Wyoming Secretary of State
2020 Carey Avenue, Suite 700
Cheyenne, WY 82002-0020
Ph. 307.777.7311
Fax 307.777.5339
Email: Business@wyo.gov

WY Secretary of State
FILED: 11/06/2018 04:23 PM
ID: 2018-000827720

Limited Liability Company
Articles of Organization

1. Name of the limited liability company:

VALKYRIE, LLC

2. This entity elects to be a close limited liability company: ☐
(You may refer to the Close Limited Liability Supplement for more information W.S. 17-25-101-W.S 17-25-109.)

3. Name and physical address of its registered agent:
*(The registered agent may be an individual resident in Wyoming or a domestic or foreign business entity authorized to transact business in Wyoming. **The registered agent must have a physical address in Wyoming.** If the registered office includes a suite number, it must be included in the registered office address. A Drop Box is not acceptable. A PO Box is acceptable if listed **in addition to a physical address**.)*

Name: RONALD J ERICSSON

Address: 426 LONESOME COUNTRY ROAD, COLONY, WYOMING, WHICH IS 4.3 MILES SOUTH OF US HIGHWAY 212 ON LONESOME COUNTRY ROAD

*(If mail is received at a Post Office Box, please list above **in addition to the physical address**.)*

4. Mailing address of the limited liability company:

426 LONESOME COUNTRY ROAD ALZADA, MONTANA 59311

5. Principal office address:

426 LONESOME COUNTRY ROAD ALZADA, MONTANA 59311

Signature: _____
(Shall be executed by an organizer.)

Date: October 16, 2018
(mm/dd/yyyy)

Print Name: SPENCER J ERICSSON

Contact Person: RONALD J ERICSSON

Daytime Phone Number: (307) 878-4494 Email: ericsson@childselect.com

(Email provided will receive annual report reminder and filing evidence)
**May list multiple email addresses*

Received
OCT 19 2018
Secretary of State
Wyoming

LLC-ArticlesOrganization - Revised October 2015

Wyoming Secretary of State
2020 Carey Avenue, Suite 700
Cheyenne, WY 82002-0020
Ph. 307.777.7311
Fax 307.777.5339
Email: Business@wyo.gov

Consent to Appointment by Registered Agent

I, RONALD J ERICSSON, registered office located at
(name of registered agent)

426 LONESOME COUNTRY ROAD, COLONY, WYOMING, WHICH IS 4.3 MILES
SOUTH OF US HIGHWAY 212 ON LONESOME COUNTRY ROAD

voluntarily consent to serve

* ***(registered office physical address, city, state & zip)***

as the registered agent for VALKYRIE, LLC
(name of business entity)

I hereby certify that I am in compliance with the requirements of W.S. 17-28-101 through W.S. 17-28-111.

Signature: Ronald J Ericsson **Date:** Oct 16, 2018
(Shall be executed by the registered agent.) *(mm/dd/yyyy)*

Print Name: RONALD J ERICSSON Daytime Phone: (307) 878-4494

Title: REGISTERED AGENT Email: ericsson@childselect.com

Registered Agent Mailing Address (if different than above): 426 LONESOME COUNTRY ROAD ALZADA MONTANA 59311

***If this is a current registered agent changing their registered address on file, complete the following:**

Previous Registered Office(s):

I hereby certify that:

- After the changes are made, the street address of my registered office and business office will be identical.
- This change affects every entity served by me and I have notified each entity of the registered office change.
- I certify that the above information is correct and I am in compliance with the requirements of W.S. 17-28-101 through W.S. 17-28-111.

Signature: _____ **Date:** _____
(Shall be executed by the registered agent.) *(mm/dd/yyyy)*

STATE OF WYOMING
Office of the Secretary of State

I, EDWARD A. BUCHANAN, SECRETARY OF STATE of the STATE OF WYOMING, do hereby certify that the filing requirements for the issuance of this certificate have been fulfilled.

CERTIFICATE OF ORGANIZATION

VALKYRIE, LLC

Accordingly, the undersigned, by virtue of the authority vested in me by law, hereby issues this Certificate.

I have affixed hereto the Great Seal of the State of Wyoming and duly executed this official certificate at Cheyenne, Wyoming on this **6th** day of **November**, **2018**.

Edward A. Buchanan
Secretary of State

By: Angela Gonzales

Filed Date: 11/06/2018

RECEIPT

Secretary of State
2020 Carey Avenue
Cheyenne, WY 82002-0020

RONALD J ERICSSON TRUSTEE
LONESOME TRUST
JEAN MARIE ERICSSON, TRUSTEE
426 LONESOME COUNRTY RD
ALZADA, MT 59311

RECEIPT INFORMATION

Receipt #: **001516688**
Receipt Date: **11/06/2018**
Processed By: **Angela Gonzales**

DO NOT PAY!
This is not a bill.

Description of Charges	Reference	Quantity	Unit Price	Total
Initial Filing - Limited Liability Company - Domestic	2018-000827720	1	$100.00	$100.00

TOTAL CHARGES PAID **$100.00**

Description of Payment	Reference	Amount
Payment-Check / Money Order	7373	$200.00

TOTAL PAYMENT **$200.00**

In Reference To:
VALKYRIE, LLC (2018-000827720)

PAD or Billing Questions?
(307) 777-5343
SOSAdminServices@wyo.gov

WARRANTY DEED

2U RANCH, LLC, a Wyoming limited liability company, for good and valuable consideration, not herein recited, but the sufficiency and receipt of which is hereby acknowledged, does hereby warrant, convey, transfer, and confirm unto **VALKYRIE, LLC**, a Wyoming limited liability company, the real property situated in the County of Crook and the State of Wyoming, described in **Exhibit A** which is attached hereto, and by reference thereto, is made a part hereof.

Together with all improvements and appurtenances thereon and thereunto appertaining and belonging.

EXCEPTING and reserving unto the Grantor and to its successors and assigns, and its agents, servants, and invitees, and tits tenants and occupants, at all times, to freely pass through and over those certain existing roads which exist, and traverse through the real property described in Exhibit A which is attached hereto.

EXCEPTING all easements, rights of way, and mineral reservations of record, and all rights and easements in favor of third parties established by reason of necessity.

Together with an easement and right of ingress and easement to and from the above described real property over existing roads.

IN WITNESS WHEREOF **2U RANCH, LLC** has caused this WARRANTY DEED to be executed by its Manager, thereunto duly authorized, this 10 day of December, 2018.

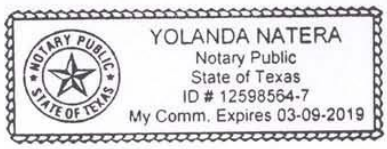
2U RANCH, LLC

by _____

SCOTT A ERICSSON, Manager

STATE OF TEXAS)
) SS.
COUNTY OF BREWSTER)

On this 10th day of December, 2018, before me, a Notary Public in and for Brewster County, Texas, personally appeared **SCOTT A ERICSSON**, who acknowledged to me that he executed the above and foregoing WARRANTY DEED in his capacity as such Manager for and on behalf of **2U RANCH, LLC** freely and voluntarily and for the uses and purposes therein mentioned and contained.



Yolanda Natera

NOTARY PUBLIC
When recorded, please return to the
Grantee whose name and address are:
VALYKERIE, LLC
615 Cottonwood Creek Road
Alpine, Texas 79830

EXHIBIT "A"

Real property situated in Crook County, Wyoming, to wit :

Township 57 North, Range 62 West, Sixth Principal Meridian

Section 30 : SW 6.21 acres of Lot 11; W1/2 E1/2 NE1/4 SE1/4 consisting of 10.21 acres, more or less, of Lot 14; W1/2 E1/2 SW1/4 SE1/4 consisting of 10.22 acres, more or less, of Lot 19

Section 31 : S1/2 NE1/4 NW1/4 NE1/4 consisting of 5.1 acres, more or less, of Lot 6; S1/2 N1/2 NE1/4 NE1/4 consisting of 10.24 acres, more or less, of Lot 5; N1/2 SE1/4 SE1/4 SE1/4 consisting of 5.14 acres, more or less, of Lot 15

Section 32 : S1/2 NW1/4 NW1/4 NW1/4 consisting of 5.12 acres, more or less, of Lot 3; W1/2 E1/2 NW1/4 NW1/4 consisting of 10.25 acres, more or less, of Lot 3; W1/2 E1/2 SW1/4 NW1/4 consisting of 10.00 acres, more or less; W1/2 E1/2 NW1/4 SW1/4 consisting of 10.26 acres, more or less, of Lot 10; W1/2 E1/2 SW1/4 SW1/4 consisting of 10.27 acres, more or less, of Lot 11; N1/2 SW1/4 SW1/4 SW1/4 consisting of 5.13 acres, more or less, of Lot 11

Township 56 North, Range 62 West, Sixth Principal Meridian

Section 6 : W1/2 E1/2 NE1/4 NE1/4 consisting of 9.77 acres, more or less of Lot 8; W1/2 E1/2 SE1/4 NE1/4 consisting of 11.64 acres, more or less, of Lot 15; W1/2 E1/2 NE1/4 SE1/4 consisting 12.31 acres, more or less, of Lot 16; N1/2 S1/2 NW1/4 SE1/4 consisting of 11.77 acres, more or less of Lot 17; N1/2 S1/2 NE1/4 SW1/4 consisting of 11.24 acres, more or less, of Lot 18

Wyoming Secretary of State
2020 Carey Avenue, Suite 700
Cheyenne, WY 82002-0020
Ph. 307.777.7311
Fax 307.777.5339
Email: Business@wyo.gov

WY Secretary of State
FILED: 11/06/2018 04:27 PM
ID: 2018-000827722

Limited Liability Company
Articles of Organization

1. Name of the limited liability company:

CINQUEFOIL, LLC

2. This entity elects to be a close limited liability company: ☐
(You may refer to the Close Limited Liability Supplement for more information W.S. 17-25-101-W.S 17-25-109.)

3. Name and physical address of its registered agent:
(The registered agent may be an individual resident in Wyoming or a domestic or foreign business entity authorized to transact business in Wyoming. ***The registered agent must have a physical address in Wyoming.*** *If the registered office includes a suite number, it must be included in the registered office address. A Drop Box is not acceptable. A PO Box is acceptable if listed* ***in addition to a physical address****.)*

Name: RONALD J ERICSSON

Address: 426 LONESOME COUNTRY ROAD, COLONY, WYOMING, WHICH IS 4.3 MILES SOUTH OF US HIGHWAY 212 ON LONESOME COUNTRY ROAD

(If mail is received at a Post Office Box, please list above ***in addition to the physical address****.)*

4. Mailing address of the limited liability company:

426 LONESOME COUNTRY ROAD ALZADA, MONTANA 59311

5. Principal office address:

426 LONESOME COUNTRY ROAD ALZADA, MONTANA 59311

Signature: Marie Ericsson
(Shall be executed by an organizer.)

Date: October 16, 2018
(mm/dd/yyyy)

Print Name: MARIE V ERICSSON

Contact Person: RONALD J ERICSSON

Daytime Phone Number: (307) 878-4494 Email: ericsson@childselect.com

(Email provided will receive annual report reminders and filing evidence)
**May list multiple email addresses*

Received
OCT 19 2018
Secretary of State
Wyoming

Wyoming Secretary of State
2020 Carey Avenue, Suite 700
Cheyenne, WY 82002-0020
Ph. 307.777.7311
Fax 307.777.5339
Email: Business@wyo.gov

Consent to Appointment by Registered Agent

I, RONALD J ERICSSON, registered office located at
(name of registered agent)

426 LONESOME COUNTRY ROAD, COLONY, WYOMING, WHICH IS 4.3 MILES
SOUTH OF US HIGHWAY 212 ON LONESOME COUNTRY ROAD

voluntarily consent to serve

* ***(registered office physical address, city, state & zip)***

as the registered agent for CINQUEFOIL, LLC
(name of business entity)

I hereby certify that I am in compliance with the requirements of W.S. 17-28-101 through W.S. 17-28-111.

Signature: Ronald J. Ericsson **Date:** Oct 16, 2018
(Shall be executed by the registered agent.) *(mm/dd/yyyy)*

Print Name: RONALD J ERICSSON Daytime Phone: (307) 878-4494

Title: REGISTERED AGENT Email: ericsson@childselect.com

Registered Agent Mailing Address (if different than above): 426 LONESOME COUNTRY ROAD ALZADA MONTANA 59311

***If this is a current registered agent changing their registered address on file, complete the following:**

Previous Registered Office(s):

I hereby certify that:

- After the changes are made, the street address of my registered office and business office will be identical.
- This change affects every entity served by me and I have notified each entity of the registered office change.
- I certify that the above information is correct and I am in compliance with the requirements of W.S. 17-28-101 through W.S. 17-28-111.

Signature: _____ **Date:** _____
(Shall be executed by the registered agent.) *(mm/dd/yyyy)*

STATE OF WYOMING
Office of the Secretary of State

I, EDWARD A. BUCHANAN, SECRETARY OF STATE of the STATE OF WYOMING, do hereby certify that the filing requirements for the issuance of this certificate have been fulfilled.

CERTIFICATE OF ORGANIZATION

CINQUEFOIL, LLC

Accordingly, the undersigned, by virtue of the authority vested in me by law, hereby issues this Certificate.

I have affixed hereto the Great Seal of the State of Wyoming and duly executed this official certificate at Cheyenne, Wyoming on this **6th** day of **November**, **2018**.

Filed Date: 11/06/2018

Edward A. Buchanan
Secretary of State

By: Angela Gonzales

WARRANTY DEED

2U RANCH, LLC, a Wyoming limited liability company, for good and valuable consideration, not herein recited, but the sufficiency and receipt of which is hereby acknowledged, does hereby warrant, convey, transfer, and confirm unto **CINQUEFOIL, LLC**, a Wyoming limited liability company, the real property situated in the County of Crook and the State of Wyoming, described in **Exhibit A** which is attached hereto, and by reference thereto, is made a part hereof.

Together with all improvements and appurtenances thereon and thereunto appertaining and belonging.

EXCEPTING and reserving unto the Grantor and to its successors and assigns, and its agents, servants, and invitees, and tits tenants and occupants, at all times, to freely pass through and over those certain existing roads which exist, and traverse through the real property described in Exhibit A which is attached hereto.

EXCEPTING all easements, rights of way, and mineral reservations of record, and all rights and easements in favor of third parties established by reason of necessity.

Together with an easement and right of ingress and easement to and from the above described real property over existing roads.

IN WITNESS WHEREOF **2U RANCH, LLC** has caused this WARRANTY DEED to be executed by its Manager, thereunto duly authorized, this 10 day of December, 2018.

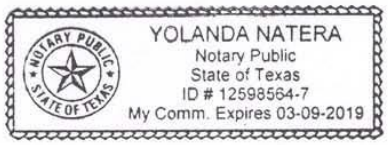
2U RANCH, LLC

by_____

SCOTT A ERICSSON, Manager

STATE OF TEXAS)
) SS.
COUNTY OF BREWSTER)

On this 10th day of December, 2018, before me, a Notary Public in and for Brewster County, Texas, personally appeared **SCOTT A ERICSSON**, who acknowledged to me that he executed the above and foregoing WARRANTY DEED in his capacity as such Manager for and on behalf of **2U RANCH, LLC** freely and voluntarily and for the uses and purposes therein mentioned and contained.



Yolanda Natera

NOTARY PUBLIC
When recorded, please return to the
Grantee whose name and address are:
CINQUEFOIL, LLC
615 Cottonwood Creek Road
Alpine, Texas 79830

EXHIBIT "A"

Real property situated in Crook County, Wyoming, to wit :

Township 57 North, Range 62 West, Sixth Principal Meridian

Section 30 : SE 6.21 acres of Lot 11; E1/2 E1/2 NE1/4 SE1/4 consisting of 10.21 acres, more or less, of Lot 14; E1/2 E1/2 SW1/4 SE1/4 consisting of 10.22 acres, more or less, of Lot 19

Section 31 : N1/2 NE1/4 NW1/4 NE1/4 consisting of 5.1 acres, more or less, of Lot 6; N1/2 N1/2 NE1/4 NE1/4 consisting of 10.24 acres, more or less, of Lot 5; S1/2 SE1/4 SE1/4 SE1/4 consisting of 5.14 acres, more or less, of Lot 15

Section 32 : N1/2 NW1/4 NW1/4 NW1/4 consisting of 5.12 acres, more or less, of Lot 3; E1/2 E1/2 NW1/4 NW1/4 consisting of 10.25 acres, more or less, of Lot 3; E1/2 E1/2 SW1/4 NW1/4 consisting of 10.00 acres, more or less; E1/2 E1/2 NW1/4 SW1/4 consisting of 10.26 acres, more or less, of Lot 10; E1/2 E1/2 SW1/4 SW1/4 consisting of 10.27 acres, more or less, of Lot 11; S1/2 SW1/4 SW1/4 SW1/4 consisting of 5/13 acres, more or less, of Lot 11

Township 56 North, Range 62 West, Sixth Principal Meridian

Section 6 : E1/2 E1/2 NE1/4 NE1/4 consisting of 9.77 acres, more or less of Lot 8; E1/2 E1/2 SE1/4 NE1/4 consisting of 11.64 acres, more or less, of Lot 15; E1/2 E1/2 NE1/4 SE1/4 consisting 12.31 acres, more or less, of Lot 16; S1/2 S1/2 NW1/4 SE1/4 consisting of 11.77 acres, more or less of Lot 17; S1/2 S1/2 NE1/4 SW1/4 consisting of 11.24 acres, more or less, of Lot 18

NOTE: **DO NOT MODIFY THIS FORM.** Use typewriter or print neatly in blue ink. Submit two (2) copies one of which must be an original Form 1 as supplied by the Department of Environmental Quality, Land Quality Division.

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND QUALITY DIVISION
APPLICATION
FOR
PERMIT TO MINE
OR
AMENDMENT TO A PERMIT TO MINE
OR
COAL PERMIT RENEWAL

MAR 0 2 2016

1. (a) Name, telephone number, and mailing address of applicant:
Bentonite Performance Minerals, LLC. 307-896-8507
554 U.S. Hwy 212 Belle Fourche, SD 57717

(b) If the applicant is a partnership, association or (corporation,) (circle one) the names and addresses of all managers, partners and executives directly responsible for operations in this State:

Name: Toby Dixon Address: 3000 N. Sam Houston Pkwy E.
Title: Vice President Baroid PSL Phone No. Houston, TX 77032 281-871-5174

Name: Joe Taylor Address: 3000 N. Sam Houston Pkwy E.
Title: Global Manager HIPS Phone No. Houston, TX 77032 281-871-4860

Name: Warren Scott Address: 3000 N. Sam Houston Pkwy E.
Title: Global Mining Operations Manager Phone No. Houston, TX 77032 281-871-2191

Name: Joel Severin Address: 554 U.S. Hwy 212
Title: Mine Manager Phone No. Belle Fourche, SD 57717 307-896-8516

2. Name, address, and telephone number of the agent or person to whom any notice under the provisions of Wyoming Environmental Quality Act or Rules and Regulations adopted thereunder may be sent: Jennifer Hartman Bentonite Performance Minerals LLC
554 US HWY 212 Belle Fourche, SD 57717 307-896-8507

3. Attach the following information as part of the specific appendices:

(a) APPENDIX "A"

Names and addresses of surface and mineral owners of record within the proposed permit (amendment) area.

(b) APPENDIX "B"

(i) Names and last known addresses of the owners of record of the surface rights of the lands immediately adjacent to the proposed permit (amendment) area.

(ii) Names and last known addresses of any other persons within one-half (1/2) mile having a valid legal estate of record.

(iii) **For surface coal mining operations**, the names and last known addresses of coal ownership immediately adjacent to the proposed permit (amendment) area.

NOTE: Appendices "A" and "B" shall each be accompanied by maps showing the ownership locations required by the respective appendices. Mapping of (b)(ii) is not required.

(c) APPENDIX "C"

(i) All lands to be included in the proposed permit (amendment) area shall be tabulated by legal subdivision, section, township, range, county, and municipal corporation, if any, and the number of acres for each subdivision listed.

(ii) Lands which are to be part of the proposed permit (amendment) area, for which no right to mine is claimed shall be identified in item (c)(i) above as such and tabulated separately listing the number of acres for each legal subdivision.

(iii) Lands which are located within other permit areas shall be identified and a copy of the land use agreement with the other permittee shall be attached as part of this application.

(iv) An original United State Geological Survey topographic map, clearly outlining and identifying the lands to be within the proposed permit areas, shall be provided. Photo copies or other similar copies are not acceptable unless prior approval is obtained from the Land Quality Division.

Initial J.S. Date 2-10-16

Permit No.
Temporary Filing No. Le 1197

(d) APPENDIX "D"

A description of the land which shall include: historic and present land use; vegetative cover; annual rainfall; general directions and average velocities of the winds; indigenous wildlife; present surface water and the immediate drainage areas; valid water rights; nature and depth of the overburden, subsoil, topsoil; including a soils map; mineral seams, or other deposits; subsurface water(s) known to exist above the deepest projected depth of the mining operation.

(e) APPENDIX "E"

A map or maps with the boundary of the proposed permit (amendment) are clearly outlined and identified showing:

(i) The lands to be affected by the mining;

(ii) The drainage area within and surrounding the proposed permit (amendment) area;

(iii) The location and names, where known, of all roads, railroads, public or private rights-of-way and easements, utility lines, lakes, streams, creeks, springs, and other surface water courses, oil wells, gas wells, and water wells;

(iv) An outline of the probable limits of all areas previously disturbed or to be disturbed by underground or subsurface mining, whether active or inactive, on or immediately adjacent to the proposed permit (amendment) area;

(v) The names, last known addresses and boundary lines of the present surface landowners and occupants on the adjacent land to be affected;

(vi) The location, ownership, and uses of all buildings on, or on lands adjacent to, the land to be affected;

(vii) Information presented as part of APPENDIX "D" when necessary for clarification.

