BLACK HILLS BENTONITE, LLC

A Limited Liability Company

Manufacturers of High Grade Wyoming Bentonite Since 1947

P.O. Box 9 – Mills, Wyoming 82644

Telephone 307-265-3740

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Thomas A. Thorson
President & General Manager

Larry Madsen
Vice Pres. & Chief Financial Officer

June 15, 2017

CERTIFIED MAIL RETURN RECEIPT REQUESTED - #7016 1370 0002 0956 1480

Mr. Jim Crossingham
P.O. Box 988
Mount Airy, North Carolina 27030

RE: WDEQ/LQD Surface Owner Consent Form for Proposed Bentonite Mining Permit to Mine No. 248C – Herco Amendment, Johnson County

Dear Mr. Crossingham,

Black Hills Bentonite, LLC (BHB) is preparing an amendment application (Herco Amendment) for Permit to Mine No. 248C located near Kaycee, Wyoming which will incorporate an additional 347 acres into the existing permit area.

The Wyoming Department of Environmental Quality, Land Quality Division (LQD) requires that BHB provide a signed statement from all surface landowners within the amendment area, approving the mine plan and reclamation plan for the amendment area. I have enclosed for your review and approval, complete copies of the mining and reclamation plans included in the Herco Amendment application.

If you find the mining and reclamation plans to be satisfactory, please sign and date the enclosed Form 8 - Surface Owner Consent and return it to me by July 7, 2017.

The LQD requires this original Form 8 to be signed by the land owner as a part of the amendment application and approval process. Please note that the LQD will not allow any modifications to the original Form 8 that has been provided.

If you should have any questions concerning this information, please do not hesitate to contact me or Bruce Lawson at 307-234-6470.

Sincerely,

Doug Gibson

Doug Gibson
Environmental Technician

EXHIBIT 1

SURFACE LANDOWNER'S CONSENT

I, J. H. Crossingham Jr., President, TTT, CERTIFY that I hold surface access rights on the following lands on which Black Hills Bentonite, LLC holds mineral estate rights:

SE1/4SE1/4 Section 2, T. 41 N., R. 81 W.
E1/2 Section 11, T. 41 N., R. 81 W.
_____ Section _____, T. _____ N., R. _____ W.
_____ Section _____, T. _____ N., R. _____ W.
_____ Section _____, T. _____ N., R. _____ W.
_____ Section _____, T. _____ N., R. _____ W.
_____ Section _____, T. _____ N., R. _____ W.

County of Johnson.

I have examined the mining and reclamation plans, prepared by Black Hills Bentonite, LLC, in compliance with the Wyoming ENVIRONMENTAL QUALITY ACT, and do hereby approve said plans, and give my consent to enter and carry out said mining and reclamation programs on said lands as proposed therein. I do hereby also grant unrestricted access to the mine site to the Department of Environmental Quality, Land Quality Division to enter and carry out mine inspections on said lands during normal business hours.

Dated this_____ day of _____, 20_____.

_____
Surface Landowner (Signature)

J. H. Crossingham Jr.
_____
Name (printed or typed)

_____ _____
Witness (Signature) (Date)

_____
Witness Name (printed or typed)

BLACK HILLS BENTONITE
A LIMITED LIABILITY COMPANY

PERMIT TO MINE NO. 248C
HERCO AMENDMENT

MINE & RECLAMATION PLANS

T.41N., R.81W.
JOHNSON COUNTY, WYOMING

TISDALE AREA
BENTONITE MINING OPERATIONS

BLACK HILLS BENTONITE, L.L.C.
P.O. BOX 9
MILLS, WYOMING 82644
PHONE: (307) 234-6470
FAX: (307) 472-5829

MINE PLAN

MINE PLAN
for
PERMIT TO MINE NO. 248C - HERCO AMENDMENT

1.0 GENERAL INFORMATION & DESCRIPTION OF THE MINING OPERATION

1.1 Mine Operator and Contact Information

The operator of the mining operation is Black Hills Bentonite, LLC, P.O. Box 9, Mills, Wyoming, 82644. The Federal Tax Identification Number for Black Hills Bentonite, LLC is 83-0295902. Contact information for BHB and this mine is: Bruce Lawson, Mine Development & Reclamation Manager, P.O. Box 9, Mills, Wyoming 82644. Office Phone: 307-234-6470; Cellular Phone: 307-267-7898.

1.2 Type of Mining Activities

The mining method used by Black Hills Bentonite, LLC (BHB) is surface mining, whereby a sequence of small excavated areas or pits, typically less than five acres in size, are developed to expose and remove the underlying bentonite deposit. Due to the shallow depth of the bentonite deposit, the deepest portion of the pits will typically not exceed fifty feet. No underground mining techniques will be utilized. No explosives or blasting agents will be used in the mining operation.

Typically, the pits are designed in a sequence where each pit is adjoining, allowing for a multiple-cut, direct-backfill sequence. As the excavation of each pit progresses through the sequence, overburden removed from each advancing pit is directly placed (direct-backfill) in the previous open pit. Mining in this sequence allows for reclamation to occur concurrent with each new pit being developed in the advancing sequence.

1.3 Life of Mining Activities

The life of the mining operation is expected to last approximately five years.

1.4 Equipment and Machinery Used for Mining & Reclamation Activities

Mining and reclamation activities will be conducted using the following equipment:

- Caterpillar 627G Push-Pull Scrapers
- Caterpillar D8R, D8T & D9 Dozers with three-shank rippers
- Caterpillar 966 Front-End Loaders
- Volvo L120 & L150 Front-End Loaders
- Caterpillar 140 Motor Graders
- Over-the-road trucks with belly-dump trailers
- John Deere 7800 Series Tractors
- John Deere 8000 Series Tractors
- John Deere Chisel Plows

- John Deere V-Rippers
- John Deere Disks
- Wishek Heavy Duty Disks
- Great Plains 1300 Series Grain Drill
- Great Plains NT 1006 No-Till Grain Drill

1.5 Type of Bentonite Mined - Nature of Ore

The bentonite layer to be mined on the amendment area is identified as the Commercial bed, as it is located in the Mowry formation. The Commercial bed averages three feet in thickness.

1.6 Existing Underground Mines and other Mining Activities

No existing surface or underground mining activities are located on the amendment area. Bentonite mining activities have been conducted on a continuous basis on the permit area since 1975. No mining activities for other minerals are located on the amendment area or in the immediate vicinity of the permit area.

1.7 Protection of Other Resources

No oil, natural gas, or other minerals are known to exist on the amendment area. Due to the shallow mining depths of less than fifty feet, it is not expected that oil or natural gas deposits would be encountered or impacted. Based on the geology of the area and the geologic formations encountered while mining, no other known mineral deposits exist within the strata where bentonite will be mined within this formation.

Exploration drilling on the area has not encountered groundwater due to the relatively shallow depth to which mining will occur (<50 feet). Groundwater will not be impacted by proposed mining activities. As no groundwater is present, no pit dewatering will be required which could potentially impact groundwater in the vicinity of the amendment area. Based on a records search of the Wyoming State Engineers database, there are no adjudicated ground water rights and there is only one surface water right located within one-half mile of the amendment area boundary.

No significant drainages will be affected by mining operations. Significant drainages are defined by WDEQ/LQD, District II, as those that are shown as a blue-line on U.S.G.S. topographic maps. Ephemeral channels which infrequently carry water in direct response to a significant rainfall event or rapid snowmelt will be affected by mining activities. These ephemeral drainages will be reestablished after mining is completed.

The Wyoming Department of Environmental Quality - Water Quality Division has issued BHB a Storm Water Discharge Permit, No. WYR320104, under the Mineral Mining General Permit for Permit to Mine No. 248C. The storm water pollution prevention plan (SWPPP) for this permit describes the best management practices that will be utilized to manage erosion and sedimentation on the amendment area.

Erosion will be kept at a minimum. If necessary, straw bales, sediment fences, rock check dams, and/or water bars will be used for erosion control.

BHB will conduct all mining activities in such a manner as to reduce the total area of disturbance and to prevent the undue and unnecessary degradation of the environment.

1.8 Quality Assurance Plans

The mine site will be inspected by BHB personnel at regular intervals. The mine foreman, as well as the mine development manager and environmental personnel, visit the site on a frequent basis. During periods when mining and hauling activities are occurring, heavy equipment operators and maintenance personnel visit the mine site on a daily basis. The mine development manager coordinates mining activities with the mine foreman, who is on the mine site on a daily basis when mining and reclamation activities are in progress, to ensure that proper operations and procedures are followed according to the plan and schedule. BHB mine site personnel such as heavy equipment operators and mine equipment maintenance personnel have been trained and educated by the mine development manager and the mine foreman to recognize potential problems, such as erosion problem areas or other unnecessary degradation of the resources. These personnel have been instructed to immediately report any potential problems or signs of undue degradation to the mine development manager, the mine site foreman or the environmental staff so that corrective actions can be implemented as soon as possible.

2.0 DESCRIPTION OF THE MINE FACILITIES

2.1 Buildings, Processing Plants, Staging Areas, Fueling Locations & Equipment Areas

No buildings, processing plants, or other facilities will be constructed in conjunction with mining activities on this amendment area. The bentonite produced from the amendment area will be transported to an existing bentonite processing plant located in Casper, Wyoming for processing, sale, and shipment to customers.

Staging areas which are utilized for equipment parking, repairs and fueling are situated throughout the permit area, generally in close proximity to active mining locations. No staging areas will be constructed within the amendment area.

2.2 Access and Haul Roads

Access to the amendment area from Casper, Wyoming is via the South Fork Powder River exit on Interstate Highway 25, between Casper and Kaycee, Wyoming. From the South Fork Powder River exit the amendment area can be accessed from various previously existing roads.

New roads constructed on the amendment area will typically have a top width of twenty feet and a total width of fifty feet. Road construction will consist of a crowned and ditched road. Typical cross sections for the construction of access roads, as well as drawings depicting typical culvert installations are presented in Figure MP-1 and Figure MP-2, respectively. These typical road construction cross sections and culvert installation drawings have been taken from an early version of the BLM publication referred

to as *"The Gold Book - Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development".*

In some instances, access to certain mining areas will be across proposed pit areas or through open pits or backfilled pits. In these instances, roads which may cross a proposed pit area are not necessarily illustrated or depicted on the mine plan maps.

Roads will be reclaimed once mining concludes in an area. No newly-developed haul road spurs will remain after mining is completed, unless desired by the landowners or the land managers in the case of state or federally managed property.

Properly sized culverts will be installed, as needed, during the construction of the access roads. The following criteria will be utilized in calculating peak storm water discharges for culvert sizing determinations. This method was provided by WDEQ/LQD District III as the recommended procedure for determining the volume and rate of runoff in small (<2,000 acre) watersheds. This method has also been approved for calculating peak storm water discharges in small watersheds by WDEQ/LQD Districts I, II and III.

Peak discharge information for proper culvert sizing is based on information presented in the U.S.D.A./Soil Conservation Service Publication SCS-TP-149, *"A Method for Estimating Volume and Rate of Runoff in Small Watersheds,"* January 1968.

Peak discharge rates are based on the following criteria:

Type II Storm Distribution
Land Use: Pasture or Range, No Mechanical treatment
Hydrologic Condition: Fair
Hydrologic Soils Group: D (from SCS Handbook NEH-4)
Rainfall Event: 10 Year, 24 Hour, 2.0 inches based on Wyoming Isopluvials
Slopes: Moderate
Curve Number: 85

Culvert Sizing for Ephemeral Drainages

One culvert will be placed in an ephemeral drainage in conjunction with the construction of access roads associated with the proposed mining activities. The location of this culvert is illustrated on Mine Plan Map No. 1. The depth of cover over the culvert will be no less than twelve (12) inches or a minimum of one-half the diameter of the culvert, whichever is greater. The culvert length will be dependent on the geometry of the drainage channel and the culvert diameter. In all cases the culvert length will never be less than forty (40) feet. The size (diameter of the culvert) is presented in the following table:

Culvert Sizing Information

Culvert Location	Drainage Area Above Culvert	Peak Discharge in C.F.S.	Culvert Installed Size	Culvert Slope (ft/ft)
#11-14 NE¼ Sec. 11, 41/81	9 acres	<5.0	18"	.03

2.3 Power Transmission Lines, Communication Lines, and Pipelines

No power transmission lines or communication lines (above ground or below ground) or pipelines will be constructed, removed or rerouted in conjunction with bentonite mining activities on the amendment area.

2.4 Sedimentation and Treatment Ponds

No sedimentation or treatment ponds will be constructed, removed or relocated in conjunction with bentonite mining activities associated with this amendment application. No sedimentation or treatment ponds currently exist on the amendment area.

