Wyoming Department of Environmental Quality
Land Quality Division
2009-2010 Annual Mining Report
Permit to Mine No. 533
Black Hills Bentonite, LLC

1. (a) **Name of Permittee:** Black Hills Bentonite, L.L.C.

   (b) **Address:** P.O. Box 9, Mills, Wyoming 82644

   (c) **WDEQ/LQD Mining Permit:** Permit to Mine No. 533

   (d) **Date of Permit Issuance:** June 23, 1982
   Total Permit Area Acreage: 163.15 acres

   (e) **Mineral Mined:** Bentonite

2. **Report Period:** June 24, 2008 through June 23, 2009

3. **Number of acres affected by mining and related activities during the report period (acreage for each type of disturbance should be listed and illustrated on a map accompanying the report)**

   No additional lands were affected by mining or mining related activities during the report period.

4. **Number of acres graded and contoured during this report period:**

   No grading or contouring was conducted on the permit area during the report period.

5. **Number of acres topsoiled during this report period:**

   No topsoil application was conducted on the permit area during the report period.

6. **Depth of redistributed topsoil:**

   No topsoil was redistributed during the report period.

7. **Number of acres seeded during this report period:**

   No seeding was conducted during the report period.

8. (a) **Species of seed used on the permit area and rate of application:**

   Original Seed Mixture

Western wheatgrass	3.0 lbs. pure live seed per acre
Bluebunch wheatgrass	3.0 lbs. pure live seed per acre
Thickspike wheatgrass	2.0 lbs. pure live seed per acre

Good 2

Crested wheatgrass	2.0 lbs. pure live seed per acre
Indian ricegrass	2.0 lbs. pure live seed per acre
Fourwing saltbush	2.0 lbs. pure live seed per acre
Yellow sweetclover	1.0 lbs. pure live seed per acre
Total	15.0 lbs. pure live seed per acre

(b) Date of seeding:

Seeding of all disturbances on the permit area, with the exception of the access road, was initially conducted in April of 1994. Due to poor growth, all disturbed areas were re-seeded (inter-seeded) in the fall of 1999. The mine site area was again seeded (inter-seeded) in the fall of 2008.

(c) Seeding Procedures Used:

Previous seeding activities were conducted utilizing a John Deere 8200 series grain drill equipped with drag chains. Seeding was done on the contour and the seed was planted to a depth of approximately one-half inch. Inter-seeding conducted during 2008 was completed using a Laird-U.S.F.S. design Rangeland Drill.

(d) Type and rate of any fertilizer used: None.

(e) Type and rate of mulch application: None.

9. Total number of acres affected to date by mining and mine related activities under this permit:

Primary Mining Area	-	27.6 acres
Topsoil Stockpiles	-	0.7 acres
Run-On Area	-	0.2 acres
Access Roads	-	2.7 acres
M-I Swaco Disturbances	-	3.2 acres
Basin, Wyoming Load-out Site	-	1.0 acre
Total	-	35.4 acres

10. Total number of acres graded, topsoiled, and seeded to date under this permit area:

Graded: 30.8 Topsoiled: 30.8 Seeded: 27.6 Re-Seeded: 26.5

11. Describe results of previous revegetation efforts:

Tthe growth of the seeded species continues to be very limited. The disturbed areas were inter-seeded the area during the fall of 2008 using the following seed mixture. Due to the rocky soil conditions, the seed mixture was applied with a Rangeland Drill at a rate of 18.3 pounds of pure live seed (PLS) per acre:

Bluebunch wheatgrass	3.0 pounds PLS	Cost per pound	$ 4.15
Blue grama	0.5 pounds PLS	Cost per pound	$ 8.28
Indian ricegrass	4.0 pounds PLS	Cost per pound	$ 3.60
Russian wildrye	2.0 pounds PLS	Cost per pound	$ 6.96
Fourwing saltbush	3.0 pounds PLS	Cost per pound	$ 13.20
Gardners saltbush	3.0 pounds PLS	Cost per pound	$ 14.40
Greasewood	1.0 pound PLS	Cost per pound	$ 28.80
Rubber rabbitbrush	0.8 pounds PLS	Cost per pound	$ 42.00
Wyoming Big sagebrush	2.0 pounds PLS	Cost per pound	$ 24.00

Prices are based on November 2009 prices of seed purchased from Granite Seed Company located in Lehi, Utah.

12. Permanent or temporary water impoundments constructed during the report period:

No impoundments have been constructed during the report period.

13. Describe any pit stability problems, surface or groundwater conditions, slope angles on graded or contoured areas, newly constructed drainage patterns, diversion ditches, road construction, culvert or bridge construction, shop and facility construction:

No new construction has been conducted on the permit area, nor do any stability or erosional problems exist.