4. Mineral(s) to be mined: Bentonite
Mining method to be used: Surface Mining

5. Estimated dates of commencement and termination of the proposed operation:
Start: 2030 Terminate: 2040

6. The total number of acres in the proposed permit (amendment) area and an estimate of the total number of acres to be affected by the operation:

Permit Acres		Approved Acreage to Affect		Surface Ownership	
Original Permit	14970.34	Original Permit	2336.52	No. of Federal Acres	1752.27
Approved Amendments	2906.19	Approved Amendments	738.19	No. of State Acres	825
This Application	600	This Application	177	No. of Private Acres	15899.26
Total Acres	18476.53	Total Acres	3251.71	Total Acres	18476.53

7. The name, if any, by which the permit (amendment) lands or any part thereof are known:
Colony Mine Permit 267C

8. The nearest town or city: Alzada, MT

9. A filing fee of $100.00 ($200.00 for amendments) plus $10.00 for each acre in the request permit (amendment) area. For any single permit (amendment) the maximum fee shall not exceed $2,000.00.

10. Plan or plans of the applicant, including maps for the proposed mining operation and the reclamation of all affected lands as required by W.S. §35-11-406(b) and Chapter 2, Sec. 2 of the Land Quality Rules and Regulations.

11. Each application **for coal mining operations** shall also contain:

(a) Additional information as required in Chapter 2, Section 2 of the Land Quality Division Coal Rules and Regulations;

(b) A certification that the applicant has a public liability insurance policy in force for the proposed mining and reclamation, as required by W.S. §35-11-406(a)(xiii) and Land Quality Division Coal Rules and Regulations Chapter 12, Section 2.;

(c) A listing of all notices of violations required by W.S. §35-11-406(a)(xiv).

12. The following obligations are incumbent upon the applicant upon approval of this application:

(a) The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit, to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

(b) The operator shall allow the Director, the Administrator and/or his authorized representatives, at reasonable times and upon presentation of appropriate credentials, to enter upon and have access to any and all lands covered by this permit and amendments thereto and to inspect and copy any records or documents, obtain or monitor any samples or sampling, for any activities associated with the operation and permit.

(c) The following shall also apply **for coal mining operations:**

(i) The operator shall conduct his operation in a manner which prevents violation of any other applicable State or Federal law.

Initial J.S. Date 2-10-16

Permit No.
Temporary Filing No. Lo 1197

(ii) The operator shall take all possible steps to minimize any adverse impact to the environment or public health and safety resulting from noncompliance with his approved mining and reclamation plan and other terms and conditions of any permit or license, including monitoring to define the nature of the noncompliance and warning of any potentially dangerous condition.

(iii) The operator shall conduct all operations in accordance with his approved mining and reclamation plan and with any special conditions of the permit or license attached thereto.

(iv) All reclamation fees shall be paid as required by Title IV, P.L. 95-87, for coal produced under the permit for sale, transfer or use.

MAR 0 2 2016

FINAL SWORN STATEMENT

State of Wyoming)
) ss
County of Crook)

I Joel Severin being duly sworn on my oath that I am the applicant (President or Vice President if the applicant is a corporation) for the foregoing permit (amendment); that I have read the said application and fully know the contents thereof; that all statements contained in the permit (amendment) application are true and correct to my best knowledge and belief; by execution of this statement I certify that Bentonite Performance Minerals, applicant or entities controlled by or under common control with the applicant has the right and power by the legal estate owned to mine from the land for which this permit (amendment) is desired; that applicant or entities controlled by or under common control with the applicant has not forfeited, or is not involved in forfeiture proceedings for, a bond posted for reclamation purposes; and if a **surface coal mining application**, that applicant or entities controlled by or under common control with the applicant has paid the reclamation fees for this and all coal mining operations under the jurisdiction of P.L. 95-87 as required by Title IV of that law; and that applicant or entities controlled by or under common control with the applicant has not had any Federal or State coal mining permits suspended or revoked in the five years preceding the date of this application.

Dated this 10th day of February, 2016.

Signature Joel Severin

(Corporate Seal)

Name Joel Severin
(Printed or typed)

Title Colony Mine Manager

The foregoing instrument was acknowledged before me by Joel Severin this 10 day of February, 2016.

Witness my hand and official seal.

Linda K Burch
(Notary Public or Secretary if a Corporation)

Linda K Burch
(Name printed or typed)

(Notary Seal)

LINDA K. BURCH
Notary Public
Crook County
Wyoming

My Commission Expires: April 15, 2017

Initial J.S. Date 2-10-16

Permit No.
Temporary Filing No. to 1197

THE STATE OF WYOMING)
)ss
DEPARTMENT OF ENVIRONMENTAL QUALITY)

MAR 0 2 2016

This is to certify that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit/coal renewal/amendment grants only the right to affect the land described in Appendix "C" of the application.

Acceptance of the approved permit/coal renewal/amendment obligates the operator to abide by the standard conditions specified in Item No. 12. of this application form. Any condition and/or special condition attached to approval of this permit/coal renewal/amendment shall supersede and/or replace any conflicts with the original permit, amendments, coal renewals or any other revision.

Additional special conditions and limitations are as follows:

Approved:_____
Administrator
Land Quality Division
Department of Environmental Quality

Approved:_____
Director
Department of Environmental Quality

Effective Date:_____

Initial J.S. Date 2-10-16

Permit No._____
Temporary Filing No. 6 1/197

BEFORE THE

ENVIRONMENTAL QUALITY COUNCIL

STATE OF WYOMING

IN THE MATTER OF OBJECTIONS)
TO THE APPLICATION OF A)
MINING PERMIT AMENDMENT BY)
ROBERT LEFAIVRE,)
PERMIT NO. 503, TFN 1 1/338)

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

Pursuant to notice duly given to all parties in interest, this matter came on for hearing on May 15, 1986, at 10:00 a.m. in the City Hall Council Chambers Room, 212 D Street, Rock Springs, Wyoming. Mr. John V. Crow, a member of the Environmental Quality Council, presided as hearing officer. Mr. David B. Park, a member of the Environmental Quality Council, was also in attendance.

The Applicant, Robert LeFaivre, appeared and was represented pro se. The protestants, Charles M. Love and Steven D. Creasman, appeared and were represented pro se. The Department of Environmental Quality, Land Quality Division, was represented by Mr. Weldon S. Caldbeck, Senior Assistant Attorney General.

With all parties participating in the hearing, the Environmental Quality Council, having taken this matter under advisement, having been fully advised, and having considered all the testimony and evidence submitted by the parties now makes its Findings of Fact, Conclusions of Law and Order.

FINDINGS OF FACT

1. Robert C. LeFaivre, (the Applicant), has filed an application with the Department of Environmental Quality, Land Quality Division, (the Department), TFN 1 1/338, for an amendment to Mine Permit No. 503.

2. Mine Permit No. 503, issued by the Department on June 25, 1980 is in the name of Western Aggregates of Mineral and Rock, Inc. The application for an amendment to Mine Permit No. 503, TFN 1 1/338 is in the name of Robert C. LeFaivre.

3. Permit No. 503 is a small mining permit as the surface mining operations do not involve more than ten thousand (10,000) yards of overburden and ten (10) acres of affected land in any one (1) year. The permit amendment would not change this designation.

4. Public notice of the permit amendment application was accomplished by publication in the Green River Star once a week for two consecutive weeks, to wit: March 13, 1986 and March 25, 1986.

5. Mr. Charles M. Love, Professor, Anthropology and Geology, Western Wyoming College, and, Mr. Steven D. Creasman, Director, Archaeological Services, Western Wyoming College, filed timely objections to a portion of the mine permit amendment application.

6. The Protestants' objections are applicable only to the NW¼ of Section 18, T21N, R101W, Sweetwater County, Wyoming. This area will hereinafter be described as the Natural Corrals.

7. Public notice of the public hearing conducted relative to the aforesaid permit objections was printed and published once a week for two consecutive weeks, prior to the hearing, in the Casper Star-Tribune and the Rock Springs Daily Rocket-Miner.

8. Permit amendment application, TFN 1 1/338, covers two non-contiguous parcels of property. The first parcel is a building stone collection area located at the Natural Corrals. The second parcel is a millsite located south of Interstate 80 in the SW¼ NW¼, Section 10, T19N, R103W, Sweetwater County, Wyoming. No objections have been filed against the proposed operation in the second parcel.

9. The United States of America owns the surface and mineral rights for the land identified as the Natural Corrals. The land is managed by the Department of Interior, Bureau of Land Management.

10. The Applicant did not present any direct evidence at the hearing in support of his application, but he chose to rely on his application and documents submitted to the Department to support his application.

11. Applicant's permit amendment application for the area around the Natural Corrals is to allow the mining of large blocks of rock for

sale as building stone. The mining and reclamation plan summary indicates that no excavation, earthmoving or roadbuilding will be conducted at the mine site. Surface rocks will be removed whole or cut and split on-site and then removed. Overland travel will be by four wheel drive with the possible use of horses and helicopters. Operations will be conducted to avoid streams, springs, marshy areas and drainages. Trees and large shrubs will be preserved. There may be a need to house employees on site using small travel trailers or skid mounted buildings. The mining and reclamation plan summary further states that if significant environmental concerns are identified during the inspection, then alternate sites and or methods will be developed by the operator.

12. The Applicant's mining and reclamation plan summary does not identify any existing archaeological, cultural or recreational values at the proposed site located around the Natural Corrals. Accordingly, no proposals or statements are made on how such values will be reclaimed, or will be affected.

13. The area of the Natural Corrals is a small portion of a much larger area known as Zirkel Mesa. The building stone material present in the Natural Corrals consists of large boulders which are the result of a lava flow.

14. Contrary to the assertions of the Applicant, evidence at the hearing demonstrated that the boulders in the Natural Corrals are of the same mineralogy and petrology as boulders in other sections of the Zirkel Mesa, and other areas of the mesa are more accessible.

15. The Natural Corrals has unique archaeological values, including shallow sites of two or three different types of Indian pottery, beads, trade beads, leather fragments, soapstone, pipes, projectile points, stone tool fragments, various types of obsidian and bone tools, and the only occurrence of mammoth tusk known in southwestern Wyoming. Current data suggests the area has been intermittently occupied by prehistoric and historic populations for the last 11,000 years.

16. The spring located immediately adjacent to the Natural Corrals has a good deal of geologic deposition. The stratigraphy within the spring or immediately adjacent to the spring could yield a valuable climatological, wildlife and human occupation sequence.

17. Ice caves at the Natural Corrals contain extensive archaeological values that are unique and therefore cannot be reclaimed.

18. Known archaeological sites at the Natural Corrals are very shallow and would be irreparably destroyed by mining disturbance.

19. Removal of any stones or boulders around the Natural Corrals could precipitate an erosion process which would adversely affect the shallow archaeological resources.

20. The natural placement of the boulders around the Natural Corrals is integral to the total environment; and removal of any of the boulders would affect the entire site.

21. The area of the Natural Corrals has been used as a recreational area by the citizens of Sweetwater County for many years, and in particular has been extensively used by the Town of Superior. The use has been of such duration and nature that the use itself has caused the site to have historic importance to Wyoming.

22. The Natural Corrals has a combination of available water, food and shelter not otherwise available in the desert terrain and, consequently, the area is a habitat for abundant and varied wildlife.

23. Access to the Natural Corrals is by a two-track dirt road, which is in poor condition, and has not been maintained as it has been closed to public vehicle use by the Bureau of Land Management.

24. The Natural Corrals is currently being considered for nomination on the National Register of Historic Places. In June, 1982, the Natural Corrals was designated as an area of critical environmental concern by the United States Department of Interior, Bureau of Land Management.

25. The management objectives of the Bureau of Land Management for the Natural Corrals, as stated in "Natural Corrals Area of Critical

Environmental Concern Management Plan" (DEQ Exhibit #4), include protection of this area from the degradation of its cultural, recreation, and geologic values.

26. The botany of the Natural Corrals is unusual for the southwestern part of Wyoming. Disturbance by mining would cause perhaps irreversible changes to both the vegetative and water regimes of the area.

27. The historic, archaeologic, recreation, and wildlife values which make the Natural Corrals area unique are irreplaceable, and if disturbed by the proposed mining activity, could not be reclaimed.

CONCLUSIONS OF LAW

1. The Environmental Quality Council has jurisdiction over both the subject matter and parties to this proceeding.

2. Due and proper notice of the hearing in this matter has been given in all respects as required by law and, specifically, by Section 35-11-406(k), Wyoming Statutes, 1977, as amended.

3. The policy and purpose of the Wyoming Environmental Quality Act is to enable the State to prevent, reduce and eliminate pollution, to preserve, and enhance the air, water and reclaim the land of Wyoming and to plan the development, use, reclamation, preservation and enhancement of the air, land and water resources of the State.

4. The archaeological, historic, recreational, and wildlife values which are unique to the Natural Corrals area must be preserved and enhanced in accordance with the policy and purpose of the Environmental Quality Act.

5. Section 35-11-402, Wyoming Statutes 1977, as amended, requires that land must be reclaimed to its highest previous use.

6. The Applicant has presented no evidence to demonstrate that the Natural Corrals can be reclaimed to its archaeological, historic, wildlife, and recreational use.

7. Section 35-11-406(m)(iii), Wyoming Statutes 1977, as amended, provides that a permit may be denied if any part of the proposed operation, or reclamation program, or proposed future use is contrary to the law or policy of this state, or the United States.

8. The Applicant bears the burden of proving that his application is complete and that it meets all legal requirements; and has failed to demonstrate that this burden has been met insofar as the Applicant seeks to amend Permit No. 503 to include the Natural Corrals.

9. As no objections were filed, and no evidence was presented in regard to the addition of the millsite area to Permit No. 503, this portion of the permit amendment application should be granted as it is complete.

ORDER

WHEREFORE, PURSUANT TO W.S. 35-11-112(c)(ii), IT IS HEREBY ORDERED THAT:

The Director of the Department of Environmental Quality and the Administrator of its Land Quality Division shall issue the permit amendment, TFN 1 1/338 to Robert LeFaivre, to conduct the proposed operations for a millsite which will be located within the SW¼ NW¼, Section 10, T19N, R103W, Sweetwater County, Wyoming, conditioned upon Mr. LeFaivre's demonstration to the satisfaction of the Land Quality Division, that he is the rightful holder of Permit No. 503. Said operations shall at all times be conducted in accordance with the Wyoming Environmental Quality Act and the rules and regulations promulgated thereunder.

IT IS FURTHER ORDERED that no permit shall be issued for the area described in TFN 1 1/338 for lands located within the NW¼, Section 18, T21N, R101W, Sweetwater County, Wyoming.

DATED this 22 day of July, 1986.

ENVIRONMENTAL QUALITY COUNCIL

Harold L. Bergman

Harold L. Bergman
Chairman

CERTIFICATE OF SERVICE

I, Terri A. Lorenzon, certify that at Cheyenne, Wyoming, on the 25th day of July, 1986, I served a copy of the foregoing Findings of Fact, Conclusions of Law and Order, by depositing copies of the same in the United States mail, postage prepaid, duly enveloped and addressed to:

Charles M. Love
Steven D. Creasman
Western Wyoming College
2500 College Drive
Rock Springs, WY 82901

Robert LeFaivre
Apartment No. 1
Little America, WY 82929

and by interoffice mail of the same date to;

Randolph Wood, Director
Department of Environmental Quality
122 W 25th Street, Herschler Building
Cheyenne, WY 82002

Roger Shaffer, Administrator
Land Quality Division
Department of Environmental Quality
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Section 2.9.3.45 WY State Lease 42804 (WSL04) Wildlife Report

This section comprise the wildlife baseline study for the Wyoming State Lease 42804 permit area. The methodology and data presented conform to those specified in Section 2.9.2.

The claims that are included in WSL04 permit area are as follows (also refer to the Project Boundary Map 1.7-1)

Amendment Areas	Legal	Total Acres
	SE4SW4, SW4SE4 Section 30 T57N R62W	80
Wyoming State Lease 42804	NE4, E2NW4, SW4, NW4SE4 Section 31T57N R62W	440
	W2NW4 Section 32 T57N R62W	80
		600

The wildlife information for the WY State Lease 42804 permit area was prepared by Amber Travsky of Real West Natural Resource Consulting, in 2014.

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1.0 INTRODUCTION

Bentonite Performance Minerals (BPM) proposes to amend their existing 267C mine permit to include the Wyoming State Lease 42804 claim. This 600-acre site is approximately 8 miles west of the BPM plant at Colony. It is located in T57N, R62W, SE ¼ SW ¼ and SW ¼ SE ¼ Section 30; W ½ NW ¼ Section 32; and most of Section 31. The purpose of this report is to document the pre-mining wildlife on the site and identify potential areas of concern.

2.0 HABITAT DESCRIPTION

The WSL04 amendment site covers 600 acres on rolling to hilly terrain approximately 8 miles west of the BPM processing plant at Colony. The Belle Fourche River is located 0.6 miles to the east, 1.35 miles to the north and 1.6 miles to the northeast since it forms an inverted U-shaped meandering corridor near the permit area. Green Mountain is located in the northwest quarter of the amendment area where the elevation rises to 3,754 feet at the summit. The lowest elevation on the site is 3,585 feet at the southern edge of the site.

As shown in Table 2-1, the dominant habitat on the site is woodland followed by mixed grass prairie. Other habitats include bottomland meadow, open water/marsh and disturbed. Photographs of all habitat types are in Addendum A. The woodland habitat is found throughout the permit area but is most prevalent on steeper hillsides and hill summits. The mixed grass prairie habitat is found in the basins between the timbered hillsides. A large reservoir is located in the center of the site along the eastern border while three small livestock ponds are also on the site, with one in the north, one in the south, and one on the west-central boundary. Marsh habitat is found on the perimeter of the four reservoirs. A strip of bottomland meadow follows the drainage bottom as it exits the larger reservoir.

A second strip of bottomland meadow is in another drainage bottom near the southern boundary of the amendment area. A small patch of disturbed habitat from previous mining is found in the extreme southeastern corner of the site. Each of these habitats is described in more detail below.

Table 2-1. Approximate acreages and percentages for the habitats on the WSL04 Amendment Site.

Habitat Type	Acreage on the Amendment Area		Disturbance Areas (acres)
	Acres	Percentage	
Woodland Habitat	196.9	32.8%	89.00
Mixed Grass Prairie Habitat	390.63	65.1%	86.23
Bottomland Meadow Habitat	2.8	0.4%	0.23
Open Water/Marsh Habitat	3.32	0.5%	0.20
Disturbed Habitat	6.35	1.0%	1.34
TOTAL	600 acres	100%	177.0

2.1.1 Woodland Habitat

The woodland habitat covers approximately 390.63 acres or 65.1 % of the amendment area. This habitat is dominated by an overstory of bur oak (*Quercus macrocarpa*), Rocky Mountain juniper (*Juniperus scopulorum*), and ponderosa pine (*Pinus ponderosa*). Shrubs are sparse but include currant (*Ribes* spp.) and snowberry (*Symphoricarpos albus*). Forbs in the woodland understory include bastard toadflax (*Comandra umbellata*), western yarrow (*Achillea millefolium*), American vetch (*Vicia americana*), threadleaf phacelia (*Phacelia linearis*), and rose pussytoes (*Antennaria rosea*). Grasses include sandberg bluegrass (*Poa secunda*), prairie junegrass (*Koeleria macrantha*), and slender wheatgrass (*Elymus trachycaulus*). Additional species found in this habitat are listed in Appendix D8, Vegetation.

2.1.2 Mixed Grass Prairie Habitat

The mixed grass prairie habitat covers approximately 196.9 acres or 32.8% of the amendment area. Big sagebrush (*Artemisia tridentata*) is the most common shrub in this habitat type, although it comprises less than 2% of the coverage. There are scattered patches with higher density sagebrush but these patches were not prevalent and therefore did not constitute a separate habitat type. Grasses include sandberg bluegrass, slender wheatgrass, prairie junegrass, and

buffalograss (*Buchloe dactyloides*). Forbs include bastard toadflax, common yarrow, silvery lupine (*Lupinus argenteus*), and American vetch (*Vicia americana*).

2.1.3 Bottomland Meadow Habitat

The bottomland meadow habitat covers approximately 2.8 acres or 0.4% of the amendment area. It is found along three drainage bottoms. One drainage bottom runs parallel to and then diagonally to the south along the southern amendment area boundary approximately 120 meters north of the boundary. The second can be found along the west-central edge of the permit boundary. The final strip of bottomland meadow is found on the west side of the dam that creates the largest reservoir on the amendment area. The bottomland meadow follows the drainage bottom for approximately 300 meters. As the drainage banks steepen and the drainage bottom narrows, the bottomland meadow habitat disappears or becomes a narrow strip less than a yard wide, alongside the rill of water that might be flowing or small pool patches that might persist into the summer in the drainage bottom.

The bottomland meadow is dominated by hydrophytic plant species including sedges (*Carex* spp.) with Baltic rush (*Juncus balticus*) and patches of bulrush (*Scirpus* spp.). Other species include redtop (*Agrostis gigantea*), meadow foxtail (*Alopecurus pratensis*), and sandberg bluegrass.