2.5 Mill and Tailings Disposal Sites

No mill or tailings disposal sites will be constructed or created in conjunction with bentonite mining activities associated with this amendment application. No mill tailings are generated in the processing or the mining of bentonite.

2.6 Hydraulic Diversions, Retention Systems & Mining Hydrology

No perennial or intermittent streams will be disturbed by the mining activities within this amendment area. Only ephemeral channels which infrequently carry water in direct response to a significant rainfall event or the rapid melting of a significant accumulation of snow will be affected by mining activities. These channels will be re-established during the reclamation phase of the mining operations.

A potential impact of run-off from disturbed areas is sediment loading onto undisturbed lands or surface waters. This can be minimized by diverting storm water flows generated by significant rainfall events or rapid snow melt away from and around disturbed areas associated with the bentonite mining activities. Diversion ditches may be constructed to divert water away from mining activities. Given the small size of the affected watersheds in the amendment area, these diversion ditches may be constructed using the blade on a Caterpillar 140 motor grader or a Caterpillar D8R/D8T/D9 dozer. The diversion ditch will be cut to create a ditch which is triangular in shape and a minimum of 1.5 feet deep with 2:1 side slopes. Soil derived from the ditch cut will be "thrown" to the down slope side of the ditches, in essence creating a berm that will provide additional protection of the mine area.

If interceptor ditches remain in place for a significant period of time where down-cutting of the interceptor ditch or sedimentation may become an issue, a Caterpillar 627G scraper may be used to construct the ditch to ensure there is adequate available capacity. The scraper constructed ditch will have a bottom width of approximately ten feet with approximately 1:1 side slopes. In the event that down-

cutting or erosion should develop in the interceptor ditches or diversions, straw bales, straw logs, rock check dams or other erosion control features may be installed to control down-cutting of the ditch or channel bottom. After mining is completed and as a part of reclamation, all interceptor ditches will be graded out and contoured to blend into the surrounding topography, topsoiled and seeded.

Overburden and topsoil stockpiles will be located and constructed so that they will not block drainages. Topsoil will be removed from the base of all overburden stockpiles in order to protect the topsoil resources from "sloughing" which may occur on the side slopes of the overburden stockpiles. This topsoil removal area, which is commonly referred to as a "topsoil buffer", surrounding the base of the overburden stockpiles also forms a basin which will collect and retain sediments originating from the overburden stockpiles as a result of storm water runoff.

2.7 Spill Contingency and Countermeasure Plan

If a fuel spill were to occur on the amendment area as a result of a mechanical failure, damage to a piece of heavy equipment, storage tank or a fuel delivery truck, mine personnel are instructed to make sure the site is safe, stop additional leakage or spillage, ensure the containment of any spilled fuels or oils, and immediately contact the company's environmental compliance personnel and/or mine manager.

Containment of a diesel fuel spill or a lubricating oil spill would most likely be contained utilizing the native earthen materials present at the site. Depending upon the size of the spill and the volume of contaminated earthen materials, the contaminated material would be removed with shovels or with the appropriate size of earth moving equipment. Disposal of the contaminated earthen material would be coordinated by BHB environmental personnel at an approved land farm in accordance with state and federal regulations.

In the event that the volume of a spill is greater than twenty-five gallons, BHB will report the spill to the Wyoming Department of Environmental Quality-Water Quality Division (WDEQ/WQD) within twenty-four hours of the spill and a written report will be submitted to the WDEQ/WQD within seven days of the spill.

Diesel fuel and lubricating oils are stored within secondary containment structures on the staging areas. These containment structures will be constructed in order to sufficiently contain 110% of the volume of the fuel or oil storage container.

2.8 Solid Waste Disposal

Waste and trash which may be generated as a result of mining activities will be collected in custom made trash containers which are completely enclosed utilizing expanded metal. These enclosed trash containers prevent trash and waste from blowing in the wind. Trash and waste generated by the mining activities will be collected and stored on staging areas located within the permit area.

Trash and waste generated by the mining operations will be periodically transported to a municipal landfill for proper disposal. Large amounts of trash and other solid waste will not be allowed to accumulate at the site. Used lubricating oil and filters from heavy equipment will also be collected and

properly disposed of, or recycled. No hazardous materials will be used, consumed, stored, generated or disposed of on the amendment area.

2.9 Railroads and Conveyor Systems

No railroad lines or conveyor systems will be constructed in conjunction with the bentonite mining activities associated with the amendment area.

2.10 Storage and/or Stockpile Sites

Overburden, bentonite and topsoil stockpiles will be constructed in conjunction with the mining activities conducted on the amendment area.

Overburden stockpiles are typically constructed in conjunction with the excavation and removal of the overburden from the first pit mined in an adjoining series of connected pits (multiple-cut sequence). These are commonly referred to as "out-of-pit" overburden stockpiles. Certain out-of-pit overburden stockpiles, in some instances, may remain as permanent reclamation features.

Bentonite stockpiles will be created and developed through the course of bentonite "field drying" activities. Bentonite stockpiles are normally placed on top of either the out-of-pit overburden stockpile, or on backfilled pits, or both, in order to reduce the surface disturbance area. Due to a limited area for storing and stockpiling field-dried bentonite at the processing plant located in Casper, Wyoming, bentonite stockpiles located on the mine site serve as inventory for the processing plant. Bentonite stockpiles may remain on the mine site for extended periods of time, depending on market conditions and the demand for a particular quality of stockpiled field-dried bentonite.

In order to prevent unnecessary and undue degradation of the environment in situations where bentonite stockpiles remain onsite for extended periods of time, containment berms or basins may be constructed around bentonite stockpiles in order to contain any storm water runoff which may originate from the bentonite stockpiles. Windblown particulates which could impact air quality, generally do not originate from these bentonite stockpiles, due to the coarse size of the stockpiled bentonite, as well as the hydrophilic nature of the bentonite.

2.11 Access Control

Due to the remoteness of the area and the size of the amendment area, no access control features are planned. Any potential hazards to humans, livestock, or wildlife which may develop will be addressed on a site specific basis using fencing or other methods determined to be appropriate for the conditions. The mined lands will be completely reclaimed following the completion of mining, which will eliminate potential hazards such as highwalls and open pits.

2.12 Auger Mining

No bentonite auger mining will be conducted on the amendment area.

2.13 Underground Mining

No underground bentonite mining will be conducted on the amendment area.

3.0 MINING METHODS AND SCHEDULE

Bentonite mining on the amendment area will consist of mining a series of small pits arranged in a multiple-cut, direct backfill or "cut and fill" sequence. Topsoil, where present, will be removed from all affected areas utilizing Caterpillar 627G push-pull scrapers and Caterpillar D8R/D8T/D9 dozers. Topsoil will be placed in stockpiles for future use in the reclamation of the mined or disturbed lands. Topsoil stockpiles are generally located in close proximity to the mining feature where the topsoil was removed. Whenever possible or feasible, the topsoil may be spread directly onto previously backfilled areas, instead of being placed in stockpiles.

Following the removal of topsoil, the exposed overburden will be ripped using Caterpillar D8R/D8T/D9 dozers equipped with one to three ripper shanks. The overburden will then be removed from the pit using Caterpillar 627G push-pull scrapers.

Following the removal of the overburden from the pit, the exposed bentonite seam will be sun-dried or "field-dried" in the pit during the summer and early fall seasons. Field-dried bentonite stockpiles which are constructed on the mine site serve as feedstock for the bentonite processing plant located in Casper, Wyoming.

3.1 Topsoil Removal and Handling

Topsoil from all affected areas will be salvaged prior to disturbance according to the recommended salvage depths presented in *Appendix D-7, Soils*.

The removal of topsoil will typically be accomplished using Caterpillar 627G push-pull scrapers. In some instances where the topography may be too steep for the safe operation of scrapers, topsoil will be removed and stockpiled using Caterpillar D8R/D8T/D9 dozers. In some circumstances, on steep topography, topsoil may be removed with Caterpillar D8R/D8T/D9 dozers by dozing the topsoil into a position where it can be safely loaded with a Caterpillar 627G scraper and then transported to a topsoil stockpile.

Topsoil salvage is conducted in the summer or fall season in order to avoid salvaging topsoil when it could be saturated by spring rains or snowmelt, or frozen during the winter months. Every attempt will be made to salvage topsoil with scrapers, as control of the depth of topsoil removal is greatly improved with the use of scrapers versus dozers. Typically, salvaged topsoil will be placed in stockpiles. If graded and contoured areas exist, the topsoil may be applied directly (haul back) instead of being stockpiled.

Topsoil will also be removed from the edges of all pits in order to create a topsoil "buffer area" ranging in width from ten to approximately thirty feet wide. This buffer is necessary in order to protect the topsoil resources from the possibility of sloughing of high-walls or low-walls on the edges of pits. These buffer areas also facilitate the safe and complete salvage of topsoil along the edges of advancing

buffer areas also facilitate the safe and complete salvage of topsoil along the edges of advancing multiple-cut pit sequences. A wider topsoil buffer approximately thirty feet in width is typically developed along a pit highwall where the mining will advance. This wider topsoil buffer provides additional protection of the topsoil resources in the event that a highwall should fail. It also creates a greater margin of safety for heavy equipment operators when removing topsoil in conjunction with the development of the next pit to be mined in a multiple-cut pit sequence.

All topsoil stockpiles will be conspicuously identified with signs reading TOPSOIL. BHB utilizes highly visible, flat, flexible fiberglass posts for topsoil signs. These sign posts are typically red in color with black on white lettering. The flexible fiberglass posts are resistant to livestock knocking down the topsoil sign posts by rubbing on the posts.

BHB's topsoil stockpile conservation plan requires that all topsoil stockpiles which will remain in place for more than one year be seeded with the approved permanent seed mixture listed in the Reclamation Plan. Seeding of stockpiles will be conducted in the spring or fall, whichever season follows the placement of the stockpile, utilizing a grain drill. Topsoil stockpiles will be constructed in such a manner that the shape of the stockpile will resemble a "dome", which will facilitate the seeding of the entire topsoil stockpile using a tractor and grain drill. Temporary seeding of topsoil stockpiles using an annual sterile small grain such as triticale may also be conducted. The use of a small grain as a "cover crop" will provide for the rapid establishment of temporary vegetation to help hold the soil in place. This will protect the topsoil stockpiles from unnecessary or undue degradation due to wind or water erosion. Seeding of the topsoil stockpiles not only reduces the potential for erosion, it also significantly reduces the establishment of weeds, annual grasses and noxious weeds on the stockpiles.

Topsoil stockpiles will be located and constructed so that they will not block drainages or be impacted by potential storm water runoff from ephemeral drainages. At the discretion of BHB, berms may be constructed around the base of topsoil stockpiles if it is determined that the topsoil stockpile is not adequately protected from erosion due to the poor establishment of vegetation.

3.2 Mine Pit Excavation, Backfilling and Contouring

The mining method used by BHB is surface mining, whereby a sequence of small excavated areas or pits, typically less than five acres in size, are developed to expose and remove the underlying bentonite deposit. Overburden depths range from one to fifty feet. Overburden removal and backfilling will occur almost exclusively during the winter and spring months, as the scrapers are used exclusively during the summer and fall for bentonite field-drying activities, reclamation activities, and topsoil removal.

Overburden will be excavated from the mine pit area utilizing Caterpillar 627G push-pull scrapers and Caterpillar D8R/D8T/D9 dozers equipped with one to three ripper shanks. The majority of the overburden will be excavated and backfilled utilizing the Caterpillar 627G push-pull scrapers. The Caterpillar D8R/D8T/D9 dozers will be utilized primarily to rip the overburden and to assist the scrapers.

Overburden removed from the pit will be placed immediately adjacent to the pit to form an out-of-pit overburden stockpile. No materials will be pushed or dumped over any steep escarpments during the

mining process. The location of the proposed pits and overburden stockpile areas are illustrated on Mine Plan Map No. 1.

Replacement of overburden during the course of backfilling the open pit will be designed to create the most conducive reclamation substrate for revegetation as possible. Most often the most suitable overburden in terms of plant growth and desirable root zone material is found directly beneath the topsoil/subsoil strata.

Overburden suitability and rock characterizations, including the analytical protocols and criteria necessary to identify potential acidic and/or reactive conditions, or the generation of deleterious leachate were evaluated for the amendment area. Please refer to the *Appendix D-5, Overburden*, for a complete and detailed assessment of the overburden suitability and rock characterizations. BHB will utilize the data presented in *Appendix D-5, Overburden*, in order to develop overburden handling and overburden replacement plans.