14. For the coming year, list acreage and illustrate on a map areas that are to be:

(a) Affected by mining and related activities:

No additional mining activities are planned on the permit area for the coming year or future years.

(b) Graded and contoured in preparation for seeding:

Grading and contouring will be required on the access road and those disturbances created by M-I Swaco. BHB is unaware of plans by M-I Swaco for completing reclamation activities on the permit area.

(c) Topsoil re-application and seeded:

Topsoil application and seeding will be required on the 3.2 acres of land affected by M-I Swaco. It is expected that M-I will complete this work. No time schedule for completion of this work has been provided by M-I Swaco.

15. Describe in detail the next year's mining and reclamation plans:

Proposed Mining Activities:

No additional mining activities are proposed on this permit area.

Proposed Reclamation Activities:

No additional reclamation activities are planned at this time.

16. Reclamation costs for the report period:

Reclamation costs for the report period are presented below.

The following costs for the reclamation fleet, consisting of Caterpillar 627F push-pull scrapers Caterpillar 114H motor grader, Caterpillar D8R dozer have been determined by Mr. Doug Emme, Mining Engineer with the Wyoming Department of Environmental Quality, Land Quality Division, District III, based on 2006 DataQuest hourly rates. Operating costs for the John Deere 7810 tractor, disc and grain drill have been determined by BHB based on actual operating costs.

Hourly Equipment Costs for Topsoil & Overburden Replacement
Caterpillar 627F Push-Pull Scrapers
Data Quest cost without operator - $170.65/hour
WDEQ Guideline 12 costs at 100% of DataQuest plus $29.53/hour labor = $200.18/hr.

Caterpillar 14H Motor Grader
Data Quest cost without operator - $68.85/hour
WDEQ Guideline 12 costs at 100% of DataQuest plus $29.53/hour labor = $98.38/hr.

Caterpillar D8R Dozer
Data Quest cost without operator - $109.89/hour
WDEQ Guideline 12 costs at 100% of DataQuest plus $29.53/hour labor = $139.42/hr.

Cost of Backfilling Overburden Using Caterpillar 627F P-P Scrapers

Average Cycle Time (minutes)	2.50
Efficiency Factor	0.83
Cycles Per Hour	20
Bank Cubic Yards Per Cycle	15
Bank Cubic Yards (BCY) Per Hour	300
Cost Per BCY of Overburden	$0.8654

Cost of Topsoil Replacement Using Caterpillar 627F P-P Scrapers

Average Cycle Time (minutes)	2.50
Efficiency Factor	0.83

Cycles Per Hour	20
Bank Cubic Yards Per Cycle	16.2
Bank Cubic Yards (BCY) Per Hour	324
Cost Per BCY of Topsoil	$0.8013

Cost of Final Grading and Contouring Using Caterpillar 14H Motor Grader

Speed (MPH, 3rd Gear)	3.3
Width of Grading per Pass	8 feet
Feet Per Mile	5,280
Square Feet Per Acre	43,560
Operating Efficiency Factor	83%
(3.3 MPH) × (5,280) × (8)	139,392 ft²/hour
(139,392 ft²/hour) ÷ (43,560 ft²/acre)	3.2 acres/hour
(3.2 acres/hour) × (0.83 efficiency factor)	2.66 acres/hour
($98.38/hour) ÷ (2.66 acres/hour)	$36.99/acre

Hourly Operating Costs for Disking Topsoil using John Deere 7810 Tractor

	Cost/Hour
Tractor Owning & Operating Cost	$25.00
Disk Owning & Operating Cost	$ 6.00
Operator	$15.00
Supervision	$ 2.50
Supervisor Transportation	$ 0.47
Total	$48.97

Hourly Operating Costs for Seeding Topsoil with John Deere 7810 Tractor

	Cost/Hour
Tractor Owning & Operating Cost	$25.00
Drill Owning & Operating Cost	$ 8.00
Operator	$15.00
Supervision	$ 2.50
Supervisor Transportation	$ 0.47
Total	$50.97

Production Rates & Costs for Disking Topsoil with John Deere 7810 Tractor

Speed (MPH, 2nd Gear)	2.5
Width of Disc per Pass	12 feet
Feet Per Mile	5,280
Square Feet Per Acre	43,560

Operating Efficiency Factor	90%
(2.5 MPH) × (5,280') × (12')	158,400 ft²/hr.
(158,400 ft²/hour) ÷ (43,560 ft²/acre)	3.6 acres/hour
(3.6 acres/hour) × (0.90 efficiency factor)	3.2 acres/hour

Cost per acre for discing with JD7810 tractor
($48.97/hour) ÷ (3.2 acres/hour) $15.30/acre