3.1.4 Open Water/Marsh Habitat

There are four reservoirs on the amendment area covering a total of 3.32 acres. The largest, covering approximately 2.72 acres, is located near the east-central boundary of the site. The three additional stock ponds cover 0.23, 0.20 and 0.17 acres. The largest of the three is located in the northern portion of the site while the 0.17-acre pond is on the west-central edge of the amendment area and the 0.20 acre pond is in the southern portion. All four reservoirs support emergent vegetation and a perimeter of marsh habitat. This perimeter vegetation is minimal on the three small stock ponds but is significant on the large reservoir. Coverage of open water versus marsh habitat varies not only seasonally but also from year to year. Plant species in the marsh habitat include sedges, Baltic rush, bulrush, and broadleaf cattail (*Typha latifolia*). As the water depth decreases and becomes more variable, the plant species are less water-dependent and

include foxtail barley (*Hordeum jubatum*), sandberg bluegrass, common dandelion (*Taraxacum officinale*), and redtop.

3.1.5 Disturbed Habitat

Approximately 6.35 acres of the amendment area has been previously disturbed by mining. This habitat is along the southeast boundary. This area includes both bare ground and patches of reclaimed vegetation. Plant species present include yellow sweetclover (*Melilotus officinalis*), slender wheatgrass (*Elymus trachycaulus*), needle-and-thread (*Stipa comata*), sandberg bluegrass, and smooth brome (*Bromus inermis*).

3.0 METHODS

The U.S. Fish and Wildlife Service (USFWS) and Wyoming Game and Fish Department (WGFD) were contacted to obtain information on wildlife species and habitats of concern on the amendment area. Their response letters are in Addendum B.

Additional information on wildlife species expected and previously reported in the area was obtained from the U.S. Fish and Wildlife Service Information, Planning, and Conservation System (IPaC) website (USFWS 2014). Supplemental information on potential big game crucial range and sage-grouse core areas as well as sage-grouse connectivity areas on the site or in the vicinity were obtained through the Wyoming Interagency Spatial Database and Online Management (WISDOM) System (WISDOM 2014). This database also provided habitat type listings and the potential for other wildlife, including mammals, amphibians, reptiles and avian species, to inhabit the area.

Amber Travsky, a biologist with Real West Natural Resource Consulting (Real West), conducted wildlife habitat evaluations and surveys on the amendment site on May 15, June 17, 18 and 19, 2014.

Those species that needed to be addressed by site surveys for individuals and suitable habitat include the greater sage-grouse (*Centrocercus urophasianus*), Sprague's pipit (*Anthus spragueii*), northern long-eared bat (*Myotis septentrionalis*), black-tailed prairie dogs (*Cynomys ludovicianus* spp.), mountain plover (*Charadris montaus*), and all raptor species. The potential

for occurrence of those species identified by the USFWS as "Natural Resources of Concern" were also noted. In addition, all species observed were recorded. The surveys were conducted primarily on foot with some coverage via 4-wheel drive vehicle and mountain bicycle.

4.0 RESULTS

4.1 Threatened and Endangered Species

There are no federally threatened or endangered wildlife species expected within the amendment area. Two candidate species, the greater sage-grouse and Sprague's pipit and one proposed species, the northern long-eared bat, have the potential in the vicinity and each is discussed in more detail below. Of these three species, only the greater sage-grouse and northern long-eared bat were listed on the IPaC (USFWS 2014).

4.1.1 Greater Sage-Grouse

The greater sage-grouse was found to be not warranted as a threatened or endangered species by USFW in October 2015. Sage-grouse inhabit foothills, plains, and mountain slopes where sagebrush is present (American Ornithologists' Union 1983) or a mixture of sagebrush, meadows, and aspen is in close proximity.

There are no sage-grouse leks within two miles of the amendment area and the site is outside any sage-grouse core area. Sagebrush coverage is patchy but, overall within the mixed grass prairie habitat, it is less than 2%. While there are areas with higher sagebrush density, these areas are small, typically covering less than 0.10 acre. Due to the lack of sagebrush and other shrub habitat, sage-grouse use of the area would likely be restricted to temporary use as the birds migrate through the area. For this reason, the proposed mining is expected to have "no effect" on the greater sage-grouse.

4.1.2 Sprague's Pipit

Sprague's pipit is a candidate for federal listing (USFWS 2014a). The species is closely tied to native prairie habitat (USFWS 2010). The breeding range is throughout North Dakota; northern

and central Montana east of the Rocky Mountains; northern portions of South Dakota; and northwestern Minnesota. During the breeding season, Sprague's pipits prefer large patches of native grassland with a minimum size requirement thought to be approximately 358 acres to 776 acres. Generally, pipits prefer to breed in well-drained native grasslands with high plant species richness and diversity (Jones, S.L. 2010). They prefer higher grass and sedge cover, less bare ground, and an intermediate average grass height when compared to the surrounding landscape.

Native grassland is present on the amendment area; however, it is intermixed with woodland. The lack of any large open native grassland makes it unlikely the Sprague's pipit would inhabit the site. The location is also on the very edge of the birds' range, making it even less likely pipits would inhabit the amendment area. For this reason the proposed mining will have "no effect" on the Sprague's pipit.

4.1.3 Northern Long-Eared Bat

These bats were listed as Threatened in April 2015. These bats roost predominantly in trees and, to a lesser extent, in man-made structures (USFWS 2013).

The greatest threat to this bat species is the white-nose syndrome disease (USFWS 2013). Other factors impacting the species are loss of forest habitat through development and timber management, mine-land reclamation that closes hibernacula, and wind turbine operations.

Woodland habitat makes up more than half of the amendment area. There is the potential for northern long-eared bats in the area and roosting under bark or within tree crevices.

It was decided through telephone consultation between BPM and WG&F that mitigation was not necessary for this case where no White Nose Syndrome has been recorded. The proposed mining will have "no effect" on the northern long-eared bat.

4.2 Species of Concern

The USFWS response (Addendum B) lists two Species of Concern as potentially occurring in the area: the black-tailed prairie dog (*Cynomys ludovicianus*) and mountain plover (*Charadrius montanus*).

4.2.1 Black-Tailed Prairie Dogs

The black-tailed prairie dog is native to short-grass prairie habitats of western North America where they play an important role, both as an herbivore and as a prey species, in the prairie ecosystem (Hoogland 1995). They avoid heavy brush and tall grass areas due to the reduced visibility these habitats impose.

No prairie dogs or their burrows were observed on or within 0.25 mile of the amendment area although suitable habitat is present. No evidence of past or recent use by this species was found; therefore no impacts to this species will occur with the proposed mining.

4.2.2 Mountain Plovers

The mountain plover was proposed for listing as a threatened species in 1999. On May 11, 2011 the USFWS determined that the mountain plover is not threatened or endangered throughout all or a significant portion of its range. While it is not protected under the Endangered Species Act, it is a migratory bird and, as a result, remains protected under the Migratory Bird Treaty Act. It is also considered a Sensitive Species in the State of Wyoming.

This ground nesting species is typically found in areas of short (less than four inches) vegetation on slopes of less than five percent. Any short grass, very short shrub, or cushion plant community could be considered plover nesting habitat (Parrish et al. 1993), however, mountain plovers prefer shortgrass prairie with open, level or slightly rolling areas dominated by blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) (Dinsmore 1981, Kantrud and Kologiski 1982). While there is mixed grass prairie on the amendment area, it is well vegetated and would not provide suitable habitat for mountain plovers. Due to the lack of suitable habitat, the proposed mining is unlikely to impact this species.

4.3 Migratory Birds of Concern

The USFWS IPAC identified 19 migratory bird species potentially occurring in the amendment area that are identified as Natural Resources of Concern. The species and their preferred habitat are listed in Table 4-1. Also listed is the potential for the species to occur on the amendment area based on suitable habitat. Those species that could occur on the amendment area are discussed in more detail.

Table 4-1. Migratory Birds of Concern potentially within the amendment area.

Common Name	Scientific Name	Preferred Habitat[1]	Potential on Site
American bittern	*Botaurus lentiginosus*	Freshwater marshes with tall vegetation	Unlikely
Bald eagle	*Haliaeetus leucocephalus*	Near lakes, reservoirs, rivers, marshes and coasts.	Possible
Black-billed cuckoo	*Coccynuz erythropthalmus*	Deciduous woods and thickets, especially along large streams.	Unlikely
Brewer's sparrow	*Spizella breweri*	Strongly associated with sagebrush.	Unlikely
Burrowing owl	*Athene cunicularia*	In active or active prairie dog burrow.	Unlikely
Cassin's finch	*Carpodacus cassinii*	Open coniferous forest.	Possible
Dickcissel	*Spiza americana*	Grassland with dense, moderate to tall vegetation and moderately deep litter.	Possible
Ferruginous hawk	*Buteo regalis*	Open country; nests in tall trees, on cliff ledges, river-cut banks, hillsides.	Possible
Golden eagle	*Aquila chrysaetos*	Inhabits open and semi-open country; nests on rock ledges of cliffs or in larger trees.	Possible
Grasshopper sparrow	*Ammodramus svannarum*	Grassland of intermediate height.	Possible
Lewis's woodpecker	*Melanerpes lewis*	Open forest and woodland.	Possible
Loggerhead shrike	*Lanius ludovicianus*	Open country with scattered trees and shrubs.	Possible
Long-billed curlew	*Numenius americanus*	Breeds on prairies and grassy meadows near water.	Possible

Common Name	Scientific Name	Preferred Habitat[1]	Potential on Site
Prairie falcon	*Falco mexicanus*	Nests on rocky cliff or steep embankment.	Unlikely
Red-headed woodpecker	*Melanerpes erythrocephalus*	Cottonwood bottoms.	Unlikely
Sage thrasher	*Oreoscoptes montanus*	Sagebrush plains.	Unlikely
Short-eared owl	*Asio flammeus*	Generally nests on high ground or upland sites; forage and nests on open land with low vegetation.	Possible
Swainson's hawk	*Buteo swainsoni*	Nests in trees; forages on open terrain with scattered trees.	Possible
Upland sandpiper	*Bartramia longicauda*	Short grassland habitat; nests on ground among grasses.	Possible

[1]Habitat information obtained from:

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer.

Dorn J.L and R.D. Dorn. 1990. Wyoming Birds. Mountain West Publishing, Cheyenne, WY. 139 pp.

4.3.1 Bald Eagle

Winter roosting habitat for bald eagles most commonly includes areas close to (within 4 km) of coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, and seabirds (Andrew and Mosher 1982, Green 1985, Campbell et al. 1990). Bald eagles preferentially roost in conifers or other sheltered sites in winter in some areas and they typically select larger, more accessible trees (Buehler et al. 1991, 1992).

Woodland habitat is plentiful on the amendment area although the site lacks large bodies of water to provide a winter food source. Due to the plentiful woodland habitat, there is the potential for temporary winter roosting on the site and in the vicinity. It is unlikely bald eagles would inhabit the area for any length of time due to the lack of winter food sources. The selection of this area by an individual bald eagle would be due to chance rather than being attracted to any habitats in the area. Eagle roost surveys were performed by BPM Environmental Specialist, Jennifer Hartman, according to the Newcastle, WY BLM field office protocols. No eagle roosts were observed during these surveys. For this reason, while an individual bird could

be displaced by mining activities, the proposed mining is expected to have no impact on bald eagles.

4.3.2 Cassin's Finch

The Cassin's finch inhabits coniferous and mixed forests that are usually somewhat open. They are also known to enter towns in the winter. They are known to occur in all the mountain ranges of Wyoming with the exception of the Black Hills (Dorn and Dorn, 1990). Since the amendment area is within the Black Hills region of Wyoming, while suitable habitat is present, the occurrence of this species is unlikely except when migrating through the area.

4.3.3 Dickcissel

Dickcissels typically inhabit tall grass habitat and are found along the eastern edge of Wyoming (Dorn and Dorn 1990). Nests are elevated in grasses, forbs, shrubs, or trees and are less commonly found on the ground (NatureServe 2014). The primary threat to these birds appears to be heavy mortality during the non-breeding season when the birds are very concentrated in relatively few nocturnal roosts. Suitable habitat is present on the amendment area and there is the potential for this species within the site or in the vicinity.

4.3.4 Ferruginous Hawk

This species prefers unbroken, semiarid grassland with elevated nesting sites such as trees, rock outcrops, hills and ridgelines (Johnsgard 1990). Ferruginous hawks are closely associated with areas that contain high densities of rodents and lagomorphs (Johnsgard 1990).

Suitable nesting habitat, in the form of trees, is common on the amendment area and there is the potential for this species to both nest and forage in the area. No nests were observed during the 2014 surveys by Real West and no ferruginous hawks were observed on the amendment are or in the vicinity. However, there is the potential for these raptors to nest in the vicinity. Should an active raptor nest become established prior to the initiation of mining activities, construction should be avoided within 1.0 mile of any active ferruginous hawk nest during the nesting season.

4.3.5 Golden Eagle

Golden eagles typically nest on the rock ledges of cliffs but they also nest occasionally in large trees (NatureServe 2014). Due to the prevalence of woodland habitat on the amendment area, there is the potential for this species to nest in the area. No golden eagles or nests were observed during the May and June 2014 surveys and it is unlikely eagles were nesting in the vicinity at that time since no golden eagles were observed. However, there is the potential for golden eagles to nest in the vicinity. Should an active raptor nest become established prior to the initiation of mining activities, construction should be avoided within 0.5 mile of any active golden eagle nest during the nesting season.

4.3.6 Grasshopper sparrow

These sparrows prefer grasslands of intermediate height and are often associated with clumped vegetation interspersed with patches of bare ground (Bent 1968, Blankespoor 1980, Vickery 1996). Other habitat requirements include moderately deep litter and sparse coverage of woody vegetation (Smith 1968, Bent 1968). The sparrow prefers moderately open grasslands and prairies with patchy bare ground, avoiding extensive shrub cover (Vickery 1996). Suitable habitat is present on the amendment area and there is the potential for this bird on the site.

4.3.7 Lewis's Woodpecker

This woodpecker breeds in open forest and woodland that have often been logged or burned, including oak, coniferous forest (primarily ponderosa pine), riparian woodland and orchards (AOU 1983). It is found less commonly in pinyon-juniper. Since suitable habitat is present on the site and in the vicinity, there is the potential for this species to occur on the amendment area.

4.3.8 Loggerhead Shrike

This species prefers relatively open country with scattered trees and shrubs, savanna, desert scrub (southwestern U.S.), and, occasionally, open woodland; it often perches on poles, wires or fenceposts (AOU 1983). Suitable hunting perches are an important part of the habitat (Yosef and Grubb 1994). Loggerhead shrikes nest in shrubs or small trees (deciduous or coniferous) and, in northern latitudes, nest sites include spruce and fir trees (Bent 1950, Brooks 1988). Suitable habitat is present on the site and in the vicinity; therefore, it is possible that this species inhabits the amendment area.

4.3.9 Long-billed Curlew

This shorebird breeds on prairies and grassy meadows, generally near water and it nests in dry prairies and moist meadows (AOU 1983). Nests are usually on the ground in flat area with short grass, sometimes on more irregular terrain, often near rock or other conspicuous structures.

Grassland structure is an important component of long-billed curlew habitat. Long-billed curlews in Nebraska used areas in which 75 percent of the total vertical vegetation density (number of plant contacts with a thin rod inserted vertically into the canopy) was found at heights <10 cm (Dechant et. al. 2003). Preference for areas in which vegetation density is concentrated near ground level may be important in terms of the feeding behavior of long-billed curlews or their ability to see potential predators. Suitable habitat is present on the amendment area and in the vicinity; therefore, it is possible this species inhabits the site.

4.3.10 Short-eared Owl

The short-eared owl ranges over mid and tall grasses and marshes, often hunting during daylight (Sibley 2000). Small rodents, especially voles *(Microtis spp.),* compose a preponderance of its diet, and there have been strong shifts between years in the density and location of breeding owls, depending on fluctuating food resources (Wiggins 2004). The abundance of prairie voles in central South Dakota was positively correlated with vegetation variables that measured the height and density of the vegetation and litter, although vole abundance seemed to be correlated with litter rather than the seral stage of prairie vegetation (Fritcher 1998). Short-eared owls build their nests on the ground in open country (Clark 1975), and nests found in the Dakotas have been in cover about 12 to 24 inches high and were well concealed from the sides (Duebbert and Lokemoen 1977). Suitable habitat is present on the amendment area and in the vicinity; therefore, it is possible this species inhabits the site. Should an active nest become established prior to the initiation of mining activities, construction should be avoided within 0.25 mile of any active short-eared owl nest during the nesting season.

4.3.11 Swainson's Hawk

Swainson's hawks inhabit open country such as grassland, shrubland, and agriculture areas (NatureServe 2014). They also are found within urban areas. These raptors nest in trees, usually

those bordering agricultural fields, in wetland borders, and on abandoned farms. Due to the prevalence of woodland habitat on the amendment area, there is the potential for this species to nest in the area. No Swainson's hawks or nests were observed during the May and June 2014 surveys and it is unlikely these hawks were nesting in the vicinity at that time since none were observed flying in the area. However, there is the potential for Swainson's hawks to nest in the vicinity. Should an active nest become established prior to the initiation of mining activities, construction should be avoided within 0.25 mile of any active nest during the nesting season.

4.3.12 Upland Sandpiper

The upland sandpiper prefers meadows and hay fields (Dorn and Dorn 1990). Since mixed grass prairie is common on the site and in the vicinity, there is the potential for this species on the amendment area.

4.4 Big Game

Four big game species occur in the amendment area: elk (*Cervus canadensis*), pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus)*, and white-tailed deer (*Odocoileus virginianus*). All four species were observed on the amendment area during the May and June 2014 surveys. The amendment area lacks designated crucial range, parturition areas, or migration routes for all of these big game species (WISDOM 2014).

The proposed amendment area is within yearlong range for the North Black Hills pronghorn herd and the Black Hills mule deer herd. The proposed mining is unlikely to have a permanent effect on big game since no crucial habitats are present. Displacement of individuals is possible during mining but suitable habitat is in the vicinity.

In the correspondence from the WGFD (Addendum B), it is recommended that reclamation efforts include legume, shrub and tree planting that will benefit mule deer. In addition, they suggest reclamation efforts should not emphasize pond construction on abandoned mine sites. Instead, upland reclamation is preferred. This will reduce habitat available for the arthropod vectors of West Nile Virus, Blue Tongue Virus, and Epizootic Hemorrhagic Disease which can severely impact local sage-grouse and mule deer populations. Pond re-construction has been

requested by the surface owner, ponds will be designed with steeper banks, than existing, to reduce mud flat development and minimize mosquito and midge reproduction.

4.4 Upland Game Birds

Wild turkeys (*Meleagris gallopavo*) inhabit somewhat open woodlands, especially ponderosa pine or riparian areas (Dorn and Dorn 1990). Wild turkeys were observed on the amendment area during the May and June 2014 surveys. Individual birds could be displaced by mining activity but similar woodland habitat is common in the vicinity.

Sharp-tailed grouse (*Tympanuchus phasianellus*) require a mosaic of dense grass and shrubs with rich forb and insect foods during nesting and brood-rearing. During winter, sharp-tails often rely on riparian areas and other sites that support deciduous trees and shrubs for feeding, roosting, and escape cover; they also utilize non-native cultivated grains and hedgerow species (Parker 1970, Oedekoven 1985). Suitable habitat is present but is not abundant on the amendment area; therefore the proposed mining is not expected to have any impact on this species.

4.5 Raptors

No active raptor nests were located on the amendment area. One small stick nest was observed approximately 0.10 mile outside the extreme northeast corner of the amendment area (Latitude 44.8995; Longitude 104.33588). This stick nest, approximately 25 feet off the ground, is shown in Photo A-12, Addendum A. The nest was in fair condition but, based on the size, may have been an old black-billed magpie (*Pica hudsonia*) nest instead of a raptor nest.

Three raptors were observed flying over the amendment area during the May and June 2014 surveys: golden eagle, northern harrier (*Circus cyaneus*), and turkey vulture (*Cynomys ludovicianus*). Vocalizations from a great horned owl (*Bubo virginianus*) were heard at night but no owls were observed. During the January and February 2016 surveys, one golden and one bald eagle were observed flying over and vocalizations from a great horned owl were heard in the evening, but no owls were observed.

Suitable raptor nesting habitat is plentiful on the amendment area in the woodland habitat. Additional raptor species that could utilize the site and vicinity for foraging and nesting include red-tailed hawks (*Buteo jamaicensis*), Swainson's hawks, American kestrels (*Falco sparverius*), ferruginous hawks, and prairie falcons (*Falco mexicanus*). Rough-legged hawks (*Buteo lagopus*) likely forage in the area during the winter.

No active raptor nests were observed during the 2014 surveys and it is unlikely raptors were nesting in the vicinity at that time since none were seen or heard. However, there is the potential for raptors to nest in the vicinity. Should an active nest become established prior to the initiation of mining activities, construction should be avoided within 0.25 mile of any active raptor nest during the nesting season. The exception is a 1-mile buffer for ferruginous hawks. If an active bald eagle nest is found, the USFWS should be contacted to determine the spatial buffer distance.

4.6 Waterfowl and Shorebirds

There are four reservoirs within the amendment area, as described in Section 3.1.4. Waterfowl were most abundant on the largest reservoir but mallards (*Anas platyrhynchos*) were observed on the northern and southern ponds as well. Mallards with chicks were observed on the large reservoir, indicating nesting occurred at that body of water. The only other waterfowl observed were Canada geese (*Branta canadensis*) but it is likely a number of other species utilize the ponds either as nesting areas or as temporary resting areas. The only shorebird observed was the killdeer (*Charadrius vociferous*), while sandhill crane (*Grus canadensis*) vocalizations were heard in the early evening.