Generally, no special handling of overburden during pit excavation and backfilling is warranted, as a considerable amount of mixing of overburden occurs during the loading and unloading of the overburden using scrapers. This mixing effect should contribute to a blending of overburden materials, thus improving overall quality of the overburden.

Waste bentonite, which remains on the bentonite stockpile areas after the stockpiled bentonite has been removed for processing, will be disposed of by placing this material at the base of a highwall prior to backfilling. This is done to prevent this highly bentonitic material from being placed directly on the surface prior to the application of topsoil.

The pre-mining conditions and topography of the areas to be mined in Sections 2 and 11, T41N, R81W consist of exposed bentonite outcrops situated at the base of a large steep butte. In this situation, mining will begin at the edge of the outcrop and progress laterally into the hillside until the overburden depth reaches approximately twenty feet. In most cases, the highwall (hillside) height cannot exceed twenty feet as the steepness of the butte becomes nearly vertical due to natural topography.

As Black Hills Bentonite has done in the past, under these mining conditions, backfilling of this type of area will be done on-the-level and perpendicular to the highwall side of the pit. This results in a backfilled area that has a level to gently sloping bottom which is adjacent to a partial vertical highwall. Due to the steep to near vertical pre-mining conditions of the butte, the reclaimed surface blends well with the adjacent topography.

Required backfill volumes under these conditions normally will require only covering the pit floor with a minimum of one foot of overburden in order to provide coverage of the hard shale pit floor.

BHB has attempted in the past to reclaim this type of topography by reestablishing slopes when backfilling. Due to the lack of topsoil on these outcrop areas and the highly erosive nature of the overburden materials, it is impossible to reclaim these outcrop areas as stable slopes. Therefore, under these conditions, pre-mining slopes will not be reestablished.

In other areas of this amendment where mining doesn't involve outcrops that are next to a butte, the following backfilling procedures will be used. After the bentonite is removed from a pit, and as the mining sequence progresses, the open pit is backfilled and contoured to blend in with the surrounding topography and to restore the area to the approximate original contour (AOC). Post mining slopes will be graded to four horizontal feet to one vertical foot (4H:1V) or flatter, with a straight slope profile, unless the pre-mine slopes were steeper. In those cases, post-mining slopes will approximate the pre-mining slopes in terms of magnitude, aspect and shape. Generally, there is enough "swell" in the volume of overburden being replaced to compensate for the overall volume of the bentonite which was removed from the area.

In general, most pits are completely backfilled and rough graded in order to establish AOC and the required slope angles utilizing Caterpillar 627G push-pull scrapers. In certain circumstances, both the Caterpillar 627G push-pull scrapers and the Caterpillar D8R/D8T/D9 dozers are utilized to backfill, grade and contour a pit in order to create the final surface configuration. At times, overburden may be placed in the pit and against the highwall utilizing the scrapers, to a point where the pit is not completely backfilled. This would create a partially backfilled pit with a section of the highwall remaining above the backfilled overburden. Caterpillar D8R/D8T/D9 dozers would then be used to push overburden from above and behind the remaining highwall, into the pit area, thus completing the backfilling of the pit. A schematic diagram of this backfill scenario is illustrated in Figure MP-3.

Any ephemeral drainages which may have existed pre-mining will also be reestablished in the process of rough grading and contouring. In general, the majority of this rough grading and contouring is done with Caterpillar 627G scrapers and Caterpillar D8R/D8T/D9 dozers. Final grading will be accomplished using a Caterpillar 140 motor grader. The haul back of topsoil will be conducted whenever possible in the mining process described above.

Out-of-pit overburden stockpiles or portions of these stockpiles which may remain as a final reclamation feature will be graded and contoured to blend with the existing topography. All slopes will be reduced to 4H:1V or less. Overburden stockpiles which will remain as a permanent reclamation feature will have a maximum height of ten feet and will be oriented in the same direction as nearby topographic features and will approximate the pre-mining topography in terms of magnitude, aspect and shape.

The outlines of the pits illustrated on Mine Plan Map No. 1 shows the location of the bentonite to be mined. However, because removal of the various grades of bentonite is subject to customer needs, weather conditions and mining efficiency, the mine plan details are subject to revision at the actual time of mining. i.e., one sequence may be mined before another, pit numbering may be changed, or the exact placement of stockpiles may vary.

3.3 Disposal of Combustible, Toxic, Acid-Forming or Radioactive Materials

With the exception of diesel fuel, no other combustible materials will be used, consumed, or stored on the amendment area. No toxic, acid-forming, hazardous or radioactive materials will used, consumed, stored, generated or disposed of on the amendment area. Due to the geology of the area, there is no reason to believe that any radioactive minerals or acid-forming materials would be encountered while

conducting bentonite mining activities. Should any such substances be encountered or discovered, the appropriate state and federal agencies will be consulted concerning the handling and removal of such materials.

3.4 Compaction of Backfilled Material

Past experience in conducting bentonite mining and reclamation activities over the last forty years has demonstrated that compaction created by passing over backfilled overburden materials with rubber-tired Caterpillar 627G push-pull scrapers is sufficient to provide stability of backfilled material and to prevent subsidence.

3.5 Bentonite Removal

Following the removal of the overburden from the pit, the exposed bentonite seam will be sun-dried or "field-dried" in the pit during the summer and early fall seasons. This drying process is conducted in order to reduce the amount of greenhouse gases produced by the combustion of fossil fuels. The drying process, utilizing the solar energy of the sun and warm air currents, reduces the natural moisture content of the bentonite by approximately ten to fifteen percent. This in turn reduces the amount of diesel fuel which is consumed when the bentonite is transported to Casper, Wyoming for processing. Additionally, reductions in greenhouse gases are achieved when the field-dried bentonite undergoes further drying in the processing plant, as the consumption of coal and/or natural gas is significantly reduced due to the field-drying techniques which take advantage of the natural solar radiation.

The effect of sun-drying the bentonite is further enhanced by tilling the exposed bentonite using John Deere 7800 and 8000 series tractors pulling an assortment of conventional agrarian tillage implements such as v-rippers, chisel plows and disks. Following several days of shallow tillage to a depth of approximately ten inches, the sun-dried layer of bentonite is removed from the exposed bentonite seam using Caterpillar 627G scrapers and transported to a bentonite stockpile area where a field-dried bentonite stockpile is constructed. Depending on climatic conditions, the size of a pit, and the thickness of the bentonite seam, the field-drying process typically lasts for two to three months.

The field-dried bentonite stockpiles which are constructed on the mine site serve as feedstock for the bentonite processing plant located in Casper, Wyoming. The bentonite from these stockpiles is loaded into over-the-road belly-dump trucks using either Caterpillar 966 front-end loaders or Volvo L120/L150 front-end loaders for transport to Casper, Wyoming for processing and sale. The over-the-road belly-dump trucks have a capacity of approximately twenty-five tons. If the over-the-road belly-dump trucks are equipped with a "pup" trailer, the hauling of the trucks capacity may reach approximately thirty-five tons.

3.6 Bentonite Handling and Processing

Once the bentonite is transported to the processing plant located in Casper, Wyoming, the bentonite is blended on the plant stockpile area by co-mingling different qualities of bentonite delivered by the over-the-road belly-dump trucks. The stockpiled bentonite is "fed" into the processing plant using either Caterpillar 966 front-end loaders or Volvo L120/L150 front-end loaders. After the bentonite enters the

plant, additional drying takes place in a horizontal rotary dryer which is heated using coal and/or natural gas. Following the drying process, the bentonite undergoes a sizing process using a series of screens and classifiers. Some of the bentonite is milled into an extremely fine powder for use as drilling fluids, or classified into a granular product for clumping cat litter and other uses. The finished products are either bagged or shipped in bulk railcars or trucks to customers throughout the world.

3.7 Mining Sequence and Schedule

Reclamation of disturbed areas will begin as soon as possible, and all attempts will be made to assure that reclamation occurs concurrently with mining activities or at an increased pace. Field drying of bentonite will occur on this amendment area.

The following information describes the sequence for mining activities that are planned for development on the amendment area.

First Year Mine Development Activities – Section 2, T41N R81W

Access Road Segment E-E' - 0.1 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #2-13.

Topsoil Stockpile #2-13 - 0.4 Acres
Topsoil salvaged from Pit #2-12 and Access Road Segment E-E' will be placed on this 0.4 acre area.

Pit #2-12 - 1.1 Acres
Topsoil salvaged from Pit #2-12 will be placed on Topsoil Stockpile #2-13. Overburden removed from Pit #2-12 will be placed on Overburden Stockpile #1. The exposed bentonite in Pit #2-12 will be field dried in the pit and stockpiled on Overburden Stockpile #1.

First Year Mine Development Activities – Section 11, T41N R81W

Topsoil Stockpile #11-1 - 1.0 Acre
Topsoil salvaged from Pit #11-1 will be placed on this 1.0 acre area.

Pit #11-1 - 2.0 Acres
Topsoil salvaged from Pit #11-1 will be placed on Topsoil Stockpile #11-1. Overburden removed from Pit #11-1 will be directly backfilled into previously mined Pit #2-11. The exposed bentonite in Pit #11-1 will be field dried in the pit and stockpiled on Overburden Stockpile #1.

Access Road Segment A-A' - 0.1 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-2.

Access Road Segment B-B' - 0.3 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-3.

Topsoil Stockpile #11-2 - 1.0 Acre
Topsoil salvaged from Pit #11-2 and Access Road Segment A-A' will be placed on this 1.0 acre area.

Topsoil Stockpile #11-3 - 0.5 Acres
Topsoil salvaged from Pit #11-2 and Access Road Segment B-B' will be placed on this 0.5 acre area.

Pit #11-2 - 1.8 Acres
Topsoil salvaged from Pit #11-2 will be placed on Topsoil Stockpiles #11-2 and #11-3. Overburden removed from Pit #11-2 will be directly backfilled into previously mined Pit #11-1. The exposed bentonite in Pit #11-2 will be field dried in the pit and stockpiled on Overburden Stockpile #1.

Access Road Segment C-C' - 0.2 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-6.

Topsoil Stockpile #11-4 - 0.1 Acres
Topsoil salvaged from Pit #11-3 will be placed on this 0.1 acre area.

Topsoil Stockpile #11-5 - 0.3 Acres
Topsoil salvaged from Pit #11-3 will be placed on this 0.3 acre area.

Topsoil Stockpile #11-6 - 1.5 Acres
Topsoil salvaged from Pit #11-3 and Access Road Segment C-C' will be placed on this 1.5 acre area.

Overburden Stockpile #11-1 - 0.9 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-6. The overburden removed from Pit #11-3 will be placed in this area to form an overburden and bentonite stockpile area.

Pit #11-3 - 2.3 Acres
Topsoil salvaged from Pit #11-3 will be placed on Topsoil Stockpiles #11-4, #11-5, and #11-6. Overburden removed from Pit #11-3 will be directly backfilled into previously mined Pit #11-2 and placed on Overburden Stockpile #11-1. The exposed bentonite in Pit #11-3 will be field dried in the pit and stockpiled on Overburden Stockpile #11-1.

Access Road Segment D-D' - 0.4 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-7.

Topsoil Stockpile #11-7 - 0.4 Acres
Topsoil salvaged from Pit #11-4 and Access Road Segment D-D' will be placed on this 0.4 acre area.

Topsoil Stockpile #11-8 - 0.5 Acres
Topsoil salvaged from Pit #11-4 and Overburden Stockpile #11-2 will be placed on this 0.5 acre area.

Overburden Stockpile #11-2 - 1.7 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-7. The overburden removed from Pit #11-4 will be placed in this area to form an overburden and bentonite stockpile area.

Pit #11-4 - 1.4 Acres
Topsoil salvaged from Pit #11-4 will be placed on Topsoil Stockpiles #11-7 and #11-8. Overburden removed from Pit #11-4 will be placed on Overburden Stockpile #11-2. The exposed bentonite in Pit #11-4 will be field dried in the pit and stockpiled on Overburden Stockpile #11-2.

Topsoil Stockpile #11-9 - 1.2 Acres
Topsoil salvaged from Pits #11-5, #11-6, and Overburden Stockpile #11-3 will be placed on this 1.2 acre area.

Overburden Stockpile #11-3 - 2.2 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-9. The overburden removed from Pit #11-5 will be placed in this area to form an overburden and bentonite stockpile area.

Pit #11-5 - 1.6 Acres
Topsoil salvaged from Pit #11-5 will be placed on Topsoil Stockpile #11-9. Overburden removed from Pit #11-5 will be placed on Overburden Stockpile #11-3. The exposed bentonite in Pit #11-5 will be field dried in the pit and stockpiled on Overburden Stockpile #11-3.