Production Rates & Costs for Seeding Topsoil with JD7810 Tractor

Speed (MPH, 3rd Gear)	4.3
Width of Drill per Pass	10 feet
Feet Per Mile	5,280
Square Feet Per Acre	43,560
Operating Efficiency Factor	90%
(4.3 MPH) × (5,280') × (10') =	227,040 ft²/hour
(227,040 ft²/hour) ÷ (43,560 ft²/acre)	5.2 acres/hour
(5.2 acres/hour) × (0.90 efficiency factor)	4.7 acres/hour

Cost Per Acre for Seeding with JD7810 Tractor
($50.97/hour) ÷ (4.7 acres/hour) $ 10.84/acre

Total seeding cost per acre $302.00/acre

(Grading Topsoil @ $37.00/acre) + (Discing @ $15.00/acre) + (Seeding @ $11.00/acre) + (Seed @ $238.11 acre)

*Equipment costs have been updated based on information provided by Mr. Doug Emme, Mining Engineer, Wyoming Department of Environmental Quality, Land Quality Division, District III. These updated costs are described in the reclamation bond review letter (TFN 4 4/244) from Ms. Stacy Page dated November 1, 2006.

Average cycle times are based on time and production studies conducted by Black Hills Bentonite under a variety of working conditions on similar bentonite mining operations, and are also based on Cat Performance Handbook production rates. Cycles per hour are based on 60 minutes per hour multiplied by a job efficiency factor of 0.83 from Cat Performance Handbook, Edition 21.

Cubic yards moved per cycle is based on Cat Performance Handbook payload data for 627F push-pull scrapers. Payload is rated at 20.0 bank cubic yards multiplied by a load factor of 0.83 for shale (overburden) and a load factor of 0.83 for loam (topsoil).

Bank cubic yards per hour is determined by multiplying the cycles per hour by the cubic yards moved per cycle.

Cost per bank cubic yard of overburden is determined by the following formula: (627F P-P cost/hour) + (D8Rdozer cost/hour ÷ the 4 scrapers it supports) + (14H blade cost/hour ÷ the 4 scrapers it supports) all

÷ bank cubic yards of overburden per hour.

Cost per bank cubic yard of topsoil is determined by the following formula: (627F P-P scraper cost per hour) + (14H blade cost per hour ÷ the 4 scrapers it supports) all ÷ the bank cubic yards of topsoil per hour.

Owning and operating costs for the John Deere 7810 tractor are based on BHB data and the average 2007 rental rates for a tractor of this size.

Seed costs are based on November 2009 seed prices from Granite Seed Co., Lehi, Utah.

CONTINGENCY COSTS

A contingency cost factor of 25 percent (25%) has been applied to the estimated reclamation costs for the permit. The 25 percent factor is based on the following items:

Project Management	2%	Site Maintenance	2%	Engineering	4%
Mobilization	2%	Profit	8%		
Bid Preparation	2%	Unknowns	5%		

RECLAMATION BOND ESTIMATE

The estimated reclamation costs and bonding requirements for the permit area are presented below:

Reclamation Liabilities for Existing Disturbances

Topsoil Replacement Costs
Existing Mining Activities:
7,904 cubic yards at $0.8013 per cubic yard = $ 6,334.00

Seeding:
5.0 acres at $302.00 per acre = $ 1,510.00

Seeding Reserves
24.3 acres at $302.00 per acre = $ 7,339.00

Subtotal = $ 15,183.00

25% Contingency Costs = $ 3,796.00

TOTAL RECLAMATION LIABILITY = $ 18,979.00

Reclamation Self Bond SBNC069 for Permit to Mine No. 533 is currently set at $24,854.00. Based on the calculations presented above, the current bond amount is sufficient to cover the reclamation costs associated with Permit to Mine No. 533.

18. Supply any additional information as requested by the Division related to:

(a) **Notices of Violations:** None.
(b) **Orders:** None.
(c) **Permit stipulations:** None.
(d) **Other special conditions:** None.

19. All drill holes used for the immediate developmental expansion of advancing pit(s) shall be tabulated by location and depth and shown on the mining plan map: No drilling has been conducted on the permit area during the report period.

Permit to Mine No. 533 2009-2010 Annual Report prepared by:

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Bruce Lawson, Mine Development & Reclamation Manager

Annual Report Attachment

A. Please indicate any change in company name or business organization:
NO CHANGES.

B. List the names and addresses of the following:

President & General Manager:	Thomas A. Thorson Black Hills Bentonite, L.L.C. P.O. Box 9 Mills, Wyoming 82644 (307) 265-3740
Vice President & Chief Financial Officer:	Larry Madsen Black Hills Bentonite, L.L.C. P.O. Box 9 Mills, Wyoming 82644 (307) 265-3740
Party to Receive Notice:	Bruce Lawson Mine Development & Reclamation Manager Black Hills Bentonite, L.L.C. P.O. Box 9 Mills, Wyoming 82644 (307) 234-6470