4.7 Passerine Birds

A number of passerine bird species were observed on the amendment area and are listed in Table 4-2. Species observed and expected are those typically inhabiting prairie and woodland habitats.

There is the potential for mining activities to disturb and destroy active passerine bird nests if construction occurs during the nesting season, typically from May 1 through July 15. Due to the abundance of similar habitat in the vicinity, no impacts to passerine bird populations are expected.

4.8 Other Mammals

During the site surveys all wildlife species observed were noted and identified. The only mammals observed that have not been mentioned in previous sections is the desert cottontail (*Sylvilagus audubonii*), white-tailed jackrabbit (*Lepus townsendii*), and red squirrel (*Tamiasciurus hudsonicus*). In addition, sign was observed for the coyote (*Canis latrans*) and the northern pocket gopher (*thomomys talpoides*).

Based on geography and habitat, those mammal species potentially occurring on the site not counting big game species already mentioned are listed in Table 4-3.

While individual animals may be disturbed during mining operations, similar habitat is in the vicinity; therefore the proposed mining is not expected to impact any small mammal populations.

Table 4-3. Additional mammal species potentially occurring within the WSL04 amendment area.

Common Name	Scientific Name
Long-legged myotis	*Myotis volans interior*
Big brown bat	*Eptesicus fuscus*
Townsend's big-eared bat	*Plecotus townsendii pallescens*
Silver-haired bat	*Lasionycteris noctivagans*
Hoary bat	*Lasiurus cinereus*
Long-eared myotis	*Myotis evotis*
Northern grasshopper mouse	*Onychomys leucogaster*
White-footed mouse	*Peromyscus leucopus*
Deer mouse	*Peromyscus maniculatus*
Western harvest mouse	*Reithrodontomys megalotis*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
Least chipmunk	*Tamias minimus*
Plains pocket gopher	*Geomys bursarius*
Northern pocket gopher	*Thomomys talpoides*
Hispid pocket mouse	*Chaetodipus hispidus*
Olive-backed pocket mouse	*Perognathus fasciatus*
Prairie vole	*Microtus ochrogaster*
Meadow vole	*Microtus pennsylvanicus*
Long-tailed vole	*Microtus longicaudus longicaudus*
Bushy-tailed woodrat	*Neotoma cinerea*
White-tailed jackrabbit	*Lepus townsendii*
Desert cottontail	*Sylvilagus audubonii*
Porcupine	*Erethizon dorsatum*
Long-tailed weasel	*Mustela frenata*
Striped skunk	*Mephitis mephitis*
Badger	*Taxidea taxus*
Raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Swift fox	*Vulpes velox*
Red fox	*Vulpes vulpes*
Bobcat	*Lynx rufus*

4.9 Reptiles and Amphibians

Boreal chorus frogs (*Pseudacris maculata*) were present in the reservoirs on the amendment area. It is possible that the northern leopard frog (*Lithobates pipiens*) is also present in the largest reservoir but a positive identification was not made. It is also possible that tiger salamanders (*Ambystoma myvortium*) are present, although none were observed.

The only lizard species expected on the amendment area is the short-horned lizard (*Phrynosoma douglassi*). Snake species potentially occurring in the region are the plains hognose snake (*Heterodon nasicus*), eastern yellowbelly racer (*Coluber constrictor*), pale milk snake (*Lampropeltis triangulum*), bullsnake (*Pituophis melanoleucas*), wandering garter snake (*Thamnophis elegans*), and prairie rattlesnake (*Crotalus viridis*). While individual reptile and amphibian species could be disturbed or even destroyed during mining operations, there is additional suitable habitat in the area. No impacts to reptile or amphibian populations are anticipated.

4.10 Fish

While there are four reservoirs on the amendment area, no evidence of fish in any of the reservoirs was found. It is likely water levels fluctuate considerably and, should water remain during the winter, it likely freezes and prevents the propagation of any fish species.

5.0 MITIGATION

Potential impacts and mitigation measures for wildlife on the WY State Lease 42804 amendment are listed in Table 5-1. Mining activities will result in "no effect" to threatened or endangered wildlife species since none are expected in the area. The site is outside any sage-grouse core area and more than two miles from any occupied lek; therefore no stipulations are needed for this species. Habitat for the Sprague's pipit is lacking or of minimal size to preclude any use aside from temporary migrations through the area; therefore the proposed mining will have "no effect" on this species.

Habitat for the northern long-eared bat is present. It was decided through BPM consultation with WYG&F (via telephone) that mitigation was not necessary for this case where no White Nose Syndrome has been recorded. The proposed mining will have "no effect" on the northern long-eared bat.

No raptor nests were found on the claim site but one small nest in fair conditions was found 0.10 mile outside the permit boundary. Based on the condition and size of the nest, it is unlikely the nest will become active in the future but, should that occur or if any new nest or previously undocumented nest is found prior to the initiation of mining activities, construction should be avoided within 0.25 mile of any active raptor nest during the nesting season. The spatial buffer is 1.0 mile for ferruginous hawks and the distance for bald eagles is variable and should be determined through consultation with the USFWS.

Winter roosting habitat for bald eagles is present although its use by bald eagles is likely only for short-term resting sites due to the lack of any large bodies of water or big game concentration areas that might provide a winter food supply. Bald eagles are more likely to roost along the Belle Fourche River, approximately 0.6 miles northwest of the amendment area. Winter surveys were conducted by BMP personnel in January and February 2016. One bald eagle was confirmed more than 1.0 mile from the site but no bald eagles were observed roosting within the amendment area. If bald eagles are observed consistently on the site, indicating a communal roost might be present, USFWS personnel will be contacted to determine if mitigation is needed. The area will be surveyed for winter bald eagle roost sites prior to and throughout mine activity.

Table 5-1. Summary of Environmental Consequences and Mitigation Measures for the WY State Lease 42804 Amendment Area.

Resource/Impact	Mitigation
Threatened and Endangered Species: No federally listed species are expected on the site.	No mitigation needed.
Proposed Species: Northern long-eared bat	No mitigation needed.
Candidate Species: Sage-grouse: the site is outside any core area and more than two miles from any occupied lek. Sprague's pipit: Suitable habitat is lacking.	No mitigation needed.
Resource/Impact	**Mitigation**

Bald Eagles Roosting habitat is present but winter food source is lacking; use limited to temporary roosting only.	Winter roosting surveys were conducted. Due to the lack of a winter food supply, the establishment of a communal roost site is unlikely. No communal roosts were observed. If a bald eagle nest is found, contact USFWS to determine spatial buffer distance.
Mountain Plover Habitat is lacking and no impacts are expected.	No mitigation needed.
Black-tailed prairie dogs Habitat is present but no prairie dogs or their burrows were observed.	No mitigation needed.
Migratory Birds of Concern Habitat is present for several avian species considered migratory birds of concern.	To minimize potential for destruction of active nests, remove shrub habitat prior to or after the nesting season.
Big Game No crucial or critical range is present.	Reclamation efforts should include legume, shrub and tree planting. Reclamation efforts should not emphasize pond construction. If any ponds are constructed, they should be designed with steep banks to reduce mud flat development.
Game Birds Sharp-tailed grouse: Suitable habitat is lacking. Wild turkeys: Suitable habitat is present and this species was observed in the area.	No mitigation needed.
Raptors No active raptor nests found.	Should an active raptor nest become established prior to the initiation of mining activities, construction should be avoided within 0.25 mile of any active raptor nest during the nesting season and 1.0 mile for ferruginous hawks.
Waterfowl and Shorebirds Stock ponds present; habitat is present but similar habitat is in adjacent areas.	No mitigation needed.
Passerine Birds Prairie and woodland species common; habitat is plentiful in the area.	No mitigation needed.
Other Mammals Prairie and woodland species expected; habitat is plentiful in the area.	No mitigation needed.
Amphibians and Reptiles Amphibian and reptile species possible are those typically found in prairie and woodland habitats; similar habitat is plentiful in the area.	No mitigation needed
Fish Stock ponds are present but fisheries are not established.	No mitigation needed

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ADDENDUM A

Photographs of the Wyoming State Lease 42804 Amendment Site

Photo A-1. The WSL04 amendment site is dominated by a combination of mixed grass prairie and woodland habitats.

Photo A-2. The woodland habitat varies in tree density across the claim site. Stands of bur oak tend to have higher density in areas of new growth.

Photo A-5. Mixed grass prairie is found throughout the permit area.

Photo A-6. Patches of mixed grass prairie include big sagebrush.

Photo A-7. Disturbed habitat is found along the southern boundary of the permit area.

Photo A-8. Bottomland meadow habitat is found immediately west of the largest reservoir on the permit areas.

Photo A-9. A narrow strip of bottomland meadow is found within three drainage bottoms within the claim site.

Photo A-10. Open water is found in several reservoirs on the permit area that also support a perimeter of emergent vegetation.

Photo A-10. The largest reservoir on site covers 2.72 acres and includes open water as well as emergent wetland and marsh around the perimeter.

Photo A-12. A small stick nest was observed in a bur oak tree.

ADDENDUM B

Correspondence from:

Wyoming Game and Fish Department

U.S. Fish and Wildlife Service

WYOMING GAME AND FISH DEPARTMENT

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August 26, 2014

WER 8390.33
Real West Natural Resource Consulting
Permitting Amendment Requirements
Wyoming State Lease 42804 Permit Amendment
760 –acre site approximately 8 miles west of the Colony plant
Bentonite Performance Minerals
Permit 267C
Crook County

Amber Travsky
Owner/Wildlife Biologist
Real West Natural Resource Consulting
1116 Albin Street
Laramie, WY 82072

Dear Ms. Travsky:

The staff of the Wyoming Game and Fish Department has reviewed the Wyoming State Lease 42804 permit amendment for Bentonite Performance Minerals, Inc's 760–acre site which is approximately 8 miles west of the Colony plant in Crook County. We offer the following comments for your consideration.

Terrestrial Considerations:

We have concerns about cumulative losses of winter habitat for deer, especially mule deer, in this part of Wyoming. To minimize impacts to winter habitat, we recommend reclamation measures include legume, shrub and tree plantings that will benefit mule deer. In addition, we suggest reclamation efforts should not emphasize pond construction on abandoned mine sites. Rather, upland reclamation should occur. This also will reduce habitat available for the arthropod vectors of West Nile Virus, Blue Tongue Virus, and Epizootic Hemorrhagic Disease which can severely impact local sage-grouse and mule deer populations, respectively. If any ponds are constructed, they should be designed with steep banks to reduce mud flat development and minimize mosquito and midge reproduction.

The permit area should be surveyed for winter, bald eagle roost sites and for those species of greatest conservation need with delineated seasonal ranges and potential habitat within the permit boundary. The online WISDOM can facilitate wildlife surveys needs.

Aquatic Considerations:

To minimize impacts to the aquatic resources of nearby waterways, we recommend the following:

- Accepted best management practices be implemented to ensure that all sediments and other pollutants are contained within the boundaries of the work area. Disturbed areas that are contributing sediment to surface waters as a result of project activities should be promptly re-vegetated to maintain water quality.

- Equipment should be serviced and fueled away from streams and riparian areas. Equipment staging areas should be at least 300 feet from riparian areas.

- Preventing the spread of aquatic invasive species (AIS) is a priority for the State of Wyoming, and in many cases, the intentional or unintentional spread of organisms from one body of water to another would be considered a violation of State statute and Wyoming Game and Fish Commission Regulation. To prevent the spread of AIS, the following is required:
  1. If equipment has been used in a high risk infested water [a water known to contain Dreissenid mussels (zebra/quagga mussels)], the equipment must be inspected by an authorized aquatic invasive species inspector recognized by the state of Wyoming prior to its use in any Wyoming water during all times of year.

  2. Any equipment entering the state by land from March through November (regardless of where it was last used), must be inspected by an authorized aquatic invasive species inspector prior to its use in any Wyoming water.

  3. If aquatic invasive species are found, the equipment will need to be decontaminated by an authorized aquatic invasive species decontaminator.

  4. Any time equipment is moved from one 4th level (8-digit Hydrological Unit Code) watershed to another within Wyoming, the following guidelines are recommended:
     DRAIN: Drain all water from watercraft, gear, equipment, and tanks. Leave wet compartments open to dry.
     CLEAN: Clean all plants, mud, and debris from vehicle, tanks, watercraft, and equipment.
     DRY: Dry everything thoroughly. In Wyoming, we recommend drying for 5 days in summer (June - August); 18 days in Spring (March - May) and Fall (September - November); or 3 days in Winter (December - February) when temperatures are at or below freezing.

  5. Any equipment used in a Wyoming water that contains AIS, must be inspected before use in another water. Species currently found in Wyoming waters include New

Zealand mudsnail, Asian clam, and curly pondweed. Information on currently affected waters can be found at: http://wgfd.wyo.gov/web2011/Departments/Fishing/pdfs/AIS_WYWATER_MONITOR130005236.pdf

*A list of high risk infested waters and locations in Wyoming to obtain an AIS inspection can be found at: wgfd.wyo.gov/AIS.

Thank you for the opportunity to comment. If you have any questions or concerns, please contact Paul Mavrakis, Sheridan Region Fisheries Supervisor, at 307-672-7418 Ext. 236, or Joe Sandrini, Senior Wildlife Biologist, at 307 746-4646.

Sincerely,

John Kennedy
Deputy Director

JK/mf/gb
cc: USFWS
Chris Wichmann, Wyoming Department of Agriculture, Cheyenne
Paul Mavrakis, Sheridan Region
Justin Binfet, Casper Region
Joe Sandrini, Casper Region

From: Joe Sandrini
To: Jennifer Hartman
Cc: Tyler Tetrault
Subject: [EXTERNAL] Re: WYG&F Letter WER 8390.33
Date: Tuesday, May 03, 2016 11:44:13 AM

Since it is private surface it is really up the landowner.

But, I would encourage you all to look at stock dam designs / fencing options to see if there are some ways to reduce the surface area of shallow water and especially mud forming areas. The mosquito concern is for west Nile virus (which may not be an issue here as you noted few sage grouse in the area) However, the mud leads to concerns with epizootic hemorrhagic disease or EHD in deer and antelope. A little note on EHD from an article in press that I just reviewed:

"EHD is transmitted by the gnat *Culicoides sonorensis*. Deer are particularly susceptible. Whitetail herds can sometimes suffer up to 95 percent mortality. The disease has a fairly simple method of transmission. In late summer and early fall, the gnat breeds in mud around the edges of receding water holes. As animals come to water, they encounter the gnats. Stock ponds expose mud as they dry out and stock tanks that run continuously and overflow also create mud – both contribute to conditions favored by gnats."

Also - cattle and horses can get EHD, but normally it is not a big deal and producers do not even know the animals are sick. All depends upon the strain. EHD is also related to Blue Tongue virus which is spread the same way and can be a problem in sheep.

Hope this helps,

Joe Sandrini
wildlife biologist
Wyoming Game & Fish Dept.
Newcastle, WY
307-746-4646

On Tue, May 3, 2016 at 11:08 AM, Jennifer Hartman <Jennifer.Hartman@halliburton.com> wrote:

> Good morning Joe,
> I am writing for more clarification regarding WYG&F Letter WER 8390.33. I have submitted the amendment application for which the letter was requested to DEQ/LQD District III in Sheridan, WY and we (BPM and DEQ) would like to get WYG&F opinion on the matter of the recommendation that no stock ponds be created in this area. The amendment lands are privately owned and contain state mineral lease. The landowner has requested replacement of all of the ponds that are mined through. Bentonite Performance Minerals (BPM) would like to replace these established ponds for the surface owner as our relationships with

landowners is very important to our business. It is noted that the recommendation states that ponds may be replaced with steep sides slopes, however this practice is not conducive to livestock use and that is what these ponds are constructed for. Establishing steep slopes is a slipping hazard for livestock that utilize the water, we have concern over that and prefer to avoid steep slope construction on stock ponds.
In addition, this area is not located in Sage Grouse Connectivity or Core and none of the amendment area contains sage grouse habitat. Therefore it should have little to no effect on sage grouse.
What is WYG&F's stance on reclaiming pre-mine stock ponds for private landowners? For this case specifically may BPM move forward with stock pond re-establishment as requested by the surface owner?

Jennifer Hartman

Environmental Specialist

554 US Hwy 212
Belle Fourche, SD 57717

Email:
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Office: +1 307-896-8507
Fax: +307-896-8530

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
06E13000/WY14CPA0161

AUG 1 3 2014

Amber Travsky, Owner/Biologist
Real West Natural Resource Consulting
1116 Albin Street
Laramie, Wyoming 82072

Dear Ms. Travsky:

Thank you for your letter dated July 28, 2014, received in our office on July 30, regarding the proposed permit amendment identified as Wyoming State Lease 42804 for Bentonite Performance Minerals, Inc. (BPM). The permit amendment area is a 760-acre site located 8 miles west of the BPM plant in Colony, Wyoming at T57N, R62W, SE1/4SW1/4 and SW1/4SE1/4 of Section 30, W1/2NW1/4 of Section 32, and most of Section 31 in Crook County.

You have requested information regarding species listed under the Endangered Species Act of 1973, as amended (ESA), 16 U.S.C. 1531 *et seq*. In response to your request, the U.S. Fish and Wildlife Service (Service) is providing recommendations for protective measures for threatened and endangered species in accordance with the ESA. We are also providing recommendations concerning migratory birds in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (Eagle Act), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 *et seq*., and the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742a-742j.

The Service has transitioned to a new online program to deliver species lists: the Information, Planning, and Conservation (IPaC) system. To obtain a current list of endangered, threatened, proposed, and candidate species and their designated and proposed critical habitat that occur in or may be affected by actions associated with your proposed project, please visit our website at http://ecos.fws.gov/ipac/. This website will provide you with an immediate response to your species list request. The response will also include information regarding other Service trust authorities.

We also request that you address the potential for Migratory Birds of High Federal Interest (MBHFI) to nest within or adjacent to the proposed permit area. The Service does not maintain site-specific information on the nesting locations of the birds on the MBHFI list (copy enclosed). Site-specific nest location information may be available from the Wyoming Game and Fish Department (WGFD), applicable land management agencies, or through species-specific surveys conducted on site. If site-specific information indicates that MBHFI do occur at or in the vicinity (e.g., 1 mile) of the proposed project area, we can provide additional site and species-specific recommendations.

In accordance with section 7(c) of the ESA, we have determined that the following species or their designated habitat may be present in the proposed project area. We would appreciate receiving information as to the current status of each of these species within the proposed project area.

Endangered, Threatened, Proposed, and Candidate Species and Their Designated and Proposed Critical Habitat That Occur In or May Be Affected by Actions in the Proposed Project Area
August 2014

Species	Scientific Name	Status	Habitat
Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 ft. elevation
Greater Sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush communities
Sprague's Pipit	*Anthus spragueii*	Candidate	Open grasslands/prairies
Northern Long-eared Bat	*Myotis septentrionalis*	Proposed	Under bark, in cracks, crevices, and cavities of trees in upland forests; also in buildings and under bridges

Ute Ladies'-tresses: Ute ladies'-tresses (*Spiranthes diluvialis*) is a perennial orchid, 8 to 20 inches tall, with white or ivory flowers clustered into a spike arrangement at the top of the stem. Ute ladies'-tresses typically blooms from late July through August. However, it may bloom in early July or still be in flower as late as early October, depending on location and climatic conditions. Ute ladies'-tresses is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams where it colonizes early successional point bars or sandy edges. The elevation range of known occurrences is 4,200 to 7,000 feet (although no known populations in Wyoming occur above 5,500 feet). Soils where Ute ladies'-tresses have been found typically range from fine silt/sand, to gravels and cobbles, as well as to highly organic and peaty soil types. Ute ladies'-tresses is not found in heavy or tight clay soils or in extremely saline or alkaline soils. Ute ladies'-tresses typically occurs in small, scattered groups found primarily in areas where vegetation is relatively open.

Many orchid species take 5 to 10 years to reach reproductive maturity; this appears to be true for Ute ladies'-tresses (FR 57 2048). Furthermore, reproductively mature plants do not flower every year. For these reasons, 2 to 3 years of surveys are necessary to determine presence or absence of Ute ladies'-tresses. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys.

Greater Sage-grouse: The greater sage-grouse (*Centrocercus urophasianus*) is a candidate for listing under the Act (75 FR 13910, March 23, 2010). Please see our recent *Federal Register* notice for detailed information concerning the status of the species; this notice is available at http://www.fws.gov/wyominges/Pages/Species/Findings/GrtSageGrouse_CandidateBulletin.html. Greater sage-grouse are dependent on sagebrush habitats year-round. Habitat loss and degradation, as well as loss of population connectivity, have been identified as important factors contributing to the decline of greater sage-grouse populations rangewide. Therefore, any activities that result in loss or degradation of sagebrush habitats that are important to this species should be closely evaluated for their impacts to sage-grouse.

We recommend you contact the Wyoming Game and Fish Department to identify important greater sage-grouse habitats, recommended seasonal restrictions within the project area, and appropriate measures to minimize potential impacts from the proposed project. The Service recommends surveys and mapping of important greater sage-grouse habitats where local information is not available. The results of these surveys should be used in project planning to minimize potential impacts to this species. No project activities that may exacerbate habitat loss or degradation should be permitted in important habitats.