Pit #11-6 - 1.5 Acres
Topsoil salvaged from Pit #11-6 will be placed on Topsoil Stockpile #11-9. Overburden removed from Pit #11-6 will be directly backfilled into previously mined Pit #11-5 and placed on Overburden Stockpile #11-3. The exposed bentonite in Pit #11-6 will be field dried in the pit and stockpiled on Overburden Stockpile #11-3.

Access Road Segment E-E' - 0.3 Acres
Topsoil salvaged from this area will be placed on Topsoil Stockpile #11-10.

Topsoil Stockpile #11-10 - 1.4 Acres
Topsoil salvaged from Pits #11-7, #11-8, and Access Road Segment E-E' will be placed on this 1.4 acre area.

Pit #11-7 - 1.3 Acres
Topsoil salvaged from Pit #11-7 will be placed on Topsoil Stockpile #11-10. Overburden removed from Pit #11-7 will be directly backfilled into previously mined MDA #14-1 (Pit #1A). The exposed bentonite in Pit #11-7 will be field dried in the pit and stockpiled on recently backfilled MDA #14-1 (Pit #1A).

Pit #11-8 - 1.2 Acres
Topsoil salvaged from Pit #11-8 will be placed on Topsoil Stockpile #11-10. Overburden removed from Pit #11-8 will be directly backfilled into previously mined Pit #11-7. The exposed bentonite in Pit #11-8 will be field dried in the pit and stockpiled on recently backfilled MDA #14-1 (Pit #1A).

4.0 MINING HYDROLOGY

4.1 Surface Drainage Plan

No perennial streams will be disturbed by mining activities on the amendment area. Only ephemeral channels which infrequently carry water in direct response to a significant rainfall event or the rapid melting of a significant accumulation of snow, will be affected by mining activities. These channels will be re-established during the reclamation phase of the mining operations.

A potential impact of run-off from disturbed areas is sediment loading onto undisturbed lands or surface waters. This can be minimized by diverting storm water flows generated by significant rainfall events or rapid snow melt away from and around disturbed areas associated with the bentonite mining activities. Diversion ditches may be constructed to divert water away from mining activities. Given the small size of the affected watersheds in the amendment area, these diversion ditches may be constructed using the blade on a Caterpillar 140 motor grader or a Caterpillar D8R/D8T/D9 dozer. The diversion ditch will be cut to create a ditch which is triangular in shape and a minimum of 1.5 feet deep with 2:1 side slopes. Soil derived from the ditch cut will be "thrown" to the down slope side of the ditches, in essence creating a berm that will provide additional protection of the mine area.

If interceptor ditches remain in place for a significant period of time where down-cutting of the interceptor ditch or sedimentation may become an issue, a Caterpillar 627G scraper may be used to construct the ditch to ensure there is adequate available capacity. The scraper constructed ditch will have a bottom width of approximately ten feet with approximately 1:1 side slopes. In the event that down-cutting or erosion should develop in the interceptor ditches or diversions, straw bales, straw logs, rock check dams or other erosion control features may be installed to control down-cutting of the ditch or channel bottom. After mining is completed, and as a part of reclamation, all interceptor ditches will be graded out and contoured to blend into the surrounding topography, topsoiled and seeded.

Overburden and topsoil stockpiles will be located and constructed so that they will not block drainages. Topsoil and subsoil will be removed from the base of all overburden stockpiles in order to protect the topsoil resources from "sloughing" which may occur on the side slopes of the overburden stockpiles. This topsoil removal area, which is commonly referred to as a "topsoil buffer", surrounding the base of the overburden stockpiles also forms a "sump" or "moat" which collects and retains sediments originating from the overburden stockpiles as a result of storm water runoff.

4.2 Water Treatment Plans

No water treatment plan is required. While exploration drilling was conducted on the amendment area, no groundwater was encountered. Due to the relatively shallow depth to which mining will occur (<50 feet), groundwater is not expected to be impacted. As no groundwater is present, no pit dewatering will be required which could require the development of a water treatment plan.

4.3 Quantity and Quality of Groundwater Discharged into Pits

No groundwater will be discharged into pits. Groundwater has not been encountered on the amendment area during the course of exploration drilling, and, due to the relatively shallow depth to which mining

will occur (<50 feet), it is not anticipated that groundwater will be encountered. BHB has been mining bentonite on the permit area for over forty years, and has never encountered groundwater.

4.4 Source, Quantity and Quality of Water to be Used

No water will be used in the mining or reclamation activities on the amendment area. Should it become necessary to use water for dust control on access roads, BHB will utilize storm water which has accumulated in open pits located on the permit area.

4.5 Design Details for Sediment Ponds and Treatment Systems

No sediment ponds or treatment systems will be constructed in conjunction with the amendment area. Therefore, no design details are provided.

5.0 REFUSE DISPOSAL

5.1 Plans for Disposal of Waste Materials or Solid Wastes

Waste and trash which may be generated as a result of mining activities will be collected in custom made trash containers which are completely enclosed utilizing expanded metal. These enclosed trash containers prevent trash and waste from blowing in the wind. Trash and waste generated by the mining activities will be collected on staging areas located at various sites on the permit area.

Trash and waste generated by the mining operations will be periodically transported to a municipal landfill for proper disposal. Large amounts of trash and other solid waste will not be allowed to accumulate at the site. Used lubricating oil and filters from heavy equipment will also be collected and properly disposed of, or recycled. No hazardous materials will be used, consumed, stored, generated or disposed of on the amendment area. Under no circumstances will trash or waste be buried on the amendment area.

6.0 PUBLIC NUISANCE AND SAFETY

6.1 Procedures to Avoid Public Nuisance and Endangerment

Mining activities will not result in a public nuisance or endangerment to public safety, human or animal life, or property. BHB has been conducting ongoing bentonite mining operations on Permit to Mine No. 248C since 1975, and has no knowledge of any instances where its mining activities have resulted in a public nuisance or an endangerment to the public, human life, or property. This is primarily due to the rural setting and the remoteness of the site, coupled with the small size and scope of the mining operation. The closest incorporated community or subdivision to the amendment area is the town of Kaycee, Wyoming, located approximately ten miles from the amendment area.

The development of additional mining activities on the amendment area will not change the number of workers on the operation, nor will the size of the mining operation increase significantly. The numbers of vehicles entering and exiting the mine site, as well as the amount of machinery operating on the site will not change.

Access to the active mining areas can be restricted due to private land ownership in the area. The main access roads can be posted as "No Trespassing" where private property is located along the access roads. Additionally, if necessary, locked gates and other barriers could be constructed at key points on private lands to restrict the public from entering the mining operations. Where deemed necessary by BHB, fences may be constructed above highwalls in order to protect wildlife or livestock from the dangers of a fall. No conflicts with grazing are expected to result in conjunction with the development of mining activities.

6.2 Occupied Dwellings, Homes, Public Buildings, Churches within 300 Feet of Affected Lands

No occupied dwellings, homes, public buildings, churches, community or institutional buildings, parks or cemeteries are located within three hundred feet of land which will be affected by mining activities. The nearest occupied dwelling is located over 1.2 miles from the nearest active mining area on the amendment area.

6.3 Hours of Operation, Routes of Haulage, Access Routes, and Estimated Truck Traffic

Mining and reclamation activities will be conducted Monday through Friday from 7:00 A.M. until 5:00 P.M. Overburden removal usually occurs from November through June. Once the overburden is removed and the bentonite is exposed, the heavy equipment fleet will conduct bentonite field-drying activities within the permit area. This "field-drying" fleet of equipment generally consisting of two to four Caterpillar 627G push-pull scrapers; a Caterpillar D8R dozer; a Caterpillar 140 motor grader and a John Deere 8000 series tractor with various tillage implements. Field-drying will be conducted for approximately three months, from June through early September.

Following the completion of bentonite field-drying activities around the early part of September, reclamation activities generally begin, lasting approximately two months. During the reclamation phase, areas where the overburden has been previously backfilled will undergo final grading and contouring, ripping or scarification (if required), topsoil application, topsoil tillage, and seeding.

Estimating the potential number of over-the-road, belly-dump trucks which will be transporting field-dried bentonite from the amendment area on a daily basis is somewhat problematic. Customer demands for various grades and quantities of bentonite varies greatly over the course of a year. At any one time, BHB may be hauling various grades of bentonite from at least a dozen different bentonite stockpiles located on the permit area.

BHB estimates that approximately 70,000 tons of bentonite will be hauled from the amendment area on an annual basis using over-the-road, belly-dump trucks with a capacity of thirty-five tons. This would result in a total of 2,000 trucks entering and leaving the amendment area annually. It is estimated, based on a hauling schedule of six days per week that approximately six truckloads per day would be required in order to transport 70,000 tons per year from the amendment area to the processing plant. The over-the-road, belly-dump trucks typically operate during the daylight hours.

7.0 INTERIM MANAGEMENT PLANS

7.1 Management During Periods of Temporary Closure or Temporary Inactivity

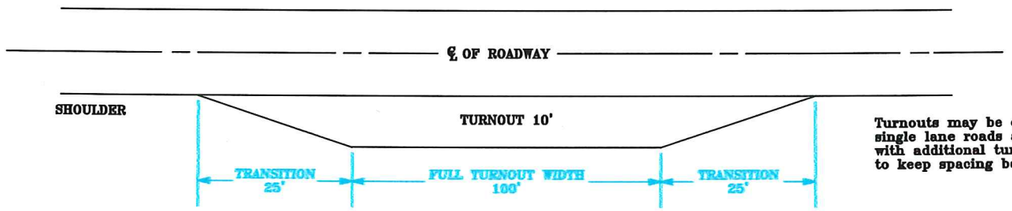
As described in detail in Section 6.3 above, periods of inactivity will occur on various areas within the amendment area. BHB's heavy equipment fleet is highly mobile and moves among the various mining operations within the permit area in order to meet the demands of customers for a wide variety of bentonite clay qualities. This results in periods of inactivity on all of BHB's mining operations at various times of the year. Periods of inactivity may also result due to inclement weather, particularly during and immediately following significant rainfall events. Periods of inactivity due to inclement weather rarely last more than a few days. Temporary closure and temporary inactivity is considered to be a period of time lasting more than twelve consecutive months when no mining, hauling or reclamation activities occur.

Prior to moving mining equipment from an active mine site, a thorough inspection will be conducted to ensure that all berms and ditches constructed to divert runoff around the active mine area are in place and functional. Containment basins will also be inspected to ensure functionality. Berms would be constructed along pit highwalls, as well as at the entrance to any open pit areas. These procedures will be implemented in order to prevent unnecessary and undue degradation of the environment, as well as ensuring the safety of the public. The area would be periodically inspected and monitored, generally on a weekly basis, by BHB's mine and environmental personnel.

Table MP-1
Volumetric Calculations
Black Hills Bentonite, L.L.C.
Permit to Mine No. 248C
Herco Amendment

