name and location of all creeks, roads, buildings, oil and gas wells and lines, and power and communication lines on areas of affected land and within 200 feet of all boundaries of such areas.*
- c. The existing topography of the area with contour lines of sufficient detail to portray direction and rate of slope of the affected land.*
- d. The total area to be involved in the operation, including the area to be mined and the area of affected lands.*
- e. The location of tributary water courses, wells, springs, stock water ponds, reservoirs, ditches on the affected land and on adjacent lands where such structures may be affected by the proposed mining operations.*

Response: Information requested above has been included on the Mining Plan map produced at a scale of one inch equals 100 feet.

Comment 4: *The Reclamation Plan Map must show the expected physical appearance of the area of affected land, correlated to the proposed mining and reclamation timetables. The map must show the proposed topography of the area with contour lines of sufficient detail to portray the direction and rate of slope of all reclaimed lands.*

Response: The Reclamation Plan map is produced at a scale of one inch equals 100 feet, at a contour interval of 10 feet. It shows the topography of the land surface, the topographic lines providing direction of flows of surface waters across the entire permit area. In areas where surface waters might be diverted from the natural flow that are not readily apparent by topography, the directions are shown using arrows. At this time, no natural surface diversions

are anticipated other than the piping that is used to transfer makeup water to the mining area. Since the operation is wholly located on a shallow surficial colluvial/alluvial deposit, the final contour of the surface will not vary significantly from the current contours shown on the Mining Plan map. The only significant change will be the removal of the small ridges and cuts to produce a smoother, more regular final surface. Reclamation of the disturbances related to permittee's operations will be done in such a manner as to blend in as well as possible with pre-law historical disturbances. The ponds may or may not all be removed if a future beneficial use is determined for them. If they are removed, the surface will be graded to produce an average elevation across them. As discussed in the reclamation plan, the area will be seeded at the specified rate with the approved seed mix.

As the permitted area has been minimized to the smallest possible area, as a result of State regulations, the entire area currently located within the permit boundary is needed to operate. The mine has been in production for at least 140 years, and the limits of the deposit have still not been defined. At this point, and at the current production rate, the operator anticipates no less than 10 years of ore in sight, and it is likely that the mine might have a life of at least 25 more years. Reclamation of the entire area will be performed at the end of production.

*Comment 5: The revised Mining Plan discusses how water from the wash plant is managed. Please provide a more detailed description of how water is routed through the three ponds. The description should address how water is routed from each of the ponds and all conveyance structures (pipes, valves and pumps) should be discussed for each pond as appropriate. Also, address how the existing system is managed to prevent the ponds from overtopping and discharging water to offsite areas.*

Response: As a base, we use the discussion of the water management from the Mining Plan provided by operator dated July 17, 2016. To that discussion, modifications have been made to assist the reader in understanding the water flows and balance. First, the mine has operated at a water deficit since its beginnings. Added to the problem of lack of water, the gravels and soils in the area generally have very high permeabilities, thus surface waters in the area of the placer tend to rapidly infiltrate the surface. In the history of the project, there is no record of any runoff water ever being lost from the mining surface, nor is there any evidence showing that surface flows, containing any mining related materials, has ever occurred. In order to be environmentally friendly, the system has been operated as a closed loop system with the process water being recycled.

To make up the water deficit, water rights were secured from Pennsylvania Creek, which is located about a quarter mile to the south. This water is simply diverted to the property whenever makeup water is required. The pipe valve is turned on, the ponds are then filled to the proper operating level, and then the diversion water is turned off. Since this is a placer operation, the water is used to wash the gravels and to segregate different particle sizes and specific gravities of the materials being washed. Reference to the Mining Plan map will help the regulator to understand the following discussion.

Beginning at the wash plant, water travels through the plant, and as much of the material is dropped out of suspension there. The finer-grained materials that did not settle out then flow to the Wash Plant Discharge Pipe which leads to Pond 1. The water is discharged from the pipe into the pond where it flows via a dike system that is designed to maximize settling of suspended

particles. The water then exits Pond 1 and flows into Pond 2 through a 12” steel pipe. The water level in Pond 1 can be regulated by the use of a valve located in the outlet structure so as to optimize the process. This pond is additionally equipped with a 14” steel overflow pipe located approximately 12” higher than normal operating pond levels to maximize freeboard holding capacity and to serve as an emergency overflow.