Sprague's Pipit: Sprague's pipit (*Anthus spragueii*) is a candidate for listing under the Act (75 FR 56028; Sept. 15, 2010). Sprague's pipit is a relatively small ground nesting passerine bird that breeds in open grasslands of the Northern Great Plains. Males and females are similar in appearance with buff and blackish streaking on the crown, nape, and underparts, and a plain buff-colored face with a large eye-ring. Sprague's pipit is closely tied to native prairie habitat and breeds in the north-central United States in Minnesota, Montana, North Dakota, and South Dakota, as well as south-central Canada. Wintering occurs in Arizona, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and New Mexico. A number of threats to its continued existence have been identified including: habitat fragmentation on the breeding grounds, energy development, roads, and the inadequacy of existing regulatory mechanisms.

Northern Long-Eared Bat: The northern long-eared bat (*Myotis septentrionalis*) is proposed for listing under the ESA as an endangered species (October 2, 2013; 78 FR 61046). Critical habitat is not proposed at this time. This bat is a medium-sized bat, distinguished from other *Myotis* species by its characteristically large ears and long, pointed tragus (projection of skin in front of the external ear). Northern long-eared bats are found throughout eastern and central North America and occur in the extreme northeastern portions of Wyoming. Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch in flight using echolocation, or by gleaning (picking) from vegetation. In the summer, male and reproductive female bats roost singly or in colonies in cracks, crevices, cavities, and under the bark of live and dead trees, while other males and non-reproductive females roost in cooler places like caves and

mines. Northern long-eared bats can also be found roosting in buildings and under bridges. Breeding occurs in late summer and fall when bats swarm at entrances of hibernacula; however, females delay fertilization until spring when they emerge from hibernation.

The northern long-eared bat is threatened by white-nose syndrome (WNS), a disease caused by the cold-loving fungus, *Psuedogymnoascus* (*Geomyces*) *destructans*. First observed in New York in 2006, WNS has spread rapidly across the Northeast and into the Midwest and Southeast. Throughout the range of WNS, up to 99 percent of infected bats die from the disease. Although there is uncertainty about the spread of WNS, experts agree that the fungus will likely spread throughout the United States. The northern long-eared bat is also threatened by the loss and degradation of summer habitat caused by human development, and by collision with or barotrauma (injury to the lungs due to a change in air pressure) caused by wind turbines. Mine closures and vandalism of winter roosts and hibernacula also pose threats to this species. In areas that may provide potential habitat for the northern long-eared bat, we recommend tree-clearing and controlled burns be avoided during the roosting season (approximately March through September) unless an emergence or other survey developed in coordination with the Service determines that no northern long-eared bats are using the area. Actions to benefit the northern long-eared bat include installing bat boxes in a safe, sunny location (instructions at http://www.fws.gov/midwest/endangered/mammals/inba/pdf/BatBoxPlanForIN.pdf), protecting hibernacula, and reducing insecticide use that targets prey species of the northern long-eared bat.

SPECIES OF CONCERN

Black-tailed Prairie Dog: The range of the black-tailed prairie dog (*Cynomys ludovicianus*) once spanned the short and mixed grass prairies of North America east of the Rockies from southern Canada to northern Mexico. This species still occurs over much of its historic range; although, in more widely scattered large colonies. Black-tailed prairie dogs occur within the eastern third of Wyoming. A population thought to have been intentionally introduced outside of this range also occurs in the Bighorn Basin. We encourage the conservation of prairie dog colonies for their value to the prairie ecosystem and the many species that rely on them. Threats that may be significant to conserving black-tailed prairie dog populations include disease (sylvatic plague) and some control programs (poisoning). Prairie dogs serve as the primary prey species for the black-footed ferret (*Mustela nigripes*) and several raptors, including the golden eagle (*Aguila chrysaetos*) and ferruginous hawk (*Buteo regalis*). Prairie dog colonies and burrows also provide shelter or nest sites for species like the mountain plover (*Charadrius montanus*) and burrowing owl (*Athene cunicularia*). Because black-tailed prairie dog colonies in Wyoming do not currently support any ferret populations, black-footed ferret surveys are not necessary within Wyoming. However, we do encourage evaluating black-tailed prairie dog colonies for the potential reintroduction of black-footed ferrets.

Mountain Plover: On May 12, 2011, the Service announced the decision to withdraw the proposed listing of the mountain plover (*Charadrius montanus*) as a threatened species under the Act (76 FR 27756). The mountain plover is a migratory, terrestrial shorebird averaging 8 inches (21 centimeters) in body length. Mountain plovers are light brown above and white below, but lack the contrasting band characteristic of other plovers. They feed on invertebrates, primarily beetles, crickets, and ants. Mountain plovers arrive at their breeding grounds in the

western Great Plains and Rocky Mountain states in the spring. Southbound migration is prolonged, starting in late June and continuing through October.

We encourage project planners to develop and implement protective measures if mountain plovers, or suitable mountain plover habitat, occur within project areas. Measures to protect the mountain plover from further decline may include: (1) avoidance of suitable habitat during the plover nesting season (April 10 through July 10), (2) prohibition of ground disturbing activities in prairie dog towns, and (3) prohibition of any permanent above ground structures that may provide perches for avian predators or deter plovers from using preferred habitat. Suitable habitat for nesting mountain plovers includes grasslands, mixed grassland areas and short-grass prairie, shrub-steppe, plains, alkali flats, agricultural lands, cultivated lands, sod farms, and prairie dog towns.

MIGRATORY BIRDS

The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs, except as permitted by regulations, and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The Eagle Act prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. Work that could lead to the take of a migratory bird or eagle, their young, eggs, or nests (for example, if you are going to erect new roads, or power lines in the vicinity of a nest), should be coordinated with our office before any actions are taken.

Removal or destruction of such nests or causing abandonment of a nest could constitute violation of one or both of the above statutes. Removal of any active migratory bird nest or nest tree is prohibited. For golden eagles, inactive nest permits are limited to activities involving resource extraction or human health and safety. Mitigation, as determined by the local Service field office, may be required for loss of these nests. No permits will be issued for an active nest of any migratory bird species, unless removal of an active nest is necessary for reasons of human health and safety. Therefore, if nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in project planning.

If nest manipulation is proposed for this project, the project proponent should contact the Service's Migratory Bird Office in Denver at 303-236-8171 to see if a permit can be issued for this project. No nest manipulation is allowed without a permit. If a permit cannot be issued, the project may need to be modified to ensure take of a migratory bird or eagle, their young, eggs or nest will not occur.

The Service's Wyoming Field Office has compiled a list of Migratory Bird Species of High Federal Interest (Enclosure) from the ongoing work among State and Federal agencies, non-governmental organizations, and the interested public that produced the Wyoming Bird Conservation Plan. This list will now serve as our list of Migratory Bird Species of Management

Concern in Wyoming, in place of the previous list based on the Migratory Nongame Birds of Management Concern in the United States: the 1995 List.

EAGLE/RAPTOR

Enclosed please find our general recommendations for the protection of eagles and other raptor species. We strongly encourage project proponents to fully implement the protective measures described in the enclosures in order to help ensure compliance with the MBTA and the Eagle Act. We are also available to assist you in developing a project specific plan to address the MBTA and Eagle Act concerns.

WETLANDS/RIPARIAN AREAS

Wetlands or riparian areas may be impacted by the proposed project. Wetlands perform significant ecological functions which include: (1) providing habitat for numerous aquatic and terrestrial wildlife species, (2) aiding in the dispersal of floods, (3) improving water quality through retention and assimilation of pollutants from storm water runoff, and (4) recharging the aquifer. Wetlands also possess aesthetic and recreational values. If wetlands may be destroyed or degraded by the proposed action, those wetlands in the project area should be inventoried and fully described in terms of their functions and values. Acreage of wetlands, by type, should be disclosed and specific actions should be outlined to avoid, minimize, and compensate for all unavoidable wetland impacts.

Riparian or streamside areas are a valuable natural resource and impacts to these areas should be avoided whenever possible. Riparian areas are the single most productive wildlife habitat type in North America. They support a greater variety of wildlife than any other habitat. Riparian vegetation plays an important role in protecting streams, reducing erosion and sedimentation as well as improving water quality, maintaining the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian areas should be avoided. Any potential, unavoidable encroachment into these areas should be further avoided and minimized. Unavoidable impacts to streams should be assessed in terms of their functions and values, linear feet and vegetation type lost, potential effects on wildlife, and potential effects on bank stability and water quality. Measures to compensate for unavoidable losses of riparian areas should be developed and implemented as part of the project.

Plans for mitigating unavoidable impacts to wetland and riparian areas should include mitigation goals and objectives, methodologies, time frames for implementation, success criteria, and monitoring to determine if the mitigation is successful. The mitigation plan should also include a contingency plan to be implemented should the mitigation not be successful. In addition, wetland restoration, creation, enhancement, and/or preservation does not compensate for loss of stream habitat; streams and wetlands have different functions and provide different habitat values for fish and wildlife resources.

Best Management Practices (BMPs) should be implemented within the project area wherever possible. BMPs include, but are not limited to, the following: installation of sediment and erosion control devices (*e.g.*, silt fences, hay bales, temporary sediment control basins, erosion control matting); adequate and continued maintenance of sediment and erosion control devices to insure their effectiveness; minimization of the construction disturbance area to further avoid streams, wetlands, and riparian areas; location of equipment staging, fueling, and maintenance areas outside of wetlands, streams, riparian areas, and floodplains; and re-seeding and re-planting of riparian vegetation native to Wyoming in order to stabilize shorelines and streambanks.

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have questions regarding this letter or your responsibilities under the ESA and/or other authorities or resources described above, please contact Kim Dickerson of my office at the letterhead address or by phone at (307) 772-2374, extension 230.

Sincerely,

For R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

Enclosures (2)

cc: WGFD, Interim Non-game Coordinator, Lander, WY (M. Grenier)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

BEFORE THE

ENVIRONMENTAL QUALITY COUNCIL

STATE OF WYOMING

Docket No.

IN THE MATTER OF OBJECTIONS TO)
THE PERMIT APPLICATION OF GEORGE)
W. KLOVER, J.W.K. AND T. MINING)
COMPANY, TFN 1 6/281.)

FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER

PURSUANT TO NOTICE duly given to all parties in interest, this matter came on for hearing on the 27th day of September, 1982 at 10:00 a.m. in the new lunchroom of the County Fairgrounds located at South Federal, Riverton, Wyoming. Mr. Walter Perry, III, Senior Assistant Attorney General, presided as hearing officer.

The Applicant appeared and was represented by Mr. Richard D. Gist and Mr. Richard Kraemer, Attorneys at Law. All Protestors represented themselves. Protestants were Ethel Nauman, William Moffat, Margaret Brown, Lennis Goliher, Albert Brown and Peggy Moffat. The Department of Environmental Quality, Land Quality Division was represented by Mr. Weldon S. Caldbeck, Assistant Attorney General.

With all parties participating in the hearing, the Environmental Quality Council having taken this matter under advisement and having been fully advised, and having considered all the testimony and evidence submitted by the parties, now makes its Findings of Fact, Conclusions of Law and Order.

6: LQD 12-23-82.ak.

FINDINGS OF FACT

1. George W. Klover, hereafter referred to as Applicant, has filed an application, TFN 1 6/281 for a small mining permit to mine gold within the NE1/4 of the SE1/4, North 1/2 of the SE1/4 of the SE1/4, NW1/4 of the SE1/4, Section 11, T29N, R100W, Fremont County, Wyoming. Applicant's mining operation will be known as the J.W.K. and T. Mining Company of Atlantic City, Wyoming.

2. During the statutory prescribed time limit objections were filed by interested persons to the Land Quality Division. Said objectors include Mr. Ethel Nauman, Mr. Lawrence Nauman, Mr. William Moffat, Mrs. Peggy Moffat, Mr. Albert Brown, Mrs. Margaret Brown and Mrs. Lennis Goliher, all of whom were present at the hearing on this matter. Objectors are hereafter collectively referred to as Protestants.

3. The Protestants generally have objected to the dust and noise potential created by the proposed operation; that mining would harm, destroy, or materially impair an area that has been designated as rare or uncommon and having particular historical, archeological, wildlife, botanical or scenic value; that aspen, willow and pine trees in the area would be destroyed and not replaced; that there is a possible affect on the water table; that the mining will occur within three hundred feet of an occupied residence; and that all people within one half mile were not afforded the statutory notice required by W.S. 35-11-406(j); and, that the mining would decrease property values in the area.

4. No testimony, beyond conclusory statements, nor any other evidence was offered with regard to the objections alleging dust problems created by the mining operation.

5. Testimony from Mr. Mark Moxley, Land Quality Division, represented that no dust problem was forseen by the Division.

6. No testimony, beyond conclusory statements, nor any other evidence was offered with regard to the objection alleging mining would harm, destroy, or materially impair an area that has been designated as rare or uncommon and having particular historical, archeological, wildlife, botanical or scenic value; furthermore, the area in question has not been designated as rare or uncommon by the Council.

7. No testimony, beyond conclusory statements, nor any other evidence was offered with regard to the objection alleging mining would affect water tables in the area.

8. Testimony did reveal that the operation would continually recycle any water used.

9. No testimony, beyond conclusory statements, nor any other evidence was offered with regard to the objection alleging mining would occur within three hundred feet of an occupied dwelling; all Protestant's who testified indicated their residence was further than three hundred feet or they were silent on this issue.

10. No testimony, beyond conclusory statements, nor any other evidence was offered with regard to the objection alleging that the mining would decrease property values in the area.

11. Numerous homes and cabins are in the area and are occupied either permanently as residences or occasionally for recreational purposes; the mining will be within hearing distance of many such homes and cabins.

12. The Applicant testified that operations would only occur between the months of June and mid-September and during the hours between 8:00 a.m. and 7:00 p.m..

13. There are no specific plans in the Applicant's reclamation to replace quaking aspen, willow and pine trees destroyed and displaced by the operation. Testimony revealed the operation would require destruction of some of these said trees.

14. The quaking aspens, willow and pine trees presently contribute to an animal habitat for moose, elk and deer. The applicant proposes to return the land to such use postmining.

15. The Applicant testified to his willingness to replace such tree growth if that were required of him.

16. The Applicant's testimony and mine plan submittals reveal that the Applicant will not affect more than one acre of land per year and that the mine will occur along and within the "Rock Creek", further, the Applicant testified reclamation would follow two hundred yards behind the operation as the operation moved up Rock Creek.

CONCLUSIONS OF LAW

1. The Environmental Quality Council has jurisdiction over both the subject matter and parties of this proceeding.

2. Due and proper notice of the hearing in this matter was given by the Council as required by law.

3. The record does not contain substantial evidence to support a conclusion that any part of the proposed operation,

as described by the Applicant, would:

a.) create a dust problem;

b.) harm, destroy or materially impair an area that has been designated as rare or uncommon and having particular historical, archeological, wildlife, botanical or scenic value;

c.) affect the water table;

d.) occur within three hundred feet of an occupied dwelling;

e.) decrease property value in the area;

f.) cause a nuisance.

4. The Applicant's mine plan and reclamation plan must provide for reestablishment of the animal habitat which would include replacement of willows, quaking aspen and pine trees destroyed or displaced by mining operations.

5. The Applicant is limited by his mine plan which allows for affected no more than one acre of land per year along Rock Creek.

ORDER

WHEREFORE, PURSUANT TO W.S. 35-11-112(c)(ii), IT IS HEREBY ORDERED THAT:

1. The Department of Environmental Quality, Land Quality Division issue a small mining permit to the Applicant.

2. Said small mining permit shall set forth and be subject to the following conditions:

a.) in the event that the permit is transferred to another person or entity the permit shall be reviewed by the Administrator of the Land Quality Division who shall review the permit to determine that the new permittee will not cause a nuisance to the neighboring landowners.

b.) Reclamation must follow within two hundred yards of the mining operation and the operator shall replace all quaking aspen, willow and pine trees destroyed or displaced by the operation.

3. Said aforementioned conditions shall not be exclusive but shall be in addition to those conditions which are inherent in the permit, and any other conditions which may be set forth in accordance with law.

DATED this 14th day of Dec, 1982.

Richard Gray
Hearing Officer

CERTIFICATE OF SERVICE

I, Walter Perry, III, Senior Assistant Attorney General, certify that on this 20th day of December, 1982, I placed a true and correct copy of the Findings of Fact, Conclusions of Law and Order in this case in the United States mail, postage prepaid, addressed as follows:

Margaret Brown, President
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Albert T. Brown, Secretary
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Peggy Moffat, Treasurer
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Mr. Paul Fuesner
c/o Margaret Brown
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Mr. Jim Phillips
c/o Margaret Brown
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Mr. William Moffatt
107 West Jackson
Riverton, WY 82501

Mr. Lawrence Nauman
Sunrise Construction Co.
P. O. Box 1685
Rock Springs, WY 82901

Mr. Richard Kraemer
150 North Third
Lander, WY 82520

Mr. Richard D. Gist
150 North Third
Lander, WY 82520

Mr. C.E. Fruse
c/o Margaret Brown
Rock Creek Grazing Assoc.
609 East Fremont
Riverton, WY 82501

Mr. Clinton Dunning
726 Parks
Lander, WY 82520

Walter Perry, III
Senior Assistant
Attorney General
123 Capitol Building
Cheyenne, Wyoming 82002

Section 2.10 Mine Plan

Section 2.10.1 Introduction

In fulfillment of W.S.§ 35-11-406(a) and (b) and LQD Noncoal Rules and Regulations Chapters 2 and 3, the permittee provides the following general information.

There was no specific Mine Plan document with the original Conversion Permit. In general, the historical Chapter XXV (and later Chapter 13) Updates did not contain specific Mine Plan documents. The permittee has historically used the Annual Report to show historic mining progressions and to project the mining progression for the next Annual Report cycle.

The LQD and permittee developed the following format for a general Mine Plan which meets the minimum requirements of the Environmental Quality Act and LQD Noncoal Rules and Regulations.

As the permittee amends new lands or updates permitted lands, the major elements of the Mine Plan for the amendment area will be described in a new section of this Mine Plan.

Section 2.10.2 Mining Method and Type

The permittee has and will continue to mine bentonite for commercial processing and sales using the surface mining process defined in W.S. § 35-ll-103(e)(x).

The permittee has and will continue to mine pit-run shale to surface access and haul roads within the permit and amendment areas. The permittee uses the surface mining method. The permittee uses the shale for noncommercial uses. It does not process nor sell the shale.

Section 2.10.3 Life of the Mining Operations

The permittee and its predecessors have mined within the boundary of the original conversion permit since the effective date of the Wyoming Environmental Quality Act.

The permittee will continue to mine within the original permit area boundary via historically approved Mine Plans, via information presented in Chapter XXV (now Chapter 13) Updates and via information presented in the Annual Report. The permittee has no projected date for exhaustion of mineable bentonite reserves within the original permit area.

The permittee received approval of the A1 and A2 amendments on July 23, 2000. The permitting of these reserves extends the life of operations under Permit No. 267C. Periodically, the permittee will add new lands via the

amendment process and briefly update the projected life of operations on the amended lands or on Chapter 13 Update lands.

Section 2.10.4 Quantity of Materials Moved And Number Of Acres Affected Annually

As per current LQD procedures, the permittee does not make these projections in the permit document. The LQD requests and the permittee provide this information in each Annual report.

Section 2.10.5 Major Equipment Used In the Mining Operations

The permittee normally conducts the bentonite and shale mining operations with some combination of the following equipment:

- D9L & D8N Caterpillar dozers
- Caterpillar 637E & 637D scrapers
- Caterpillar 988 front-end loaders
- Caterpillar 14G patrol blade
- Track-hoe excavator
- Highway Tractor-Trailers Haul Trucks
- Water trucks

This equipment list may change as new equipment is incorporated into the current fleet. The company also uses contractors for various operations. The contractor's equipment fleet is determined on an as-needed basis.

Section 2.10.6 Mining Progression: Original Permit and All Amendments

The Annual Report process has historically been used to show the historical and projected mining sequences. The general mining process excavates a sequence of small pits which are 2-5 acres in size. Each small pit or cut removes 50,000-150,000 cubic yards of overburden depending upon the depth of overburden and the size of the pit.

As each new cut is made, the salvaged topsoil and subsoil and overburden materials are used to reclaim the previous pits in a timely and contemporaneous manner. Mine Plan Figure 1 illustrates the integrated mining and reclamation process. The mining progression for amendment lands will follow one of the three generalized sequences described as A, B and C:

Schedule A The overburden from the first pit is used to re-contour the landscape near the pit. Then the tiered system of backfilling of successive pits will be utilized. The last pit is filled by leveling out the immediate area surrounding that pit. This scenario is useful to make the landscape more traversable to livestock and wildlife and to stabilize slopes.

Schedule B The overburden from the first pit is stockpiled and each new pit is backfilled into the previous pit. The last pit is backfilled with the stockpiled overburden completing the sequence.

Schedule C The overburden from the first pit is used to backfill the last pit of different sequence. The last pit is filled by leveling out the immediate area surrounding that pit.

Permanent spoil dumps are usually constructed only at the first pit in the series, and then only when pre-EQA disturbances are not adjacent. When pre-EQA disturbances are nearby, spoil from the first one or two pits in a series is backfilled onto the pre-EQA disturbance and reclaimed as part of the mine series.

Since the actual date of the approval of amendments is not precisely known, each amendment application subsequent to the approved A1 and A2 amendments will include a numbered map which delineates at least the first year's projected mining sequence on the amendment area.

Each subsequent Chapter 13 Update package will either include a map (or reference an existing Annual Report map) which delineates the first years projected mining sequence.