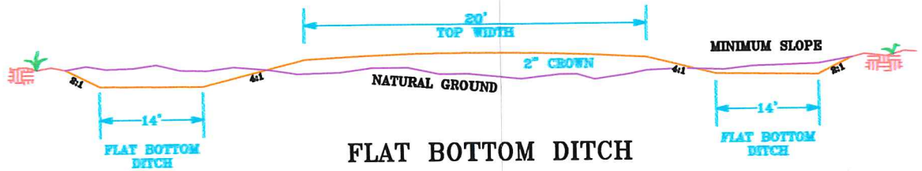
Mine Development Area Section Township Range	Disturbance	Acres	Year of Development or Construction	Topsoil Volume (Calculated) (Ave. Depth)	Segregated Overburden Volume (1.25 ft.)	Average Overburden Depth	Pit Area	Estimated Overburden Volume	Overburden Swell Volume (45% Factor)	Average Bentonite Thickness	Calculated Bentonite Volume	Total Pit Depth	Overburden Replacement Volume (Box Cut)
				(BCY)	(BCY)	(Feet)	(Acres)	(BCY)	(LCY)	(Feet)	(BCY)	(Feet)	(BCY)
Sec 2, T41N R81W	Access Road Segment E-E'	0.1	Year 1	0									
	Topsoil Stockpile #2-13	0.4	Year 1	0									
	Pit #2-12	1.1	Year 1	484	2,218	10.0	1.1	17,743	7,984	3.5	6,210	13.5	23,953
Sec 11, T41N R81W	Topsoil Stockpile #11-1	1.0	Year 1	0									
	Pit #11-1	2.0	Year 1	4,194	4,033	20.1	2.0	64,843	29,179	4.6	14,840	24.7	79,682
	Access Road Segment A-A'	0.1	Year 1	161									
	Access Road Segment B-B'	0.3	Year 1	726									
	Topsoil Stockpile #11-2	1.0	Year 1	0									
	Topsoil Stockpile #11-3	0.5	Year 1	0									
	Pit #11-2	1.8	Year 1	7,124	3,629	17.9	1.8	51,971	23,387	3.7	10,743	21.6	62,713
	Access Road Segment C-C'	0.2	Year 1	323									
	Topsoil Stockpile #11-4	0.1	Year 1	0									
	Topsoil Stockpile #11-5	0.3	Year 1	0									
	Topsoil Stockpile #11-6	1.5	Year 1	0									
	Overburden Stockpile #11-1	0.9	Year 1	1,452									
	Pit #11-3	2.3	Year 1	6,990	4,637	18.8	2.3	69,746	31,386	4.5	16,695	23.3	86,441
	Access Road Segment D-D'	0.4	Year 1	645									
	Topsoil Stockpile #11-7	0.4	Year 1	0									
	Topsoil Stockpile #11-8	0.5	Year 1	0									
	Overburden Stockpile #11-2	1.7	Year 1	2,742									
	Pit #11-4	1.4	Year 1	645	2,823	10.0	1.4	22,582	10,162	3.5	7,904	13.5	30,486
	Topsoil Stockpile #11-9	1.2	Year 1	0									
	Overburden Stockpile #11-3	2.2	Year 1	4,839									
	Pit #11-5	1.6	Year 1	6,452	3,226	9.3	1.6	24,001	10,801	4.3	11,097	13.6	35,099
	Pit #11-6	1.5	Year 1	6,640	3,024	6.2	1.5	15,001	6,750	3.1	7,500	9.3	22,501
	Access Road Segment E-E'	0.3	Year 1	726									
	Topsoil Stockpile #11-10	1.4	Year 1	0									
	Pit #11-7	1.3	Year 1	2,903	2,621	18.7	1.3	39,212	17,645	4.6	9,646	23.3	48,858
	Pit #11-8	1.2	Year 1	2,339	2,420	11.0	1.2	21,292	9,581	5.3	10,259	16.3	31,550
TOTAL		**28.7**		**49,385**	**28,631**		**14.2**	**326,391**	**146,876**		**94,893**		**421,283**

ABBREVIATIONS:
BCY = Bank Cubic Yards
LCY = Loose Cubic Yards



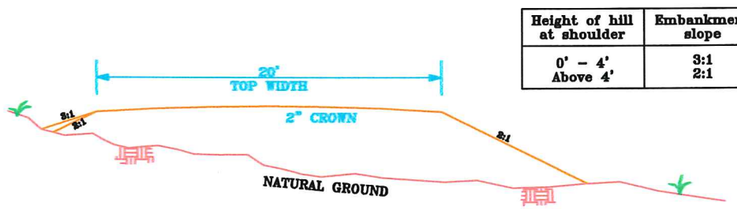
Turnouts may be constructed on single lane roads and blind curves with additional turnouts as needed to keep spacing below 1000 feet.

TYPICAL TURNOUT PLAN

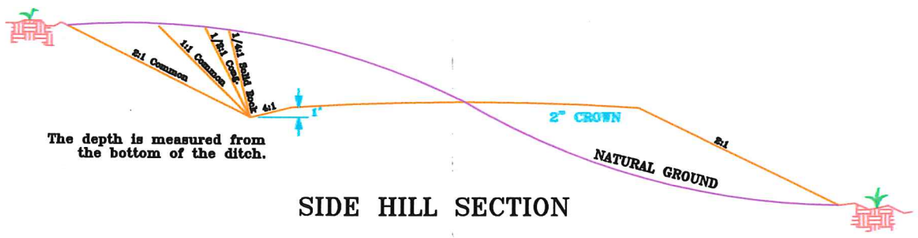


FLAT BOTTOM DITCH

Height of hill at shoulder	Embankment slope
0' – 4'	3:1
Above 4'	2:1



EMBANKMENT SECTION



The depth is measured from the bottom of the ditch.

SIDE HILL SECTION

CUT SLOPE ROUNDING

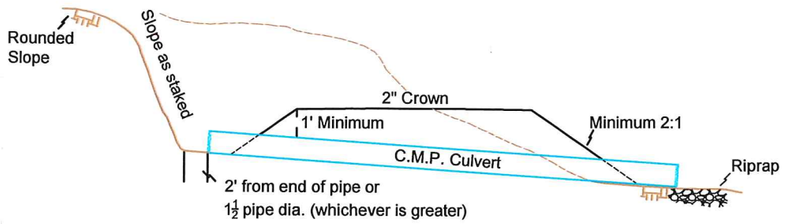
From: U.S. Dept. of Interior, B.L.M./U.S.G.S., Oil and Gas Surface Operating Standards for Oil & Gas Exploration and Development, 1978, page 23.

Black Hills Bentonite, L.L.C.			
Permit to Mine No. 248C – Herco Amendment			
Figure MP–1			
Typical Construction Cross Sections of Access Roads			
Black Hills Bentonite, L.L.C. P.O. Box 9, Mills, WY 82644			
Drawn by: J. Hathaway	Date Drawn: Jan. 2002	Revised: 09/2005	Not to Scale
S:\Shared Drawings\Design Drawings – Mine Features\Road Cross Section – 2012 Original.dwg			

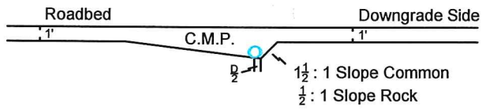
Black Hills Bentonite, L.L.C.
WDEQ/LQD Permit to Mine No. 248C
Herco Amendment

Figure MP-2
Typical Culvert Construction

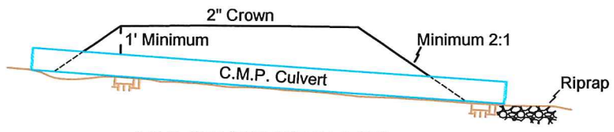
FROM: U.S. Department of the Interior, BLM
U.S.G.S., Oil and Gas Surface Operating Standards for Oil and Gas Exploration and Development, 1978, page 23.



C.M.P. CULVERT INSTALLATION



DITCH CONSTRUCTION AT SIDE HILL
C.M.P. CULVERT INSTALLATION

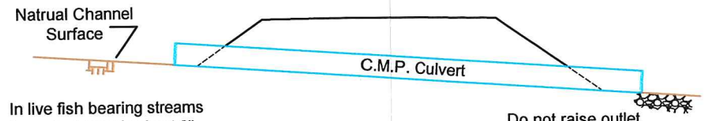


C.M.P. CULVERT INSTALLATION
EMBANKMENT SECTION

General Notes:
1. In bedding of C.M.P. Culverts, if the foundation is rock, excavate to depth of 8 in. below culvert grade and replace with earth cushion.
2. Minimum cover over culvert is one foot (1').
3. Minimum culvert diameter is 18".
4. Minimum culvert spacing:
   (a) 1 - 2% grade - 1000 feet minimum
   (b) 2 - 4% grade - 800 feet minimum
   (c) 4 - 6% grade - 600 feet minimum
   (d) 6 - 8% grade - 400 feet minimum
   (e) 8 - 10% grade - 250 feet minimum
5. Maximum grade 10%.

FROM: U.S. Department of the Interior, BLM & U.S.D.A., Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, 2007, page 34.

TYPE 1



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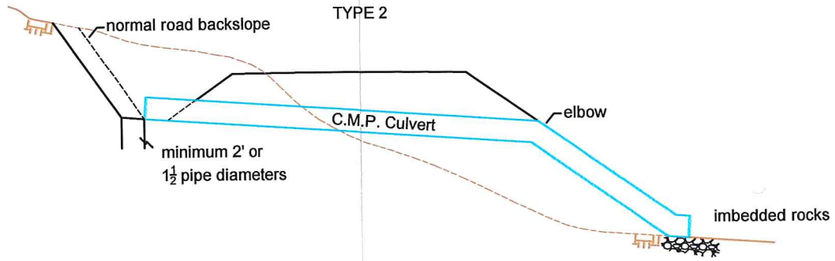

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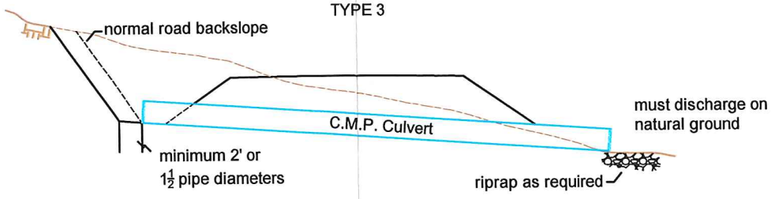
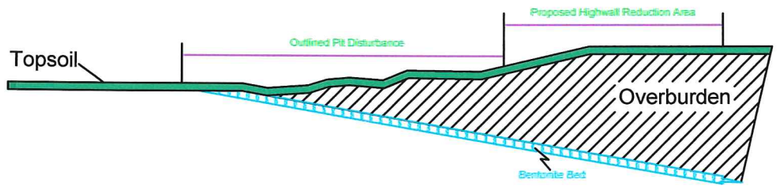


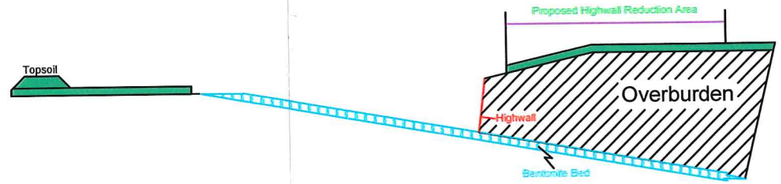
Black Hills Bentonite, L.L.C.
WDEQ/LQD Permit to Mine No. 248C
Herco Amendment

Figure MP-3
Typical Mining Sequence

Sequence 1
Undisturbed Pit Area

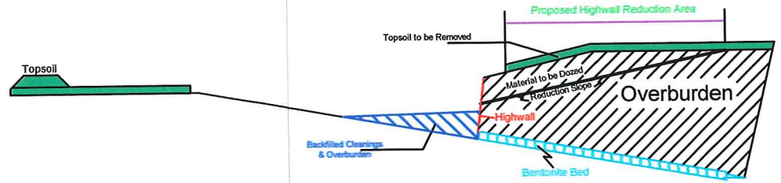


Sequence 2
Topsoil and Overburden Excavated.
Open Pit with Bentonite Exposed.

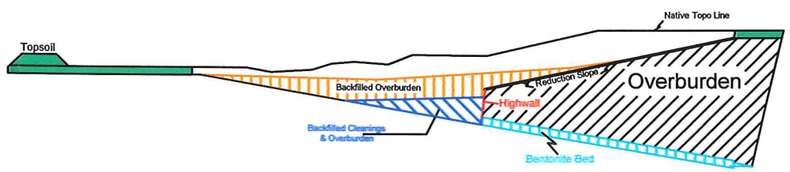


Sequence 3
Highwall Reduction Projection

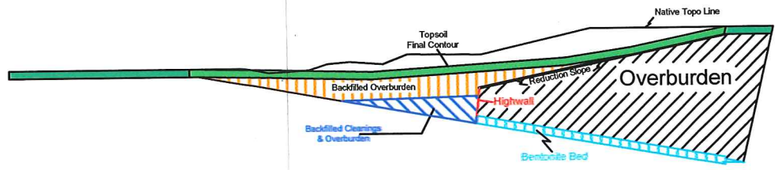
Sequence 4
Bentonite Removed.
Backfilled with Cleanings and Overburden.