Pond 2 serves as a quiescence zone to allow additional settling of remaining suspended particles. This further treated water then exits Pond 2 to Pond 3. Outflow from the pond is provided through a series of three pipes. Two 10-inch pipes are in place to handle operational flow volumes, and an additional 12 inch pipe is located as an overflow and for emergencies. Pond 3 is used as the polishing pond and as the sump for the pump plant. Pond 3 is also equipped with two 12” emergency overflow steel pipes with no valves. Any spillage from those pipes would travel to an emergency catchment basin through a rock-lined ditch. The emergency catchment area is equipped with a rock overflow channel and would be the point for water sampling in the event of discharge, as per our current storm water discharge permit (permit number CO0048971) which was activated July 1, 2016.

The pump plant consists of an 8”x6” diesel powered pump that moves the wash water to the wash plant. The pump plant is designed to move up to 1,200 gallons per minute during operation through an 8” HDPE line.

There are two other ponds on site referenced as Pond 4 and Pond 5. Both ponds are only used as storm water catchment and not used for process water. There is a 12” steel overflow pipe from Pond 4 to Pond 5 and any overflow from Pond 5 would enter the emergency catchment area as mentioned above. The mine site is located a topographically up-gradient distance of 1,900 feet from Pennsylvania Creek, so in the very unlikely event that any overflow from this catchment area might occur, assuming that both emergency Ponds 4 and 5 should overflow, there would still be little chance that any surface water ever reaching Pennsylvania Creek. As discussed above, there is no record that any releases of process water have ever occurred over the 140 year life of the project.

*Comment 6: Provide a more detailed description of the pipe and ditch system which convey water from the wash plant to the settling ponds. Include approximate dimensions of the pipes and ditches.*

Response: This comment has been answered in detail in the response to Comment 5, above.

*Comment 7: Please provide a detailed description of how water is diverted from Pennsylvania Creek for each of the diversion points. Describe all valves, pipes and pumps associated with the diversion points. Also, describe what safeguards are in place to ensure that water from Pond 1 or from the wash plant area cannot backflow into Pennsylvania Creek*

Response: The diversion from Pennsylvania Creek consists of a low dike and small sump cut into the bottom of the creek. An eight-inch diameter HDPE pipe leads out of this structure and follows the contour of the mountain to the permit area. The pipe is valved at both the upper and lower ends, so the flow can be controlled from either side. This configuration is beneficial from both an operations standpoint and also for safety. There are no pumps associated with the

diversion and it is constructed just as any other diversion. This water right and diversion is regulated by the Colorado State Engineer's Office up on the eighth floor of your building, and is independent of the DRMS permit.

As for the second sentence of the comment, the answer has been discussed in detail in the response of Comment 5 above.

*Comment 8: Provide an estimate of the project water requirement including flow rates and annual volumes for the development, mining and reclamation phases of the project.*

Response: This information is somewhat proprietary and is normally considered the business of the owner of the water right and the agency that oversees that right, the State Engineer's Office. The owner of the mining permit, in addition to having a permit to mine, also has a water right for surface water taken from a specific location in Pennsylvania Creek. That right is for 2.3 cubic feet per second (cfs).

The volume of water used by the permitted mine can vary significantly from year to year. The use is dependent on the length of time the plant is operated during the season, the amount of winter moisture that fell on his property the winter before the operating season, and the amount of rainfall that occurs during the operating season. On the consumptive side, water use will be based on the amount of evaporation, loss due to water adhering to processed particles due to surface tension, and loss through infiltration. Historically, the operation operated from a minimum annual use of no supplemental water, to use the entire allotted flow. This water right is enjoyed by its owner and is not specifically tied to the operation permitted by DRMS. As a result the owner is free to use it for purposes consistent with that right, and the right does not come under DRMS authority.

*Comment 9: Provide a brief statement or plan showing how water runoff from disturbed areas, piled material and operating surfaces will be managed to protect against pollution of either surface or groundwater, both during and after the mining operation. In addition, specify if the Operator holds a stormwater discharge permit.*

Response: First, the natural undisturbed soils within the permit area consist of coarse-grained materials having high permeability. An inspection of the site during a rain storm would reveal that very little runoff occurs due to infiltration. Secondly, since all ponds are located topographically below the mining operation, as can be seen on the topographic map, any runoff that might occur diverts to those ponds. In the 130 year history of the site, there has never been a documented discharge of any mine water off of this site.

As for the potential for groundwater pollution, the mine process simply consists of moving gravel from one place to another. The gravel contains no levels of contaminants deemed hazardous by the government and the physical movement of these materials uses no chemicals deemed hazardous. Thus, this operation is no different than someone building a road or setting a foundation for a house. The risk to the environment from this operation is the same.

Due to the size of the area of disturbance, the operator has been required by the Colorado Department of Public Health and Environment (CDPHE) to obtain a storm water discharge permit. That permit number is CO-48971.