Section 2.10.7 Mining Progression Time Schedule

Neither the Wyoming Environmental Quality Act nor the Noncoal Rules and Regulations require a specific time schedule. As previously noted, the permittee has historically used the Annual Report process to establish the *initial* mine processions schedule for a new pit sequence and/or *continuation* of the mine progression schedule for an existing pit sequence within the original permit area.

The permittee will continue to use the Annual Report process to present the time schedule for all active mining progressions in the original permit area and the approved A1 and A2 amendment areas and all subsequently approved amendments.

Since the actual date of the approval of amendments is not precisely known, each amendment application subsequent to the A1 and A2 application will provide:

- A map outlining the likely pit locations and sequences, the location of the initial topsoil and subsoil stockpiles and the location of

existing and new haul/roads which will service the pit sequence.

- Brief text which identifies the likely starting date for the first pit of each identified pit sequence.
- Text commitment to provide additional pit progression information in each subsequent annual Report.
- Text which states that Schedule A, B or C (Section 2.10.6 above) will be used; if not the text will specify the specific alternative Mine Plan.

Section 2.10.8 Topsoil And Subsoil Salvage, Storage And Protection Procedures

The permittee will use the definitions of subsoil and topsoil from the LQD Noncoal Rules and Regulations, Chapter 1. The permittee will use the topsoil and subsoil salvage depths established in Section 2.7 (Appendix D-7) for each respective update or amendment application. The permittee will follow the recommendations in Section 2.7 for previously affected lands such as lands affected (and reclaimed) prior to the July 1, 1973 effective date of the Wyoming Environmental Quality Act and lands rehabilitated by the Abandoned Mine Lands (AML) Division.

Topsoil and subsoil will be separately and selectively salvaged. In general A horizons and top of B horizon are salvaged as topsoil and the bottom of B horizons and C horizons are salvaged as subsoil: Paralithic material is not salvaged with the subsoil.

Before soil stripping is initiated Mining Supervisors are accompanied with a pit diagram which identifies the soils series and distinguishes topsoil and subsoil depths to be salvaged. Typically rubber-tired scrapers are used in the soil salvaging process; in areas where soil salvage depths abruptly vary or equipment maneuverability is constrained, the operators will employ the use of other types of equipment to ensure proper depths are salvaged. Once soil stripping begins, trained operators and/or supervisors will routinely check soil to ensure proper depths are being salvaged. Supervisors and equipment operators use indicators such as vegetation rooting depth, change in soil coloration and monitoring equipment cylinder exposure to assure desired soil depth is salvaged.

The permittee will salvage all topsoil and subsoil from affected lands including:

- overburden stockpile sites
- bentonite stockpile sites
- new haul roads
- all pit areas and a buffer zone around their perimeter
- all equipment parking and fueling and maintenance areas

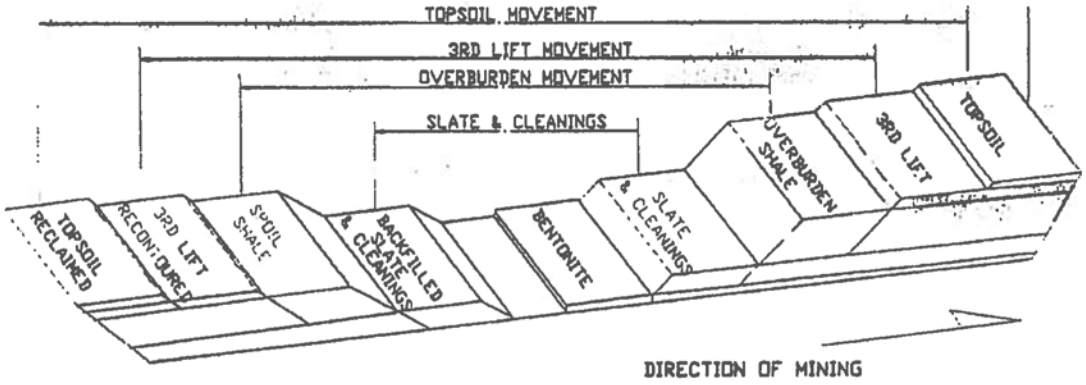
If adjacent backfilled and regraded lands are available, the permittee will seek to direct haul and redistribute the salvaged subsoil and topsoil in their premining vertical arrangement, this practice in known as "live-spreading".

The topsoil and subsoil stockpiles will be marked with signs reading TOPSOIL or SUBSOIL respectively. The sign lettering will be at least six (6) inches tall. The Annual Report will show the location and type of all existing stockpiles. New topsoil and subsoil stockpiles will be seeded with the approved permanent seed mix during the first available fall seeding period.

Section 2.10.9 Overburden Removal, Handling And Backfilling Procedures

Section 2.5 (Appendix D-5) describes the general characteristics of the native overburden. After removing the defined topsoil and subsoil on a specific pit, dozers usually rip the overburden in lifts. Rubber-tired scrapers remove the overburden and use it to backfill an open pit. Mine Plan Figure 1 illustrates the general process.

FIGURE 1. MINING & RECLAMATION SCHEMATIC OF MATERIAL MOVEMENT



RECLAMATION SEQUENCE

The permittee has developed and commits to using a "tiered" system for backfilling open pits. The tiered system consists of placing poor quality overburden from pit excavation to fill the lower third of the previous pits. The upper portion of overburden removed from the next pit is placed on top of the previous pit's lower quality material. This procedure enables the overburden closest to the bentonite to be buried as deep as possible. Third lift material immediately below the subsoil from the next successive pit is then placed on top of the upper portion of overburden removed from the previous pit. The third lift material is brought to the approximate original grade and blended with the surrounding native lands. Topsoil and subsoil are then direct hauled from the next pit and placed on the third lift.

If the overburden is not directly backfilled, it will be stockpiled on lands stripped of subsoil and topsoil. A containment berm will prevent stockpile runoff from contaminating native soils and to minimize loss of materials due to water erosion. Temporary Overburden stockpiles will not block intermittent or perennial stream channels and will not be placed directly in defined ephemeral drainage channels.

Historical analyses of overburden and bentonite beds have not identified combustible, toxic, acid-forming or otherwise hazardous materials. Should any such materials be encountered in the mining process, it will be handled according to applicable state and federal laws.

Section 2.10.10 Bentonite Handling Procedures

The exposed bentonite bed is usually ripped by a dozer. The bentonite may be removed by rubber-tired scrapers and stockpiled for field drying or other temporary stockpiling needs.

The stockpiles will be created only on surface without native topsoil and subsoil. If the stockpile is not confined by an open pit, a containment berm will minimize the loss of material and prevent pollution of surface waters.

The bentonite may be loaded into semitrailer trucks (from the pit or stockpiles) for over-the-road delivery to the permittee's processing plant at Colony, WY

Section 2.10.11 Protection Of Other Resources

Due to shallow depth to which mining will occur, it is not anticipated that groundwater will be impacted by mining operations.

Watersheds to existing drainages will be minimally affected during mining; surface flow will be temporarily diverted around active disturbance and into the existing drainages. Final contouring will direct similar-size watersheds toward the existing natural outlets. No significant effects on surface water are anticipated due to mining.

Section 2.10.11-1 Best Management Practices

General BMP's, concerning discharge, utilized are listed in the Bentonite Performance Minerals' Wyoming General Storm Water Permit for Mining Operations. These BMP's include:

- The TSS (clay) resulting from entrainment from sediment into stormwater is managed by placing a buffer and depressions around overburden piles that collect runoff. Further, any errant runoff from the overburden is collected in drainages that have additional Best Management Practices (BMPs) such as water bars, sediment ponds and less often filtrations dams.
- Before pumping from a pit, the clay in the water must first be given an opportunity to settle. Water then may only be pumped into an area that does not connect with a major

drainage. If water is pumped to a major drainage, the drainage must contain BMPs such as water bars or a sediment pond(s).

- Topsoil is usually spread immediately after it is collected in accordance with BPM's policy of concurrent mining and reclamation. However, there are times when topsoil and subsoil piles must be created to reclaim pits, roads and other miscellaneous disturbances. The topsoil and subsoil piles that remain in place for longer than 6 months are sloped at 3:1 or less and seeded to minimize erosion and pile diminution. A buffer and catchment is sometimes placed around piles as a BMP to help minimize sediment loading to the surrounding native ground.
- Each campsite is bermed and constructed on a 1-2% grade. On the down-gradient end of the camp a sump is constructed to catch runoff and prevent a discharge. All trash and debris generated at the camp is collected and regularly transported to the plant site or landfill for disposal.
- The management of field storage, dispensing, and clean-up of hydrocarbons is discussed in the BPM SPCC Plan (Appendix C). In summary, this plan directs all storage of petroleum products to be maintained within the bermed and graded camp area. The camp area has a sump that is capable of storing 110% of the largest storage container in the camp area. The regular fueling of equipment is also to be performed in the camp area. The camp area is typically situated on bentonitic clays and soils or shale-clay soils. Both surfaces are extremely impermeable and readily soak up petroleum products and other liquids. This unique characteristic of bentonite makes it an ideal surface for containment of spills. In the event of a spill of petroleum product, the soil is excavated and placed into pile and transported to the PCS landfarm. The spill is reported internally as a spill inside containment per the SPCC plan.
- The management of the roads includes, dust control (watering), blading and ditching, crowning, use of proper road construction materials (shale) and routine maintenance. The dust control measures include watering the roads using several water trucks on a regular basis during each day. The roads are also bladed with a maintainer to remove fines and help establish a crown. The road ditches are cut to help promote water runoff and settling. Appropriately sized culverts are installed to divert water under roads and keep open drainages.
- The stockpiled bentonite is cupped (ditched) and bermed to prevent loss of material (product).

- The loading of bentonite outside of pits occurs in areas that have been cleared of topsoil and has had a berm placed around it to prevent contamination of stormwater.
- The fueling of the pumps is performed either in the pit bottom or in camp areas which have been stripped of topsoil and are cupped/bermed for containment.

Section 2.10.12 Temporary Diversion of Unchannelized and Ephemeral Stream Flows

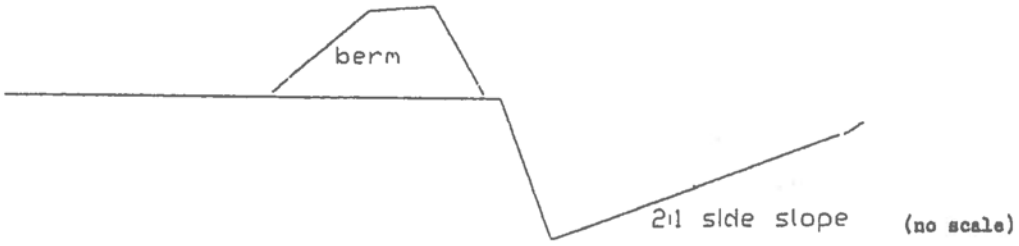
The permittee may temporarily divert unchannelized surface water flows and /or ephemeral streams for any of the following reasons:

- assistance in controlling pollution of the waters of the State.
- prevention or control of unnecessary erosion.
- protection of the on-going mining reclamation processes.
- protection of downstream water rights.

In designing and construction such diversions, the permittee will use the performance standards in the 1993 Noncoal Rules and Regulation, Chapter 3, Section 2. (e)(ii). the permittee will not submit specific designs but will have information available to confirm attainment of these standards. The permittee will generally divert surface flows around the open pit sequence with v-ditches when the watershed is small, e.g. ten to thirty acres (see Mine Plan Figure 2). When the watershed is larger, the permittee will construct a trapezoidal channel (see Mine Plan Figure 3). In all cases, topsoil will be salvaged prior to construction. In all cases, the V-ditch or trapezoidal channel will be designed to the 2-year, 6 hour precipitation event in a non-erosive manner.

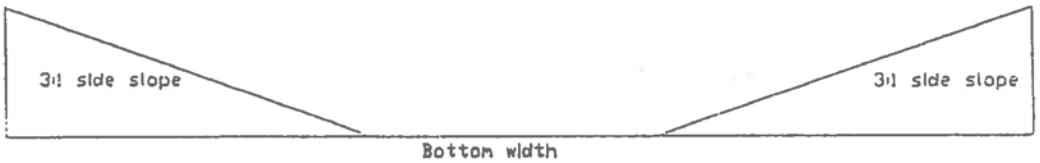
Mine Plan Figure 2. **Schematic diagram for a v-ditch diversion of surface water in ephemeral drainages with small (10-30 acres). The berm material is the ditch cut material if the total depth does not exceed the defined depth of topsoi plus subsoil. If the necessary ditch depth exceeds the topsoil plus subsoil, the berm will be exclusively topsoil plus subsoil or exclusively overburden material.**

V ditch template



Mine Plan Figure 3. **Schematic diagram for trapezoidal channels for diverting ephemeral drainages which watersheds greater than 30 acres**

Temporary diversion channel template



Section 2.10.13 Mining through Intermittent or Perennial Streams

The permittee does not anticipate the need to mine through any streams identified by the intermittent stream or perennial stream USGS map symbol as shown on the USGS map associated with the original permit area or any amendment area. The permittee will consult with LQD should it ever anticipate mining through an intermittent or perennial stream.

Section 2.10.14 Processing and Handling Facilities

The permittee operates a single processing plant at Colony, WY which services all mining conducted under Permit No. 267C. This processing plant was originally constructed in 1948 and has been progressively upgraded to meet changes in bentonite processing and marketing. The lands occupied by the Colony plant were added to the permit area in 1982 under a "Plant Site and Haul Road" amendment. The LQD did not formally approve and number that amendment. At the Colony plant different grades (qualities) of bentonite are stockpiled and, as necessary, blended to meet marketing needs and then dried to reduce the moisture content to approximately ten percent. After drying, it is sized by a series of screens and air classifiers. Finally it is bagged for loading or loaded in bulk for shipment to a customer by truck or rail. No tailings are produced from the process, therefore no tailings disposal site is required.

Section 2.10.15 Solid Waste Disposal

The permittee has a single designated solid waste disposal area southeast of the Colony plant. This site was originally permitted under the Solid and Hazardous Waste Division (SHWD) of the Department of Environmental Quality. The LQD was subsequently mandated to assume regulation of non-hazardous solid wastes which are generated by the bentonite mining and processing operations. The LQD's regulatory mandate derives from the LQD Noncoal Rules and Regulations Chapter 2, Section 2(b)(iii)(l) and Chapter 3, Section 2 (c)(v).

As of December, 2000, the LQD does not have specific and detailed solid waste disposal regulations. Those regulations cited above cross-reference to "...those provisions of the Solid Waste Management Rules and Regulations deemed appropriate by the Administrator". The LQD Administrator has not listed "appropriate" regulations. Thus, the permittee understands that it is held to all applicable SHWD regulations which apply to non-hazardous "...industrial solid waste generated by the operation".

The permittee will not establish other solid waste disposal sites within the permit area or amendment areas without prior approval from the LQD.

The existing solid waste disposal site accepts only non-hazardous materials generated by the plant, office, and mining operation. The wastes are covered weekly.

Section 2.10.16 Power Transmissions and Communication Lines

No power transmission or communication lines will be constructed for the mining operations associated with the original permit area or the approved Al and A2 amendments. The permittee will not mine within a ten foot radius of any power or communication poles. This practice ensures a stable pedestal will be left around any poles in the permitted area, thus preventing destabilization. Any underground utilities will be relocated before mining, or marked by the utility company to ensure mining does not impact those utilities.

Standard utility, power and communications lines service the Colony plant. Modifications to these systems will not require any consultation with the LQD.

Section 2.10.17 Haul, Access and Light Use Roads

LQD Noncoal Rules and Regulations Chapter 2, Section 2.(b)(iii)(G) list the permitting requirements for roads. Chapter 1, Section 2(ax) defines the road categories.

These road permitting requirements have been treated different ways in the original conversion permit and the approved Al and A2 amendments; these historic treatments will not be revisited or held to the permitting procedures discussed below. All existing haul and access roads will be held to the maintenance performance standards of W.S. § 35-11-406 (b)(xv) and LQD Noncoal Rules and Regulations Chapter 3, Section 2(i).

All Chapter 13 Updates and Form 1 amendment applications submitted after July, 2000 will address the road permitting requirements by submitting the following information on the mine sequence map noted in Section 2.10.7:

- Show the applicable types of roads which will be built or utilized in support of mining operations.
- List the road types in the legend
- Show the location and size of all culverts which exist and/or will be upgraded and/or will be newly installed.

If existing two-track roads fit the definition of light-use roads, the LQD will not require salvage of topsoil or subsoil when the permittee uses these light-use roads.

All newly constructed and upgraded haul and access roads will be built in accordance with the performance standards of LQD Noncoal Rules and Regulations Chapter 3, Section 2(i).

All newly constructed or upgraded access and haul roads will be shown on and

identified on Annual Report maps.

The Colony plant is serviced by a railroad spur. However, the spur does not provide exclusive service to the permittee's operation, so only portions of the railroad spur are incidentally included in the original conversion permit area boundary. The railroad corridor and railroad spur are not owned by the permittee.

Section 2.10.18 Buildings and Structures

W.S. § 35-ll-406(b)(iv) and LQD Noncoal Rules and Regulations Chapter 2, Section 2(b)(iii)(H) and Chapter 3, Section 2(j) hold the permittee responsible to remove and/or dismantle all buildings and structures erected, constructed, used, improved and/or modified by the operator unless the permittee provides written proof documenting the surface owner's desires.

Historically, the LQD has not required the Reclamation Performance Bond (bond) itemize demolition and final reclamation costs for the Colony plant buildings. The permittee has no satellite buildings or structures which support the mining operations. The permittee understands its responsibilities to demolish and reclaim structures. Such demolition will not occur until the Colony plant ceases operation; there is no identified date for cessation of the current mining and processing operations.

Section 2.10.19 Signs and Markers

W.S. § 35-11-41.5.(b)(i) requires the permittee to "conspicuously post and maintain at each entrance to the operation, a sign which clearly shows the name, address and telephone number of the operator, the name of his local authorized agent, and the permit number of his operation".

The permit area is far-flung and is accessible at many points by government maintained or private roads. There is no realistic possibility of posting and maintaining a sign at each entrance. The permittee will post and maintain an identification sign near the main entrance to the Colony plant. The permittee may post other signs at other locations within the mining operations.

As noted in Section 2.10.8, the permittee will post and maintain identification signs on all topsoil and subsoil stockpiles.

Section 2.10.20 Operational Water Use

W.S. § 35-11-406(b)(xvi) requires "a statement of the source, quality and quantity of water, if any, to be used in the mining and reclamation operations". The permittee uses water in its plant and office operations. These water sources are permitted and maintained according to applicable regulatory requirements; quality meets the requirements of the uses.

The permittee and its contractors periodically water the haul and access roads within the mining operations. The source of this water is permitted according to applicable regulatory requirements; quality meets the requirements of the use. The quantity of water used is reported to Wyoming Department of Environmental Quality/Air Quality Division per operating permit #3-2-096-2 semiannually.

Section 2.10.21 Impoundments

The permittee does not generate any tailings as discussed in Noncoal Rules and Regulations Chapter 3, Section 2(h). Thus, the permittee will construct no tailings impoundments.

Permanent post-mining impoundments are discussed in the Reclamation Plan (Section 2.11.5).

Section 2.10.22 Unanticipated Conditions

The LQD Noncoal Rules and Regulations Chapter 3, Section 2.(l)(ii) defines an *unanticipated condition* as "...any condition encountered in a mining operation and not mentioned by the operator in his mining or reclamation plan which may seriously affect the procedures, timing, or outcome of mining or reclamation". This citation further states that *unanticipated conditions* include but are not limited to:

- The uncovering during mining operations of any acid-forming, radioactive, inflammable, or toxic materials which must be burned, impounded, or otherwise disposed of in order to eliminate pollution or safety hazards;
- The discovery during mining operations of a significant flow of groundwater in any stratigraphic horizon;
- The occurrence of slides, faults, or unstable soil and overburden materials which may cause sliding or caving in a pit which could cause problems or delays with mining or reclamation;
- The occurrence of uncontrolled underground caving or subsidence which reaches the surface, causing problems with reclamation and safety hazards; and
- A discovery of significant archaeological or paleontological importance.

If the permittee encounters any of these unanticipated conditions in its mining or reclamation activities, the permittee shall notify the LQD District III office as soon as possible and in any event no more than five days after discovering the unanticipated condition. The permittee will take appropriate measures to correct (in compliance with applicable regulatory agencies), eliminate or adapt

to the unanticipated condition before resuming the mining operation in the immediate vicinity of the discovered condition.

Section 2.10.23 Absence of Public Nuisance And Endangerment

W.S. § 35-11-406(b)(xiii) requires procedures to avoid constituting a public nuisance or endangering public safety, property or other life forms. The permittee has conducted its mining operations for many years without creating any of the nuisances or endangerments mentioned in this portion of the Wyoming Environmental Quality Act. The permittee will continue to operate in such a fashion.

The permittee does not generally fence any of its bentonite pits, equipment parking areas, access or haul roads or stockpiles. The permittee does occasionally fence those portions of pits which are close to access or haul roads or government maintained roads in order to prevent safety compromises. These decisions to fence are made on site-specific considerations.

The permittee does maintain fencing around certain portions of its Colony plant site and the associated solid waste disposal site. These fences will be maintained to limit public access to these areas.

The permittee does selectively fence some portions of active pit areas and reclaimed lands to maintain pasture units for respective surface owners. These fence patterns also serve to limit public access and thereby prevent public nuisances and endangerment. These fencing decisions are made on site-specific considerations and consider surface owner preferences.