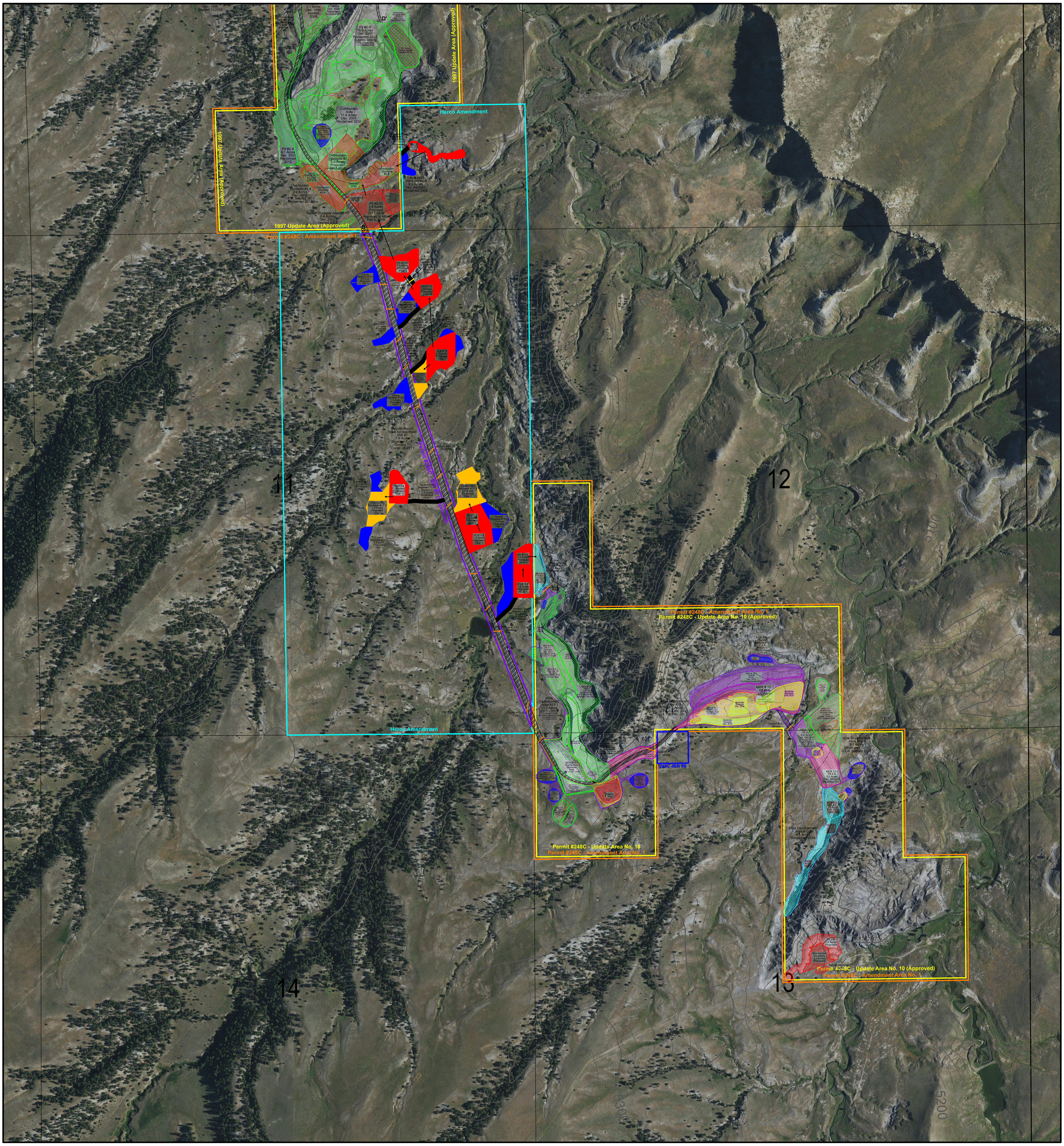


Sequence 5
Highwall has been Reduced and Contoured.



Sequence 6
Final Topography with
Topsoil Replaced.





Permit Area Boundary Legend

- Permit to Mine No. 248C - Amendment Area No. 1 (Change No. 1)
- Permit to Mine No. 248C - 1997 Update Area (Change No. 28)
- Permit to Mine No. 248C - Update Area No. 10 (Change No. 49)
- Permit to Mine No. 248C - Incidental Boundary Revision No. 7 (Change No. 50)
- Permit to Mine No. 248C - Incidental Boundary Revision No. 8 (Change No. 54)
- Permit to Mine No. 248C - Herco Amendment

Mining Activities Legend

- Access Road / Haul Road
- Backfilled Area
- Bentonite Stockpile
- Equipment Parking Area (Staging Area)
- Graded and Contoured Area
- Mine Development Area
- Open Pit Area
- Overburden Stockpile
- Proposed Mining Feature
- Reclaimed Area (Outcrops - No Seeding)
- Reclaimed Area (Seeded Area)
- Topsoil Stockpile
- Undisturbed Area
- Proposed Access Road Herco Amendment
- Proposed Pit Area Herco Amendment
- Proposed Overburden Stockpile Area Herco Amendment
- Proposed Topsoil Stockpile Area Herco Amendment
- Overburden Movement Arrow
- Proposed Culvert Location

N

Black Hills Bentonite, A Limited Liability Company

Permit to Mine No. 248C - Herco Amendment
Tisdale Area
Mine Plan Map No. 1

T.41N., R.81W.
Corresponding U.S.G.S. 7.5 Minute Quadrangle:
Wall Creek, Wyoming

Black Hills Bentonite, L.L.C. P.O. Box 9, Mills, WY 82644		
Drawn by: Black Hills Bentonite	Date Drawn: 05/2017	Revised:
Date of Photography: 2015 True Color	Scale: 1" = 400'	Contour Interval: 20'

S:\Shared Drawings\Permit to Mine No. 248C - Kaycee\Salt Canyon - Wall Creek - TTT Ranch Areas\Mine Plan Map - Herco Amendment - 2017.dwg

RECLAMATION PLAN

RECLAMATION PLAN
for
PERMIT TO MINE NO. 248C – HERCO AMENDMENT

1.0 POST MINING LAND USES

Lands affected by BHB's bentonite mining activities on the amendment area will be reclaimed to the pre-mining land use of livestock grazing and wildlife habitat.

2.0 CONTOURING PLAN FOR AFFECTED LANDS

2.1 Blending Affected Lands with Adjacent Topography

The pre-mining conditions and topography of the areas to be mined in Sections 2 and 11, T41N, R81W consist of exposed bentonite outcrops situated at the base of a large steep butte. In this situation, mining will begin at the edge of the outcrop and progress laterally into the hillside until the overburden depth reaches approximately twenty feet. In most cases, the highwall (hillside) height cannot exceed twenty feet as the steepness of the butte becomes nearly vertical due to natural topography.

As Black Hills Bentonite has done in the past, under these mining conditions, backfilling of this type of area will be done on-the-level and perpendicular to the highwall side of the pit. This results in a backfilled area that has a level to gently sloping bottom which is adjacent to a partial vertical highwall. Due to the steep to near vertical pre-mining conditions of the butte, the reclaimed surface blends well with the adjacent topography. Examples of this method of backfilling, contouring, and reclamation on outcrop areas adjacent to steep topography are illustrated by the photography on pages RP-C2 and C3.

Required backfill volumes under these conditions normally will require only covering the pit floor with a minimum of one foot of overburden in order to provide coverage of the hard shale pit floor.

BHB has attempted in the past to reclaim this type of topography by reestablishing slopes when backfilling. Due to the lack of topsoil on these outcrop areas and the highly erosive nature of the overburden materials, it is impossible to reclaim these outcrop areas as stable slopes. Therefore, under these conditions, pre-mining slopes will not be reestablished.

In other areas of this amendment where mining doesn't involve outcrops that are next to a butte, post mining slopes will be graded to 4H:1V or flatter, with a straight slope profile, unless the pre-mine slopes were steeper. In those cases, post-mining slopes will approximate the pre-mining slopes in terms of magnitude, aspect and shape. Generally, there is enough "swell" in the volume of overburden being replaced to compensate for the overall volume of the bentonite which was removed from the pit.

In general, most pits are completely backfilled and rough graded in order to establish AOC and the required slope angles utilizing Caterpillar 627G push-pull scrapers. In certain circumstances, both the Caterpillar 627G push-pull scrapers and the Caterpillar D8R/D8T/D9 dozers are utilized to backfill,

grade and contour a pit in order to create the final surface configuration. At times, overburden may be placed in the pit and against the highwall utilizing the scrapers, to a point where the pit is not completely backfilled. This would create a partially backfilled pit with a section of the highwall remaining above the backfilled overburden. Caterpillar D8R/D8T/D9 dozers would then be used to push overburden from above and behind the remaining highwall, into the pit area, thus completing the backfilling of the pit. A schematic diagram of this backfill scenario is illustrated in Figure MP-3 of the Mine Plan.

2.2 Control of Erosion and Sedimentation

During the reclamation phase, run-off from lands undergoing reclamation activities will be minimized and controlled in order to reduce or eliminate sediment-loading onto undisturbed lands. This can be achieved by diverting storm water flows generated by significant rainfall events or rapid snow melt away from and around disturbed areas associated with the reclamation activities. Diversion ditches may be constructed to divert water away from reclamation areas. Given the small size of the affected watersheds in the amendment area, diversion ditches may be constructed using the blade on a Caterpillar 140 motor grader or a Caterpillar D8R/D8T/D9 dozer. The diversion ditch will be cut to create a ditch which is triangular in shape and a minimum of 1.5 feet deep with 2:1 side slopes. Soil derived from the ditch cut will be "thrown" to the down slope side of the ditches, in essence creating a berm that will provide additional protection of the reclamation area. In the event that down-cutting or erosion should develop in the interceptor ditches or diversions, straw bales, straw logs, rock check dams or other erosion control features may be installed to control down-cutting of the ditch or channel bottom. As a part of reclamation, all interceptor ditches will be graded out and contoured to blend into the surrounding topography, topsoiled and seeded.

2.3 Re-Establishment of Drainages

No perennial or intermittent streams will be disturbed by the mining activities. Only ephemeral channels which infrequently carry water in direct response to a significant rainfall event or the rapid melting of a significant accumulation of snow will be affected by mining activities. These channels will be re-established during the reclamation phase. Reconstruction of the drainages will be accomplished using Caterpillar 627G push-pull scrapers and/or Caterpillar 140 motor graders to construct flat-bottomed swales that meander as much as possible and are at least as long as the native channels.

2.4 Acceptable Slope Conditions

Except where mining occurs on outcrops that are situated at the base of a large steep butte, post mining slopes will be graded to 4H:1V or flatter, with a straight slope profile, unless the pre-mine slopes were steeper. In those cases, post-mining slopes will approximate the pre-mining slopes in terms of magnitude, aspect and shape.

Out-of-pit overburden stockpiles or portions of these stockpiles which may remain as a final reclamation feature will be graded and contoured to blend with the existing topography. All slopes will be reduced to 4H:1V or less. Overburden stockpiles which will remain as a permanent reclamation feature will be oriented in the same direction as nearby topographic features and will approximate the pre-mining topography in terms of magnitude, aspect and shape.

3.0 SURFACE PREPARATION FOR TOPSOIL REPLACEMENT

Backfilled overburden will be graded and smoothed prior to applying topsoil in order to facilitate a uniform application of topsoil. Areas where backfilled overburden is compacted due to repeated traffic by scrapers or other equipment will be ripped using the rear scarifier on a Caterpillar 140 motor grader, or with a D8T/D8R/D9 dozer equipped with three ripper shanks.

4.0 TOPSOIL REPLACEMENT AND HANDLING

4.1 Methods of Topsoil Replacement

Topsoil will be applied primarily with Caterpillar 627G push-pull scrapers. In areas which are too steep to safely operate scrapers, Caterpillar D8R/D8T/D9 bulldozers may be used to spread topsoil. Topsoil will be re-applied to approximately the original depth which existed on each area prior to removal.

4.2 Schedule for Topsoil Replacement

Topsoil will be applied to the affected areas as soon as possible, although the replacement schedule for topsoil application is dependent upon the mining and backfilling schedule. If areas are available for the direct application of topsoil, topsoil will be applied during the topsoil removal phase during the development of a new pit. Topsoil application from stockpiles is generally conducted during the late summer or early fall, immediately prior to the seeding phase.

4.3 Special Soil Reconstruction Procedures and Special Treatments

No special soil reconstruction techniques or procedures will be required or used on the amendment area. Additionally, no special treatment of topsoil will be conducted.

4.4 Depth of Topsoil Replaced on Affected Lands

Topsoil will be re-applied to approximately the original depth which was removed. In certain circumstances, such as the occurrence of isolated pockets of topsoil on bentonite outcrop areas, the topsoil will be applied to those areas where it will be most beneficial in terms of reclamation success. BHB will use its discretion in determining which areas are best suited for topsoil application in these special situations.

Refer to *Appendix D-7, Soils* for recommended topsoil salvage depths and locations of areas where no topsoil is available for salvage due to bentonite outcrops or other limiting factors such as chemical or physical properties.

4.5 Soil Amendments

No soil amendments will be used on the amendment area.

5.0 REVEGETATION PRACTICES

5.1 Topsoil Decompaction and Tillage

In order to reduce the compaction of the topsoil created by passing over it with loaded Caterpillar 627G push-pull scrapers during the topsoil application process, proper tillage of the topsoil is a necessity. Due to the clay content in many of the soil types of the permit area, rubber-tired scrapers can exacerbate soil compaction. This generally results in soil conditions that are detrimental to seedling establishment unless topsoil tillage is conducted.