Section 2.10.24 Potential U.S. Fish And Wildlife Service Mitigation Plan

As discussed in Section 2.9.2, the permittee will contact and secure the U.S. Fish and Wildlife Service (Service) recommendations for all necessary actions. In past contacts with the Service, the permittee developed generic mitigation plans such as the following documented in Don A. Dahlgren's letter of January 21, 2000 to Pat Deibert of the Service:

> "The mitigation plan for this nest is to prevent any taking of raptors during nesting. Bentonite Performance Minerals will not conduct any mining activities (drilling, hauling, or stripping) between February 1 and August 14 of each year on the Proctor-Maurer State Lease property. BPM can conduct mining activities on Proctor-Maurer State Lease property between August 15 and January 31 of each year.
>
> If BPM needs to conduct mining activities between February 1 & August 14, must receive written approval from the U.S. F&WS prior to conducting any activities on the Proctor-Maurer State Lease property."

When necessary, the permittee will secure written agreements on mitigation

plans from the Service. The permittee will copy the LQD District III on such written mitigation plans. The permittee understands that the LQD District III is not directly involved in the execution of these mitigation plans.

Section 2.10.25 and 2.10.26 Reserved for Future Permitting

Section 2.11.41 Wyoming State Lease 42804 (WSL04) Amendment Reclamation Plan

The area that is included in the Wyoming State Lease 42804 Amendment area is as follows:

Amendment Areas	Legal	Total Acres
Wyoming State Lease 42804	SE4SW4, SW4SE4 Section 30 T57N R62W	80
	NE4, E2NW4, SW4, NW4SE4 Section 31T57N R62W	440
	W2NW4 Section 32 T57N R62W	80
		600

The WSL04 surface is owned by Lonesome Country LC. The area has been surveyed/cleared for baseline soils, wildlife and vegetation in accordance with WY-DEQ regulations.

Section 2.11.41-1 General Reclamation Standards & Practices

The information and commitments in Permit 267C Sections 2.11.1 through 2.11.8.1 remain current for the reclamation operations performed on the Amendment area. Reclamation progress will follow that listed in Section 2.11.3.3. In regards to post-mining slope, topography and through drainage, reclamation on the WSL04 Amendment will not deviate from the standards listed in Section 2.11.4.

Section 2.11.41-2 Permanent Out-of-Pit Overburden

As stated in section 2.11.3.2 of Permit 267C when the permittee creates permanent overburden stockpiles, the reclamation will achieve the performance standards of LQD Non Coal Rules and Regulations including:

- Overburden placement will not occur on native slopes that exceed 20 degrees (approximately 33% or 3:1 slopes)
- Stabilizing the overburden slopes by grading and contouring them to blend with adjacent native and reclaimed lands
- Covering the stabilized overburden with subsoil and topsoil.
- Seeding the topsoil with an approved permanent seed mix.
- Overburden placement will not block ephemeral, intermittent or perennial drainage channels

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- Overburden which is placed on pre-Act affected lands will be subject to the other reclamation practices in the reclamation section of the permit.

Specifically regarding the WSL04 Amendment three out of pit overburden piles will be constructed in relation to mining on the WSL04 claim. One will be in relation to Pit series S4-A, one will be in relation to Pit series S4-B and one for S4-C. These post mine features are illustrated on the reclamation map 2.11.41-1. The out of pit overburden will have topsoil, subsoil, or third lift spread over it, or parts of it in a "candy-striping" or "patch-work" pattern, it will then be seeded. This practice is consistent with mining progression Schedule A and Schedule C illustrated in Section 2.10.6 of the permit. The soil (0-54+" based on Soil Report) will be removed and live-spread or stockpiled adjacent to the active mining for reclamation. Seeding will take place in the fall of each year as outlined in Section 2.11.8.

Section 2.11.41-3 Permanent Post-Mining Impoundments

One new permanent post-mine impoundment is planned for the WY State Lease 42804 Amendment area per landowner request. This impoundment will be immediately west of the largest pond found on the Amendment area and can be found illustrated on the Reclamation Plan map 2.11.41-1. In addition, one impoundment will be mined through and enhanced through reclamation with steeper slows and a greater depth. It is noted in the letter from WG&F has suggested constructing no impoundments, but these recommendations are directly conflicting of the land owner's desires. Therefore, enhancements will be made, such as steeper slopes and greater depths than what currently exist, but impoundments will still be replaced.

Section 2.11.41-4 Ephemeral Drainage Construction

The information and commitments in Section 2.11.6 remain current for the reclamation operations on the WY State Lease 42804 Amendment area.

Section 2.11.41-5 Subsoil and Topsoil Redistribution Methods and Depths

Refer to section 2.11.7 for general reclamation practices regarding soil management. Topsoil and subsoil depths are delineated in the Soil Section (2.7.3.45). The soil (0-54" based on Soil Report 2.7.3.45) will be live-spread on previous pits within that series or stockpiled for future use (subsoil will be salvaged and stored separately), depending on the area and pit progression. The permittee will adjust the "general backfilling and handling of overburden in the 'tiered' system" manner as discussed in Section 2.5.3 in order to ensure that the most suitable overburden material lies next to the topsoil.

Disturbance of ten soil communities within 177 acres of the 600 acre project area will take place. Refer to pages 2.7.3.45-10 & 11 or the Soils Map 2.7.3.45-1 for a table listing all projected soil types, affected acreage and salvage depths for the amendment area.

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Section 2.11.41-6 Revegetation & Seed

The information and commitments in Section 2.11.8 remain current for the revegetation process of the WY State Lease 42804 Amendment lands. The Permit 267C approved seed mix (Pages 2.11-16 and 2.11-17) is to be used in the reclamation.

In the correspondence from the WGFD (Section 2.9.3.45, Addendum B), it is recommended that reclamation efforts target restoration of the pre-disturbance shrub components. The permit seed mix is entirely made up of native seeds and offers a variety of forbs, grasses and shrubs (depending on availability) for the permit area. Refer to Reclamation section 2.11 pages 2.11-13 & 2.11-14 for a list of species in seed mix. Specifically shrub species are listed in section 2.11.8.2. Sampling results are presented in the Vegetation section (2.8.8.36). Based on the comment, reclamation plans will include this shrub component. However, the land owner, Lonesome Country, LC has requested that no trees be replaced in the reclamation.

Section 2.11.41-7 Husbandry Practices on Revegetated Lands

The information and commitments in Sections 2.11.9 through 2.11.11 remain current for the WY State Lease 42804 Amendment area.

Section 2.11.41-8 Fencing

Any fencing removed by the permittee will be temporarily replaced during mining events. Any fencing removed by the permittee will be permanently replaced in equal or better condition of initial fencing as part of the reclamation plan.

Section 2.11.41-9 Hydrologic Restoration

The Wyoming State Lease 42804 amendment covers 600 acres on rolling to hilly terrain with most of the disturbance occurring in the flat open areas located amongst the steeper terrain. The Belle Fourche River is located 0.6 miles to the east, 1.35 miles to the north and 1.6 miles to the northeast since it forms an inverted U-shaped meandering corridor near the permit area. Green Mountain is located in the northwest quarter of the amendment area where the elevation rises to 3,754 feet at the summit. The lowest elevation on the site is 3,585 feet at the southern edge of the site.

Refer to section 2.6.3 regarding drainages within the mining area.

One unnamed drainage will be affected by mining in the amendment area. Approximately 1000 yards of this drainage which course through the center of the amendment area from east to west will be affected; the largest pond in the claim spills into this drainage. This drainage will be reclaimed back to its original contour with the exception the addition of a pond at the beginning of the drain on the west. This pond will have steeper slopes as

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well as greater depth than the water that currently collects in that area making a marshy pool.

In addition the small southern most pond in the amendment area will be mined through and replaced with improvements, including steeper slopes and greater depth. See WYG&F correspondence regarding post min impoundment on private surface.

All surface water on the amendment area underwent quarterly baseline water sampling for a year. Results from this sampling can be found in section 2.6.5.24. Information regarding wetlands in the amendment area can be found in section 2.12-20, this is also where correspondence with USACE can be located as well as illustrations of the wetlands within the amendment area.

General BMP's utilized, concerning discharge, are listed in the Bentonite Performance Minerals' Wyoming General Storm Water Permit for Mining Operations Authorization and are listed in Section 2.10.11-1 of Permit 267C.

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Section 2.11 Reclamation Plan

Section 2.11.1 Introduction

Numerous components of LQD Noncoal Rules and Regulations Chapter 2, Chapter 3 and Chapter 13 and W.S. § 35-11-406 and W.S. § 35-11-415 outline Reclamation Plan elements. This section of the permit seeks to organize these components and where applicable, makes clear the distinctions established by Chapter 13.

The commitments outlined in this section apply to most lands affected in recent years and to all lands permitted under the A1 and A2 amendments. All variations to these general plans which may apply to specific Chapter 13 Updates or amendments will be submitted as individual subsections of Section 2.11 in the respective Chapter 13 Update or amendment application.

Section 2.11.2 Postmining Land Uses

LQD Noncoal Rules and Regulations Chapter 3, Section 2(a)(i) establishes the overall reclamation standard that "reclamation shall restore the land to a condition equal to or greater than the highest previous use". Section 2.1.1 of this permit establishes the premining land use of grazingland.

The permittee will restore these postmining land uses as stated in Section 2.1.2. The collective reclamation techniques discussed below will ensure achievement of the "equal to or greater than" standard.

Chapter 3, Section 2(a)(ii) requires restoration of postmining wildlife habitat unless the proposed uses preclude use as wildlife habitat. The collective reclamation techniques discussed below will restore wildlife habitat which is commensurate with habitat conditions which existed prior to the mining operation. The postmining reclaimed surface configurations, restored drainage patterns, approved postmining stockponds, and the type and vigor of seeded plant species will ensure wildlife use.

Section 2.11.3 Backfill, Grading And Contouring Plans And Schedules

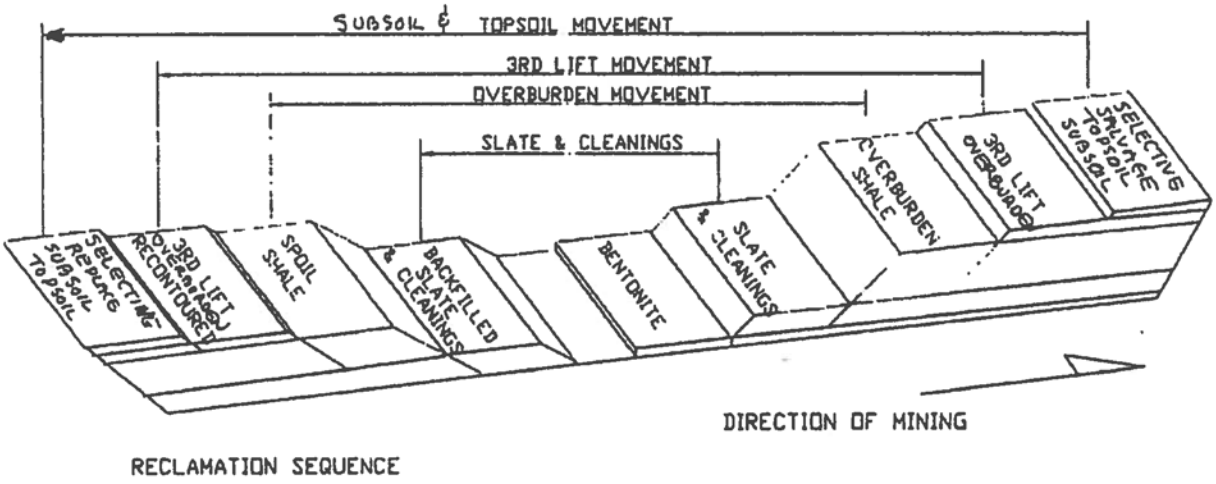
Mine Plan Sections 2.10.6 and 2.10.7 outline the general mining progressions and schedule. This Reclamation Plan section describes detailed but general reclamation practices which show that reclamation is timely and concurrent with the mining operations and that reclamation provides surface configurations which support the specified land uses.

The permittee uses no tailings impoundments, tailings disposal areas, head leaching facilities nor spent ore disposal areas as listed in Chapter 2, Section 2 (b)(iii)(F). This Reclamation Plan does not address such facilities or areas.

Section 2.11.3.1 Backfill Progressions, Temporary Overburden Stockpiles And Schedules

Mine Plan Section 2.10.6 and Mine Plan Figure 1 outline the general backfill progression and demonstrate that backfill is placed at approximately the same stratigraphic level from which it was removed. The cleanings from the top of the bentonite bed and other slate/shale cleanings are backfilled on the previous pit bottom. The "tiered" system (Reclamation Plan Figure 1) continues by replacing the lower overburden layers from the current pit over the cleanings. The upper portion of the mined overburden from the current pit is placed at an intermediate level in the backfilled pit. Lastly, the third lift (immediately below the subsoil) from the current pit is placed closest to the surface. This third lift is graded to the desired contour and surface configuration as shown in Reclamation Plan Figure 1.

Reclamation Plan
Figure 1 MINING & RECLAMATION SCHEMATIC OF MATERIAL MOVEMENT



All temporary overburden stockpiles will be used in backfill as soon as possible consistent with reclamation progressions and schedules outlined in Section 2.11.3.3.

Section 2.11.3.2 Permanent Out Of Pit Overburden

Mine Plan Section 2.10.6 outlines three "schedules" or different pit series development sequences. Schedule A allows the possibility of permanent, out-of-pit overburden stockpiles. Schedules B and C commit to backfilling all mined overburden material.

When the permittee creates permanent overburden stockpiles, the reclamation will achieve all the performance standards of LQD Noncoal Rules and Regulations Chapter 3, Section 2(i)(iv)(B)(II) including:

- overburden placement will not occur on native slopes that exceed 20 degrees (approximately 33% or 3:1 slopes).

- stabilizing the overburden slopes by grading and contouring them to blend with adjacent native and reclaimed lands.

- covering the stabilized overburden with subsoil and topsoil.

- seeding the topsoil with an approved permanent seed mix.

- overburden placement will not block ephemeral, intermittent or perennial drainage channels.

- overburden which is placed on pre-Act affected lands will be subject to the other reclamation practices following in this section.

Section 2.11.3.3 Reclamation Progression Maps And Schedules

Various citations in the Wyoming Environmental Quality Act and LQD Noncoal Rules and Regulations Chapters 2 and 3 and 13 require "plans" or "detailed plans" and various "maps" and projected "time schedules" for the reclamation processes. As stated in Mine Plan Sections 2.10.6 and 2.10.7 and Section 2.11.3 above, the permittee commits to reclaiming land concurrently with each new cut in each pit sequence.

Furthermore, LQD Noncoal Rules and Regulations Chapter 13, Section 3(a)(vi) establishes a specific time schedule for reclamation of all lands affected after August 31, 1983 (including all lands under approved A1 and A2 and subsequent amendments). Since the permittee sometimes field dries the bentonite and in consultation with the LQD District III staff, the permittee commits to the following schedule for all permitted lands affected after August 31, 1983:

- reclamation backfilling in a specific cut will begin within three (3) years from the date the cut was initiated and permanent seeding will be completed no later than five (5) years from the date the cut was initiated.

- each specific deviation which exceeds this schedule will be individually identified in the appropriate Annual Report as a Variance requested under provisions of W.S. § 35-11-601(a). The Variance request will specify the alternate reclamation schedule and explain reasons for the adjusted schedule. The permittee understands that the LQD will decide whether Variance request will be formally processed under W.S. § 35-11-601(a).

- each Annual Report will clearly identify the status of all affected land within the permit area using at least the following categories:

  - open pit affected land
  - unreclaimd associated affected land
  - backfilled, graded and contoured land
  - subsoiled/topsoiled land

- permanently seeded land
- full bond release land

➢ each Annual Report will clearly identify the new cuts (proposed mining) in all pit sequences which will experience mining operations during the next (upcoming) Annual Report cycle.

These commitments and Annual Report information will collectively satisfy requirements to present detailed reclamation plans, maps and schedules which establish that reclamation is concurrent with mining operations.

Section 2.11.4 Postmining Slopes, Topography And Through Drainage

Section 2.11.4.1 Postmining Slopes

In general, the postmining slopes will approximate the premining slope configurations except where initial "box cut" overburden material is permanently reclaimed (see Section 2.11.3.2) or where a permanent postmining impoundment is created (see Section 2.11.5). The reconstruction of approximate original slope gradients and timely completion of reclamation will assure stability of postmining landscapes.

LQD Noncoal Rules and Regulations Chapter 3, Section 2(b)(ii)(A) states that "individual slope measurements...shall be submitted with the reclamation plan". Because of the discussion above and under agreement with the LQD District III, these measurements will not normally be submitted. The permittee understands that the LQD reserves the option to ask for such slope measurements at the time of final bond release or if the reclaimed surfaces prove to be unstable and erosive.

The slopes on the final pit in any given sequence may have slopes as steep as 3:1 (18 degrees or 33%). The permittee will ensure that these slopes blend with surrounding native lands and reclaimed lands, that the slopes support the postmining land uses and that the slopes are stable.

Section 2.11.4.2 Postmining Topography

All postmining topography will blend smoothly with the surrounding topography and terrain and will reestablish stable contours consistent with postmining land uses.

W.S. § 35-11-406 (b)(vii) and LQD Noncoal Rules and Regulations Chapter 2, Section 2 (b)(iii)(B)(I) require description of the reclaimed land surface using contour maps or cross-sections. By agreement with the LQD District III, the permittee will not submit cross-section drawings for reclamation of lands affected by the general mining operations. In general, the permittee will not include contours on Reclamation Plan maps unless specifically requested by the LQD. The primary reason for this approach is that the mine site topography is relatively gentle and detail would not show useful information. There will be no postmining depressions with internal drainage.

The permittee understands that the LQD may request contour based maps and drawings for final bond release request and where certain drainage channels are restored.

Under the Schedule A (Mine Plan Section 2.10.6), the permittee reclaims the final pit in a pit series by reducing the highwall and creating through drainage where necessary. The reduced highwall slopes may be as steep as 3:1 (18 degrees or 33%) if those slopes will clearly be stable. To ensure stability on steeper slopes and long slope lengths, the permittee will break up these slopes by creating terraces during grading the Third Lift backfill. These terraces will generally be approximately the width of a single pass of reclamation equipment. The gradient of the terraces will be as gentle as possible and non-erosive. The downstream end of terraces will feather into the reclaimed surfaces to create non-erosive transitions.

Section 2.11.4.3 Through Drainage

All backfilling, grading and contouring operations will restore existing drainage patterns and create through drainage on all reclaimed lands. There will be no depressions which accumulate water unless the permittee secures approval from the LQD prior to constructing the feature. The restored drainage patterns and through drainage will be adequate to prevent pollution or diminution of the quantity and quality of surface and groundwater.

Section 2.11.5 Permanent Postmining Impoundments

Section 2.11.5.1 Historical Reclamation Practices

Prior to the construction of an official permit document, the current permittee and its predecessors occasionally constructed postmining impoundments (stock ponds) on reclaimed lands. In general, the LQD requested no designs for or knowledge of the impoundments prior to their construction. The LQD will resolve the status and function of these historically constructed permanent impoundments during final bond release procedures.

Section 2.11.5.2 Reclamation Practices After July, 2000

Prior to constructing permanent impoundments on lands which are reclaimed after July 31, 2000, the permittee will submit information and drawings which fulfill the intent of the following provisions of the LQD Noncoal Rules and Regulations:

Chapter 2, Section 2(b)(iii)(B)(Ill)
Chapter 2, Section 2(b)(iii)(E)(I)-(V)
Chapter 3, Section 2(a)(iii)
Chapter 3, Section 2(b)(i)(D)
Chapter 3, Section 2(b)(ii)(C)
Chapter 3, Section 2(g)(i)-(iv)

This information will be formatted as a specific section of this Reclamation Plan and will be submitted under Noncoal Rules and Regulations Chapter 7 as a revision to the permit.

Section 2.11.6 Ephemeral Drainage Reconstruction

Section 2.11.6.1 Introduction

This section outlines the basic strategy followed by the current permittee and its predecessors in the reclamation of major ephemeral stream channels. This program was tailored for the ecosystem of northeastern Wyoming and the equipment available for construction. Drainages constructed in the described manner have proven stable through several major flood events.

Section 2.11.6.2 Drainage Size And Other Characteristics

Only relatively large channels have been and will continue to be built under this approach. As a rule, channels which qualify as large, are classified as third order drainages and have a minimum watershed size between 50 and 100 acres. Such channels are characterized by a generally sinuous character and a concave-up (concave while looking upstream) stream profile. Drainages which have relatively straight channels and straight or convex-up profiles are categorized as minor and will not undergo the calculated channel reconstruction effort described here. A return of the approximate original contours and original slopes following mining assures a return of minor drainages which are at least as stable as those which existed in the pre-mine area.

Headcuts and minor gullies will exist in the reclaimed channel because the native stream channels which serve as a model for this method contain headcuts. The approximate return of the pre-mine hydrologic character required by the Wyoming Environmental Quality Act intends creation of a landscape which will behave in the same manner as the pre-mine area. The permittee is aware that it has the option to more thoroughly document the premining conditions of all drainages which it will affect.