BHB will utilize a John Deere 7800 or 8000 series four-wheel drive tractor in conjunction with various tillage implements in order to decompact the topsoil and create a suitable seedbed prior to planting the cover crop and/or the permanent seed mixture. Depending on the degree of compaction and the physical characteristics of the soil, BHB may utilize a John Deere V-ripper in the initial phase of tillage, followed by disking with a heavy-duty Wishek disk. In other instances where the soil compaction is not so great, initial tillage may be conducted with a John Deere chisel plow, followed by disking with a heavy-duty Wishek disk. The depth of tillage is carefully controlled and monitored to prevent mixing of the topsoil with the underlying materials. Tillage will be conducted along the topographic contours whenever possible.

5.2 Cover Crops and/or Mulch

In the event that a fall seeding with the permanent seed mixture is not possible due to inclement weather, saturated or frozen soils, or other special circumstances, the area will be seeded with a sterile annual small grain hybrid such as triticale, as soon as possible, in order to protect the topsoil from erosion. The triticale cover crop will be drill seeded using a John Deere 7800 or 8000 series four-wheel drive tractor pulling a Great Plains 1300 Series or NT 1006 No-Till Grain Drill. The seed will be planted approximately one-half inch in depth, at a rate of fifty pounds per acre. After the cover crop has been established, the permanent seed mixture will be directly drill seeded into the standing stubble and biomass. No mulch such as straw or native hay will be applied in conjunction with the reclamation activities conducted on the amendment area.

5.3 Permanent Seed Mixture

Due to the predominance of cool season species in the permanent seed mixture, planting generally takes place during the months of October, November and December. Seeding is conducted using a John Deere 7800 or 8000 series four-wheel drive tractor pulling a Great Plains 1300 Series or NT 1006 No-Till Grain Drill. The seed will be planted approximately one-quarter to one-half inch in depth. Seeding will be conducted along the topographic contours of the reclaimed area, or perpendicular to the prevailing winds whenever possible.

Due to the difficulties in feeding certain seeds such as sagebrush seed through a conventional grain drill, broadcast seeding may be conducted as well as drill seeding. Sagebrush will be broadcast seeded using a Herd mechanical broadcast seeder mounted on the three-point hitch of the John Deere 7800 or 8000 series tractor. The sagebrush seed may be applied immediately prior to seeding with the Great Plains

1300 Series or NT 1006 No-Till Grain Drill, or the sagebrush seed may be applied on top of snow after the area has been drill seeded.

In the event that an area cannot be drill seeded due to steep topography or other special circumstances, hand broadcasting of seed may be attempted.

Species contained in the permanent seed mixture listed in Table RP-1 have been selected based on the following criteria:

- Adaptability to existing soil conditions
- Forage potential and palatability to livestock
- Forage, cover and habitat potential for wildlife
- Pre-mining presence as documented by the vegetation inventory
- Reclamation success proven by previous revegetation efforts
- Contribution to species and structural diversity
- Ability to remain self-sustaining
- Commercial availability

5.4 Temporary Seed Mixtures

No temporary seed mixtures will be used on the amendment area.

5.5 Woody Species Transplants

Transplanting of woody species (trees) on the amendment area will not be conducted.

5.6 Post-Mining Husbandry Practices

No post-mining husbandry practices will be conducted on the amendment area.

5.7 Protection of Seeded Areas

At the discretion of BHB, and based on the grazing intensity occurring on the reclaimed areas, newly seeded areas may require fencing to protect these areas from grazing by livestock. If fencing is required to protect seeded areas on the amendment area, they will be constructed in order to allow the egress and ingress of wildlife species.

5.8 Control of Noxious Weeds

Per WDEQ/LQD Rules & Regulations, Chapter III, Section 2(d) (ix), in those areas where there were no or very few noxious weeds prior to being affected by mining, BHB will control and minimize the introduction of noxious weeds into the revegetated areas for a period of at least five years after the initial seeding.

6.0 RECLAMATION SUCCESS CRITERIA AND METHODS FOR DETERMINING SUCCESSFUL RECLAMATION

6.1 Reclamation Success Criteria

Reclamation will be determined successful, considered complete, and be eligible for full bond release under the following conditions specified by WDEQ/LQD Rules & Regulations, Chapter 3, Section 2, which states,

"The Administrator shall not release the entire bond of any operator until such time as revegetation is completed, if revegetation is the method of reclamation as specified in the operator's approved reclamation plan. Revegetation shall be deemed to be complete when: (1) the vegetation species of the reclaimed land are self-renewing under natural conditions prevailing at the site; (2) the total vegetation cover of perennial species (excluding noxious weed species) and any species in the approved seed mix is at least equal to the total vegetation cover of perennial species (excluding noxious weed species) on the area before mining; (3) the species diversity and composition are suitable for the approved post-mining land use; and (4) the requirements in (1), (2) and (3) are achieved during one growing season, no earlier than the fifth full growing season on the reclaimed lands. The Administrator shall specify quantitative methods and procedures for determining whether equal total vegetation cover has been established and procedures for evaluating post-mining species diversity and composition."

Lands affected by mining and associated activities within the permit area which have been classified as bentonite outcrop or shale outcrop in *Appendix D-8, Vegetation* will be reclaimed in such a manner that these lands will exhibit similar pre-mining characteristics. Similar pre-mining characteristics shall include similar surface stability, approximate original contours, and an appearance similar to the pre-mining conditions.

Due to the absence of suitable plant growth material on lands classified as bentonite outcrop and shale outcrop, the establishment of vegetation will not be feasible. Therefore, these lands will be reclaimed by backfilling, grading, and contouring to produce a surface configuration which will be similar to the pre-mining conditions.

6.2 Extended Reference Areas or Comparison Areas

BHB will use extended reference areas (ERA) or comparison areas, as described by WDEQ/LQD Guideline No. 2, November 1997 for the purpose of evaluating post-mining reclamation success of affected lands on the amendment area. The selection and verification of the representative nature of the ERA or comparison area will be determined by evaluation of the vegetation mapping, pre-mining vegetation data, soils data, topographic and land use information. The location of the ERA or comparison area will be mutually selected on-site by LQD and BHB personnel.

6.3 Methods for Demonstrating and Evaluating Reclamation Success

Reclamation success will be evaluated by collecting quantitative data from the ERA or comparison area and the reclaimed area and directly comparing, by standard statistical procedure, the resulting data from each site. Data will be collected from an adequate sample size from each area. Adequate sample size will be determined using the information presented in WDEQ/LQD Guideline No. 2, Section IV - Estimating Adequate Sample Size, November, 1997.

Each sampling site will be randomly located on each area. Sampling for aerial cover will be done using point intercept sampling techniques which will include percent total cover and percent absolute vegetation cover. Total herbaceous production data will not be collected from the reclaimed area or the ERA or comparison area. Production will be qualitatively judged based on visual comparison and field reconnaissance of the reclaimed lands and the ERA or comparison area. The vegetative cover data collected from the reclaimed area and the ERA or comparison area will also be used to qualitatively judge total herbaceous production.

Based on the reference area concept, there will be no re-use of pre-mining vegetation data in the evaluation of reclamation success where ERA's or comparison areas have been or will be used. Quantitative vegetation data (percent cover) gathered from the appropriate ERA or comparison area and reclaimed area will be directly compared by standard statistical procedure. Statistical evaluations will follow McDonald et.al. 2003 and the 2006 LQD document titled "Sample Adequacy Calculations and Statistical Procedures for Revegetation Success Evaluation" for comparison of the reclaimed area and comparison area data sets.

Species composition and species diversity present on the reclaimed areas will be qualitatively judged based on the relationship between the species present and the post-mining land use. Species establishment from qualitative and quantitative aspects will be based on the permanent seed mixture. The establishment of these species will be determined through documentation in the quantitative data collected and through qualitative observations using percent cover estimates and qualitative abundance estimates.

The post-mining evaluation process for the determination of full bond release shall also include the construction of a species list and an evaluation of surface stability. The development of a species list for the reclaimed area will provide quantitative data on the total number (diversity) and kinds (composition) of species established from seeding, and the total number and kinds of species established through natural succession. The species list will be compiled by conducting a thorough field reconnaissance of each reclamation unit and recording all plant species observed. This species list and the cover data will provide the basis for demonstrating the quantity and quality of plant species established on the reclaimed lands. This information will be provided for LQD review when bond release is requested. The development of a detailed species list will provide information on the ability of the reclaimed lands to support the post-mining land use and should also provide data on the capability of the vegetation to renew itself. Surface stability (erosion) of the reclamation units will be assessed by field reconnaissance by LQD and BHB personnel present on site.

BHB personnel will make the preliminary decision on the timing of any full bond release request, based in part upon comparison of annual observations of reclamation success and progress. In general, BHB anticipates that 2-3 years of accumulated reclamation may be combined in a single bond release request. In each request package, BHB will also provide a written statement that the reclamation is satisfactory to the surface owner.

7.0 FINAL HYDROLOGIC RESTORATION

No perennial or intermittent streams will be disturbed by the mining activities. Only ephemeral channels which infrequently carry water in direct response to a significant rainfall event or the rapid melting of a significant accumulation of snow will be affected by mining activities. These channels will be re-established during the reclamation phase. Reconstruction of the drainages will be accomplished using Caterpillar 627G push-pull scrapers and/or Caterpillar 140 motor graders to construct flat-bottomed swales that meander as much as possible and are at least as long as the native channels.

All pits will be backfilled, with no depression and allowing for through-drainage. Post-mining slopes will approximate the pre-mining topography in terms of magnitude, aspect and slope. No impoundments are included as final reclamation features in the reclamation plan for the permit area. As mining progresses, all secondary access roads and culverts that are no longer needed will be removed and the areas will be graded to achieve pre-mining contours.

8.0 ISOLATION AND CONTROL OF ACID-FORMING, DELETERIOUS MATERIALS, OR NON-EXEMPT RCRA MATERIALS

Replacement of overburden during the course of backfilling open pits will be designed to create the most conducive reclamation substrate for revegetation as possible. In areas that have not been previously disturbed by surface mining activities, based on the laboratory analysis, the entire overburden strata has generally been determined to be unsuitable as root zone material. In areas of thin topsoil (<12 inches) in order to establish a rooting zone of suitable quality, BHB will salvage, at its discretion, a portion of the better quality overburden up to a depth of eighteen (18) inches. This material is generally found near the surface, just below the topsoil/subsoil layer. This salvaged overburden material, referred to as segregated overburden, will be stockpiled so that it can be utilized during the reclamation phase of the operations. The segregated overburden will be applied once backfilling is completed. The segregated overburden will be placed so that it is located immediately below the topsoil in order to create a more suitable root zone. Segregated overburden may also be used as a final cover material for reclamation on areas where no topsoil is present prior to mining (outcrop areas).

Overburden suitability and rock characterizations, including the analytical protocols and criteria necessary to identify potential acidic and/or reactive conditions, or the generation of deleterious leachate were evaluated for the amendment area. Please refer to *Appendix D-5, Overburden*, for a complete and detailed assessment of the overburden suitability and rock characterizations. BHB has utilized the data presented in *Appendix D-5, Overburden*, in order to develop overburden handling and overburden replacement plans.

Waste bentonite, which remains on the bentonite stockpile areas after the stockpiled bentonite has been removed for processing, will be disposed of by placing this material at the base of a highwall prior to backfilling. This is done to prevent this highly bentonitic material from being placed directly on the surface prior to the application of topsoil.

No materials or wastes considered non-exempt under the Resources Conservation and Recovery Act (RCRA) will be generated by or during the extraction of the bentonite. Therefore, plans for the isolation and control of non-exempt RCRA waste and materials are not provided.

9.0 DECOMMISSIONING, STABILIZATION AND REMOVAL OF BUILDINGS, STRUCTURES AND SUPPORT FACILITIES

No buildings, processing plants, structures, fueling stations, or other facilities will be constructed in conjunction with mining activities on the amendment area. The bentonite produced from the permit area will be transported to existing bentonite processing plants located in Casper, Wyoming for processing, sale, and shipment to customers.

10.0 EXPLORATION DRILL HOLE PLUGGING

Exploration drilling consists of shallow auger drilling (< 50 feet) using a four-inch diameter auger drill mounted on a Ford F550 heavy duty four-wheel drive truck. Drill holes will be reclaimed by shoveling the auger cuttings back into the drill hole, completely filling the hole. The drill hole location will be marked with a two-inch by four-inch wooden stake placed in the hole. The area around the drill stake will be hand-seeded with certified weed-free native grass seed (Western wheatgrass) and lightly raked to cover the seed with soil. Each drill hole will be reclaimed immediately and concurrently with the drilling program. No drill holes will remain open and/or un-plugged.

The drill hole plugging and sealing techniques described above meet all the plugging and sealing requirements of the WDEQ/LQD and the BLM.

11.0 POST-CLOSURE MANAGEMENT

BHB defines post-closure as the phase of the project immediately following the completion of reclamation activities, up to the time reclamation success is demonstrated and final bond release is approved by the LQD.

During this period, BHB will periodically monitor and evaluate the reclaimed areas for signs of erosion, off-site sedimentation, seeding failures and noxious weeds. Additionally, these sites will be monitored to ensure that they are not subject to overgrazing. If fences have been constructed to restrict grazing on the reclaimed areas, fences will be periodically examined in order to ensure their structural integrity. If the quality and integrity of the reclamation appears to be jeopardized by erosion, seeding failures, noxious weeds, etc., BHB will implement corrective actions to correct the problem at the first available opportunity.

12.0 RECLAMATION SCHEDULE

Reclamation of disturbed areas will begin as soon as possible, and all attempts will be made to assure that reclamation occurs concurrently with the mining activities. Field drying of bentonite will occur on this amendment area.

13.0 RECLAMATION COST ESTIMATES AND BONDING

13.1 Reclamation Cost Estimates

BHB has utilized WDEQ/LQD Guideline 12A (Rev. 02/22/2016) costs for overburden replacement, topsoil replacement, scarification of compacted surfaces and seeding. Contingency fees are also based on Guideline 12A. These costs are presented below.

Cost of Overburden & Topsoil Replacement Using Caterpillar 627G Push-Pull Scrapers
$.72 per BCY assuming 500 foot distance, 0% grade, 4% rolling resistance

$.79 per BCY assuming 750 foot distance, 0% grade, 4% rolling resistance

Cost of Final Grading Using a Caterpillar 140 Motor Grader
$65.91 per acre

Cost of Scarification of Compacted Surfaces using a Caterpillar 140 Motor Grader
$57.80 per acre

Cost of Seeding
Seed @ $316.35/acre + Application Cost @ $100.00/acre = $416.35/acre per Guideline 12A

Contingency Fees
25.0% per Guideline 12A

13.2 Reclamation Bond

The total reclamation liability for Permit to Mine No. 248C is recalculated and updated on an annual basis. Bonding for the first years proposed mining activities on the amendment area are included in Table RP-2 of this reclamation plan. Based on the calculations presented in the 2016-2017 annual mining report, there is a bond surplus for Permit to Mine No. 248C in the amount of $3,267,775.00. Therefore, a bond increase for the reclamation of the amendment area will not be required.

Table RP-1: Permanent Seed Mixture

Species and Variety	Seeding Rate Pounds of Pure Live Seed per Acre
Western wheatgrass, Rosana	2.00
Bluebunch wheatgrass, P-7	2.00
Crested wheatgrass, CD2	0.75
Thickspike wheatgrass, Bannock	1.50
Alkar Tall wheatgrass	2.00
Alkali sacaton	0.25
Blue grama, Bad River	0.25
Prairie junegrass	0.10
Sandberg bluegrass, High Plains	0.25
Western yarrow	0.10
Cicer milkvetch	1.00
Scarlet globemallow	0.20
Fernleaf biscuitroot	1.50
Purple prairie clover	1.00
Prairie coneflower	0.10
Fourwing saltbush, Wytana	3.00
Wyoming Big sagebrush	2.00
Total Pounds of Pure Live Seed per Acre	18.00

Table RP-2
Reclamation Costs - First Year Mining Activities
Black Hills Bentonite, LLC
Permit to Mine No. 248C
Herco Amendment

Map Number Section Township Range	Disturbance	Acres	Year Developed or Constructed	Topsoil Volume Removed & Stockpiled (cubic yards)	Average Overburden Depth (feet)	Pit Area (acres)	Estimated In-Place Overburden Volume (cubic yards)	Highwall Height or Stockpile Height (feet)	Highwall Length or Stockpile Perimiter Length (feet)	Overburden Volume Required to Establish 4h:1v Slopes (cubic yards)	Overburden Volume Required for Approx. Original Contours 4h:1v Slopes Pit Floor Coverage (cubic yards)	Topsoil & Overburden Movement Costs Cat 627 Push-Pull Scraper 500' One-Way Travel Distance ($0.72/cu. yd.)	Topsoil & Overburden Movement Costs Cat 627 Push-Pull Scraper 750' One-Way Travel Distance ($0.79/cu. yd.)	Grading and Contouring Required (acres)	Grading and Contouring Costs ($65.91/acre)	Scarification of Compacted Surfaces Costs ($57.80/acre)	Seeding Required (acres)	Seeding Costs ($416.35/acre)
Sec 2, T41N R81W	Access Road Segment E-E'	0.1	Year 1	0	0.0	0.0	0	0	0	0	0			0.1	$6.59	$5.78	0.0	$0.00
	Topsoil Stockpile #2-13	0.4	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.4	$166.54
	Pit #2-12	1.1	Year 1	484	10.0	1.1	17,743	0	0	0	17,743	$13,123.37		1.1	$72.50	$63.58	0.3	$124.91
Sec 11, T41N R81W	Topsoil Stockpile #11-1	1.0	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	1.0	$416.35
	Pit #11-1	2.0	Year 1	4,194	20.1	2.0	64,843	0	0	0	64,843	$3,019.54	$51,225.65	2.0	$131.82	$115.60	2.0	$832.70
	Access Road Segment A-A'	0.1	Year 1	161	0.0	0.0	0	0	0	0	0	$116.14		0.1	$6.59	$5.78	0.1	$41.64
	Access Road Segment B-B'	0.3	Year 1	726	0.0	0.0	0	0	0	0	0	$522.61		0.3	$19.77	$17.34	0.3	$124.91
	Topsoil Stockpile #11-2	1.0	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	1.0	$416.35
	Topsoil Stockpile #11-3	0.5	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.5	$208.18
	Pit #11-2	1.8	Year 1	7,124	17.9	1.8	51,971	0	0	0	51,971		$54,538.76	1.8	$118.64	$104.04	1.8	$749.43
	Access Road Segment C-C'	0.2	Year 1	323	0.0	0.0	0	0	0	0	0	$232.27		0.2	$13.18	$11.56	0.2	$83.27
	Topsoil Stockpile #11-4	0.1	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.1	$41.64
	Topsoil Stockpile #11-5	0.3	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.3	$124.91
	Topsoil Stockpile #11-6	1.5	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	1.5	$624.53
	Overburden Stockpile #11-1	0.9	Year 1	1,452	0.0	0.0	0	0	0	0	0	$1,045.22		0.9	$59.32	$52.02	0.9	$374.72
	Pit #11-3	2.3	Year 1	6,990	18.8	2.3	69,746	0	0	0	69,746		$60,621.27	2.3	$151.59	$132.94	2.3	$957.61
	Access Road Segment D-D'	0.4	Year 1	645	0.0	0.0	0	0	0	0	0	$464.54		0.4	$26.36	$23.12	0.4	$166.54
	Topsoil Stockpile #11-7	0.4	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.4	$166.54
	Topsoil Stockpile #11-8	0.5	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	0.5	$208.18
	Overburden Stockpile #11-2	1.7	Year 1	2,742	0.0	0.0	0	0	0	0	0	$1,974.31		1.7	$112.05	$98.26	1.7	$707.80
	Pit #11-4	1.4	Year 1	645	10.0	1.4	22,582	0	0	0	22,582	$16,259.04	$3,313.10	1.4	$92.27	$80.92	0.4	$166.54
	Topsoil Stockpile #11-9	1.2	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	1.2	$499.62
	Overburden Stockpile #11-3	2.2	Year 1	4,839	0.0	0.0	0	0	0	0	0	$3,484.08		2.2	$145.00	$127.16	2.2	$915.97
	Pit #11-5	1.6	Year 1	6,452	9.3	1.6	24,001	0	0	0	24,001	$21,926.48		1.6	$105.46	$92.48	1.6	$666.16
	Pit #11-6	1.5	Year 1	6,640	6.2	1.5	15,001	0	0	0	15,001	$15,581.58		1.5	$98.87	$86.70	1.5	$624.53
	Access Road Segment E-E'	0.3	Year 1	726	0.0	0.0	0	0	0	0	0	$522.61		0.3	$19.77	$17.34	0.3	$124.91
	Topsoil Stockpile #11-10	1.4	Year 1	0	0.0	0.0	0	0	0	0	0			0.0	$0.00	$0.00	1.4	$582.89
	Pit #11-7	1.3	Year 1	2,903	18.7	1.3	39,212	0	0	0	39,212	$30,323.11		1.3	$85.68	$75.14	1.3	$541.26
	Pit #11-8	1.2	Year 1	2,339	11.0	1.2	21,292	0	0	0	21,292	$17,013.92		1.2	$79.09	$69.36	1.2	$499.62
TOTAL		**28.7**		**49,385**						**0**	**326,391**	**$125,608.83**	**$169,698.78**	**20.4**	**$1,344.56**	**$1,179.12**	**26.8**	**$11,158.18**
TOTAL COSTS		**$308,989.47**																

Photographs

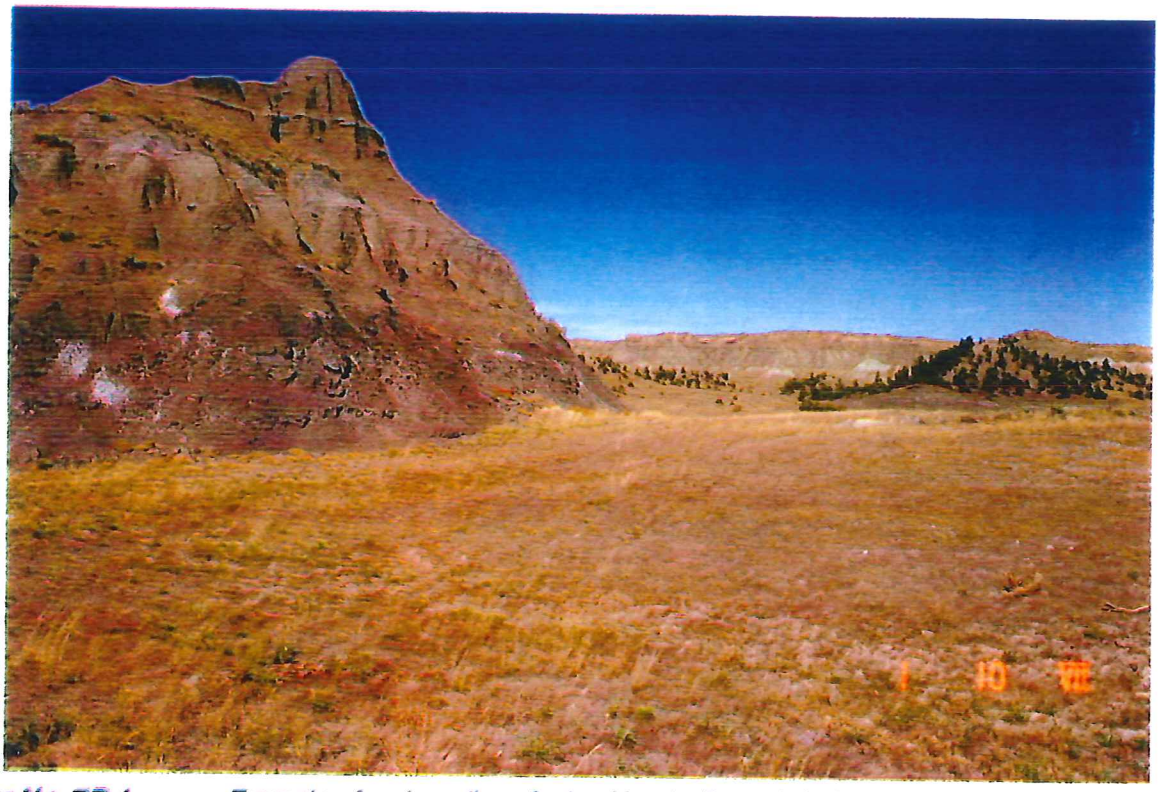


Photo No. RP-1. Example of reclamation of mined bentonite and shale outcrops at the base of a large butte in the Tisdale - Wall Creek Area. Pit #5 - SE¼NE¼SE¼ Section 34, T.42N., R.81W.

Photo No. RP-2. Example of reclamation of mined bentonite and shale outcrops at the base of a large butte in the Tisdale - Wall Creek Area. Pit #5 - SE¼NE¼SE¼ Section 34, T.42N., R.81W.

Photo No. RP-3. Example of reclamation of mined bentonite and shale outcrops at the base of a large butte in the Tisdale - Wall Creek Area. Pit #5 - SE¼NE¼SE¼ Section 34, T.42N., R.81W.

Photo No. RP-4. Example of reclamation of mined bentonite and shale outcrops at the base of a large butte in the Tisdale - Wall Creek Area. Pit #5 - SE¼NE¼SE¼ Section 34, T.42N., R.81W.