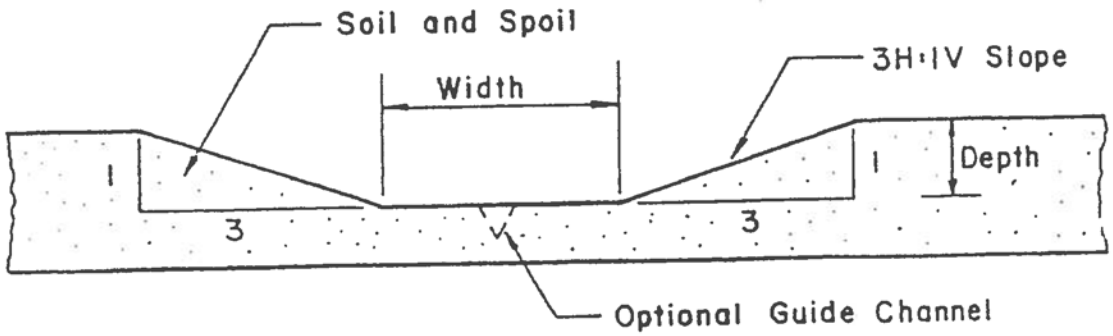
In addition to the fact that headcuts are a natural phenomenon, their presence cannot be considered destructive nor indicative of instability. Studies show that headcuts account for a minor portion of the total sediment lost from a typical watershed in northeastern Wyoming. Sheet flow was reported as the major source of eroded material, while an average total of only 25% of the sediment loss could be attributed to headcuts (Rankl 1987). This would seem to indicate that elimination of headcuts in favor of a "smoother" slope would increase erosion and conflict with the Wyoming Environmental Quality Act's goal of rebuilding a geomorphically suitable landscape. In order to look and act like a native drainage, erosion must occur in the same places at about the same rate as occurs naturally. Channels which are designed in order to lower the natural rate of erosion have proven as unstable and unacceptable as channels designed without consideration for erosion control.

With this understanding, this construction method was designed so that the natural rate of erosion would neither be increased nor decreased. A system is created which directs erosion.

Section 2.11.6.3 Design Elements

Past reclamation efforts indicate that channels built strictly according to engineering designs, such as Manning's model, result in an inappropriate amount of sediment loss. Geomorphic sizing methods have also failed to provide consistently successful channel designs. However both mathematical and geomorphic sizing methods have positive aspects. This method takes an approach which combines the strongest features of Manning's equation and geomorphic approaches.

The stream channel reconstruction program implemented in 1987, and the method followed to date, involves transposing an ideal pre-mine channel section within a broad flood valley. Manning's equation is used to calculate the 100-year flood path, which is referred to as the valley (Reclamation Plan Figure 2). The low-flow, sinuous channel will course within the valley. Soil bars are placed within the valley in order to guarantee that the low-flow channels follow the ideal path.



Reclamation Plan
Figure 2. Trapezoidal cross-section of typical Manning's channel.

Every effort is made to create a constant, concave-up valley grade with no areas which are steeper or with a profile shape other that than dictated by the stream order. Pre-mine streambeds in the Colony, Wyoming mining area have no structural controls, such as bedrock, which would produce sharp changes in valley grade. This means that stable convex-up (convex while looking upstream) valley profiles cannot exist in the undisturbed area. To be stable each reconstructed valley profile must therefore be built in a concave-up shape.

In order to determine the proper shape and degree of valley slope, the geomorphic character of the valley portions above and below the affected reach are examined. The reclaimed valley must have a concave slope intermediate between the unaffected stream sections above and below the zone of disturbance. Therefore, depending on the location and extent of mine disturbance, the target valley grade may vary greatly from site to site. However, the slope of the channel which will flow within Manning's valley cannot be allowed to be outside the bounds of the maximum and minimum slope percentages which have been determined to be erosionally stable for the area of disturbance.

Steady state third order stream courses in the Colony area maintain slopes which range between one and two percent. Because low spots have resulted in as many long-term reclamation problems as over-steep sections, a minimum slope percentage of one percent is equal in importance to the two percent maximum grade. Accordingly, neither a portion nor the entirety of the reconstructed channel must be allowed to fall outside these bounds. Guaranteeing formation of a sinuous channel course which has a grade within the critical slope range requires placement of a water guidance system within the valley.

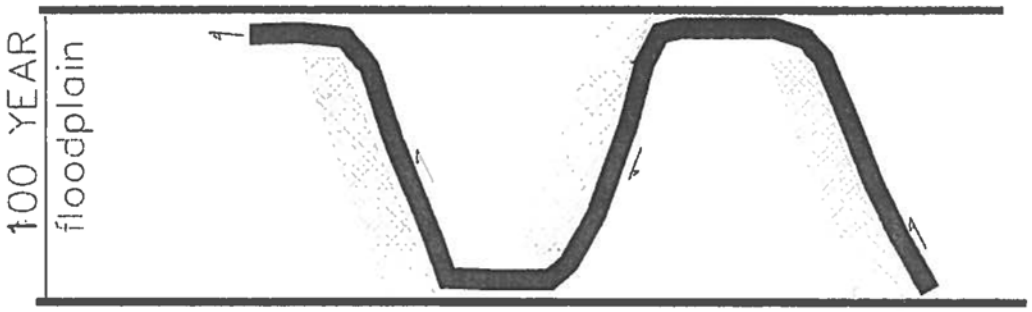
Manning's 100-year flood channel is the foundation of this program because channels described by this formula have proven erosionally stable during major floods. Additionally, Manning's provides the width and depth of a structure which will theoretically promote formation of a stable meandering water channel. However the ability of Manning's channels to induce sinuosity is dependent on a consistent valley bed slope. This requirement cannot be met due to the nature of the material mined and the tools used to mine. The bumps and ridges left by the equipment used to construct the drainage, as well as natural spoil slumping, frequently result in grade inconsistency. These slumps and ridges are not part of the original design and often lead to valley slopes outside the necessary one to two percent range.

In order to assure sinuous flow, rectangular shaped bars are constructed within Manning's valley. Placement of these bars is modeled after the area stream channel section which is considered the most stable and aesthetically appropriate. One end of each channel bar is tied into the valley bank while the distal end juts into the 100-year flood valley (Reclamation Plan Figure 3).

With minor variations, the aerial appearance of the bars are copied from the natural bars located within the model unaffected channel reach. Only the leading edge of the ellipsoidal native bar will be built. The angle of the upstream portion of the native bar will be copied as closely as possible but the length of the native bar may not be duplicated. The designed bars will be built so that Manning's 10-year flood channel can flow around the tip (Reclamation Plan Figure 4). The constructed soil bars may therefore be longer or shorter than the model.

The width and depth of the 25, 50, and 75 year flood courses are calculated using Manning's equation. For design purposes these sub-100 year flood channels are considered solid boxes. The derived flood paths are then stacked within the 100-year valley (Reclamation Plan Figure 4). The angle made by the lower edge of the stacked "boxes" describes the slope of the soil bars.

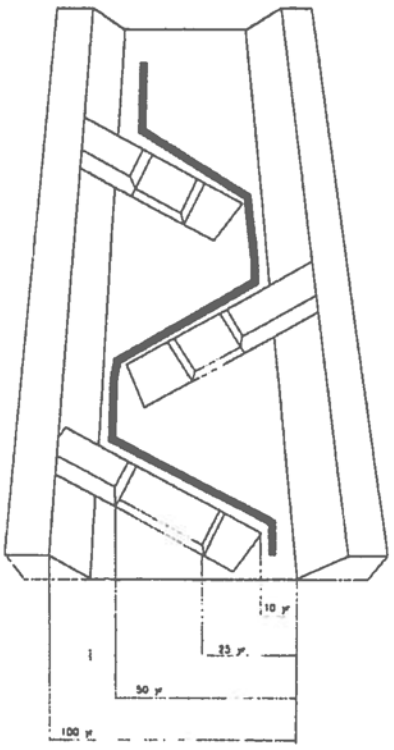
Reclamation Plan Figure 3.



Reconstructed channe bars

Extremely large flood flows
overtop the bars

Reclamation Plan Figure 4



By accommodating major floods, the bars will not obstruct or deflect flows into potentially destructive directions. Rather, large flood events will be allowed to course freely over each bar without causing excess sediment loss to the valley walls or the bars themselves.

The cornerstone of this approach is a wide, concave-up valley floor with dimensions described by Manning's equation using the 100-year, 6-hour flood event. The valley profile is intermediate between the areas above and below the disturbance with a valley sinuosity which is copied from the undisturbed area. This provides assurance that the pre-mine slope gradient and shape will be returned to the reclaimed area.

Vertical bar dimensions are also critical since bars which have been built without regard to flood courses have frequently resulted in failure of the bars and/or the valley. Geomorphic measures cannot be used to design the vertical dimensions of the soil bars because the native meander bars do not show a repeatable three-dimensional shape which could serve as a blueprint. Manning's mathematical sizing method is used as an alternative.

In design planning, the ideal native channel is superimposed onto the valley floor. Using the sinuosity of this ideal channel reach as the template, soil bars can be installed which counteract valley-slope inconsistencies and assure formation of a stable meandering channel. By constructing each bar at a height which compensates for major flows, large floods are allowed to course unencumbered within the valley. Sinuosity is introduced without compromising long-term stability.

The end result is a channel which has a concave-up profile with a slope less than the containing valley. Since this slope relationship exists in the pre-mine area, long term stability is assured. Channels constructed using this combination of Manning's and geomorphic sizing methods are more visually acceptable and have shown reduced sediment loss compared to those constructed strictly according to either approach alone.

Section 2.11.6.4 Notes On The Use Of Manning's Formula

Manning's Formula is expressed as $Vp = 1.49/n \times R^{2/3} \times$ the square root of the slope. The presentation of this formula is in Barfield, B.J., R.C. Warner and C.T. Haan, 1981. Applied Hydrology and Sedimentology for Disturbed Areas, 161-165 1st Edition, Oklahoma Technical Press, Stillwater, Oklahoma.

Runoff is calculated using USDA, SCS, Engineering Division-Hydrology Branch, Engineering Field Manual (EFM), Notice-4, 5/71; Kent, K.M. (comp.), W.A. Styner (rev.), 55 pp., Western Regional Technical Service Center, SCS, Portland Oregon.

Precipitation amount is derived from the Precipitation-Frequency Atlas of the Western United States, Atlas 2, Vol. IT-Wyoming, Miller, J.F., R.H. Frederick, and R.J. Tracy, U.S. Dept. Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Office of Hydrology, Silver Spring, MD, 1973.

"Q" is estimated using drainage area and slope calculated from 7.5 minute quadrangle

maps and/or company surveying of watershed area and slope. The range condition and soil type of the watershed are determined in the field and subsequently used to determine the curve number (CN) value according to the EFM Notice-4, 5/71.

A negative solution represents an impossible construction format and will therefore be discarded as a possible solution.

Section 2.11.7 Subsoil And Topsoil Redistribution Methods

Section 2.11.7.1 Introduction

Mine Plan Section 2.10.8 outlines the permittee's topsoil and subsoil salvage and storage (stockpile) procedures. The permittee will always seek to minimize the amount of time topsoil and subsoil remains in stockpiles.

Chapter 3, Section 2 (d)(ii) states that "Land which did not support vegetation prior to becoming affected land need not be revegetated unless subsoil or overburden from such affected land will support vegetation". When such native lands exist, they will be identified in the baseline vegetation studies. As noted below, the permittee will respread subsoil and topsoil on all affected lands because historical practices have demonstrated that all lands can be successfully revegetated. The special case of reaffected pre-Act lands is also discussed below.

Section 2.11.7.2 Topsoil Nutrient Analyses And Subsoil Suitability Tests

Chapter 3, Section 2 (c)(i)(C) states "Where topsoil has been stockpiled for more than one year, the operator may be required to conduct nutrient analyses to determine if soil amendments are necessary". The LQD has never required such analyses for any historical reclamation completed under the Wyoming Environmental Quality Act. The permittee does not see any need for these analyses based upon the facts of the historical record of reclamation success and full bond release.

Chapter 13, Section 3 (a)(i) allows the LQD Administrator to request subsoil suitability tests. The premining subsoil characterizations outlined in Section 2.7 and the subsoil salvage techniques outlined in Mine Plan Section 2.10.8 ensure that subsoil is handled in a manner which will facilitate successful revegetation. The LQD has never required subsoil suitability testing prior to redistribution of subsoil. The permittee does not see any need for additional suitability testing based upon the facts of the historical record of reclamation success and full bond release.

Section 2.11.7.3 Subsoil Redistribution Methods And Depths

If the permittee determines that the "third lift" backfill has been unduly compacted, the high compaction areas will be ripped to eliminate slippage between the backfill and subsoil.

The permittee will use scrapers to replace all subsoil. As shown in Reclamation Plan Figure 1, the available subsoil will be replaced on top of the recontoured "third lift" overburden. If the permittee is direct hauling from a new pit cut, all the salvaged subsoil will be redistributed at approximately uniform depths. When redistributing stockpiled subsoil, the redistribution depths will be approximately uniform. The subsoil will be graded as necessary, but any grading will avoid excessive compaction.

In select cases, the permittee may redistribute some subsoil on pre-Act lands which have been reaffected by ongoing mining operations. In these cases, the permittee will ensure that the Subsoil use does not reduce the potential for reclamation success on other lands. When used in this manner, the subsoil depths will vary and will be graded to blend with the adjacent pre-Act lands and the standard reclamation.

Section 2.11.7.4 Topsoil Redistribution Methods And Depths

The permittee will use scrapers to replace all topsoil as illustrated in Reclamation Plan Figure 1. If the permittee is direct hauling from a new pit cut, all the salvaged topsoil will be redistributed on available subsoil at approximately uniform depths. When redistributing stockpiled topsoil, the redistribution depth will be approximately uniform.

The redistributed topsoil may be graded, but will always be left in a roughened condition to protect the topsoil from wind and water erosion. The permittee will always conduct operations to limit excessive compaction of the redistributed topsoil.

Chapter 3, Section 2 (c)(i)(F) states that "If abundant topsoil is present, and it is not all needed to accomplish the reclamation required in the approved reclamation plan, the Administrator may approve of use of this topsoil.....in another area for reclamation purposes". In select cases, the permittee will exercise this option to spread topsoil on pre-Act lands which have been reaffected by ongoing mining operations. In these select cases, the permittee will ensure that the topsoil used will not reduce the potential for reclamation success on other lands. When used in these cases, the topsoil depths will vary and will be graded to blend with the adjacent pre-Act lands and the standard reclamation.

Section 2.11.8 Revegetation and Seeding Method

Section 2.11.8.1 Seedbed Preparation, Seed Mix and Seeding

The permittee prepares the seedbed with a spring-tooth chisel plow. This technique leaves deep furrows which trap available moisture and assist in controlling wind and water erosion.

The permittee plants the seed mix in Reclamation Plan Table 2.11.8.1 on all permanently reclaimed lands.

Reclamation Plan Table 2.11.8.1 Permanent Seed Mix and Seeding Rates

Scientific Name	Species	Lbs of PLS/acre*
Calamovilfa longifolia	Prairie Sandreed	1.0
Agropyron dasystachyum	Thickspike Wheatgrass	1.0
Agropyron smithii	Western Wheatgrass	1.0
Oryzopsis hymenoides	Indian Ricegrass	1.0
Elymus cinereus	Great Basin Wildrye	1.0
Stipa viridula	Green Needlegrass	1.0
Agropyron spicatum	Bluebunch Wheatgrass	2.0
Buchloe dactyloides	Buffalo Grass	1.0
Bouteloua gracilis	Blue Grama	1.0
Vicia Americana	American Vetch	1.0
Ratibida columnifera	Prairie Coneflower	1.0
Achillea millefolium	Western Yarrow	1.0
Sphaeralcea coccinea	Scarlet Globemallow	1.0
Sporobolus airoides	Alkali Sacaton	1.0
Secale cereale or Triticale	Fall Rye or Triticale	5.0-25.0**
Total		30.0

*PLS (Pure Live Seed) **15.0 lbs of PLS/acre used for Total figure

The seed mix includes a variety of species selected for their drought and alkaline tolerance; most species were discovered during the baseline study. A few species were selected because of their revegetation success on previous seeding. Additionally some were added due to the forage capacity they hold for certain species of wildlife. All species are self-renewing except the rye and Triticale. Fall rye or Triticale is seeded as a nurse crop with the permanent seed mix. The nurse crop protects the soil from erosion, adds organic mulch and reduces weed infestation.

The seed box is mounted on the chisel plow and set so that the seed is released into the chisel plow furrows.

The permanent seeding will occur from September to November each year as long as the topsoil is not frozen.

Seeding will be on the topographic contour unless safety considerations overrule or are perpendicular to the to the prevailing wind direction on very flat lands.

The permittee does not propose irrigation of any reclaimed and revegetated lands in the original permit area or on any amendment lands.

Any permanent topsoil redistributed outside the designated September through November permanent seeding window will be seeded with a temporary cover crop as long as topsoil conditions allow. The temporary cover will protect the topsoil and help conserve available

moisture.

Section 2.11.8.2 Shrub Species In Seed Mix

Shrubs are planted in late winter or early spring in addition to the permanent seed mix, to reestablish wildlife habitat.

Reclamation Plan Table 2.11.8.2 Shrub Mix and Seeding Rates

Scientific Name	Species	Lbs of PLS/acre*
Artemisia tridentate	Big Sagebrush	0.5
Artemisia Cana	Silver Sage	1.0
Artemisia frigida	Fringed Sagewort	1.0
Krascheninnikovia lanata	Winterfat	1.0

Historically, the LQD has accepted the absence of shrub species in the permanent seed mix if the permittee documents that each surface owner does not want shrubs seeded. In each Chapter 13 Update and all amendment applications after the A2 amendment, the permittee will present and briefly note the presence of written statements for each surface owner.

If the permittee does not secure written surface owner statements, a specific section of text will list the site specific seed mix.

Section 2.11.8.3 Seed Mix Substitutions

The permittee commits to the permanent seed mix in Table 2.11.8.1 when the mix components are readily available. History has shown that individual species may be unavailable at a given seeding because:

- The species and/or the preferred variety may not be available because of a poor seed crop or because federal or state agencies have purchased large quantities of seed.
- The cost may be excessive.
- The amount of available seed may not be adequate for the reclamation acreage.

In any given seeding effort, the permittee may need to substitute a small number of species. If the total number of substitutions is three (3) or more, the permittee will secure prior approval from the LQD District Office. Otherwise, the permittee will substitute a native or naturalized species of the same life form with similar characteristics. The permittee will report the substitutions in the first available Annual Report.

Section 2.11.8.4 Historic Seed Mixes And Methods

The permittee has used several different seed mixes and planting methods over the history of reclamation since July 1, 1973. The respective Annual Reports have

documented the historic combinations. The methods and seed mix outlined above are current commitments for the historic permit area and the A1 and A2 amendment areas. The permittee will revise this section via the amendment or Noncoal Rules and Regulations Chapter 7 procedures as appropriate.

Section 2.11.8.5 Other Postmining Plant Communities

The LQD Noncoal Rules and Regulations Chapter 3, Section 2 (d)(vi)(E) and (F) allow for reforestation and cropland. The permittee will generally not restore such communities unless they were present on the premining landscape and only when they are specified in this Reclamation Plan.

Section 2.11.8.6 Postmining Tree Restoration

The permittee occasionally affects lands which have one or more tree species present. These affected lands most often comprise haul/access road corridors and lands which are back-sloped above reclaimed highwalls of the last pit in a sequence. Section 2.8 (Appendix D-8) will include description of the tree composition and locations for all Chapter 13 Updates and all amendment lands after June 23, 2000 (approval date for the A1 and A2 amendments).

The permittee will not replant the destroyed trees unless the surface owner specifically requests restoration in writing. If a surface owner wants trees replanted, the permittee will include specific Reclamation Plan text which details the replanting methods and locations.

Section 2.11.9 Husbandry Practices On Revegetated Lands

Section 2.11.9.1 Noxious Weed Control

The permittee will use certified weed-free seed and standard agricultural practices to minimize the introduction of noxious weeds. The permittee will consult with appropriate county and state agencies when other weed control methods, e.g. spraying, appear appropriate to control localized weed infestations on stockpiles on revegetated lands. The permittee will continue these practices until the reclaimed lands are fully released from the reclamation performance bond.

The use of the fall rye cover crop and nurse crop will assist in reduction of all weed species.

Section 2.11.9.2 Protection Of Revegetated Lands

Chapter 3, Section 2 (d)(viii) requires a mutual agreement among the LQD Administrator, permittee, land owner or land managing agency which determine when the revegetated land is ready for the initial episode of domestic livestock grazing. As per current LQD

procedures, the permittee does not make projections regarding initial grazing on reclamation in the permit document. The LQD requests and the permittee provide this information in each Annual report.

The permittee will protect young vegetative growth from being destroyed by livestock until the vegetation is capable of renewing itself. The permittee will employ some combination of the following practices to accomplish this standard:

A. Selective Fencing

Based upon agreements with respective surface owners, the permittee may selectively fence reclaimed lands to control the pattern and duration of domestic cattle grazing. The fences will be removed after bond release if the surface owner requests.

B. Grazing Deferral and Controlled Grazing

Based upon agreement with respective surface owners and grazing lessees, the permittee will seek to properly manage domestic cattle grazing on revegetated lands so that the self renewing capacity of the revegetation is not negatively impacted.

Section 2.11.10 Evaluation of Revegetation Success and Bond Release

By definition from the Wyoming Environmental Quality Act (WEQA) reclamation seeks to reestablish "... use for grazing, agricultural, recreational, wildlife purposes, or any other purpose of equal or greater value". The permittee will restore a stable, non-erosive postmining surface which promotes a postmining land use of "grazingland" as defined in the WEQA. Revegetation practices will establish cover sufficient to prevent undue erosion. Revegetation will establish cover and production and species diversity and composition which support the land use and which meet the performance standards of LQD Noncoal R&R Chapter 3, Section 2.(d)(vi).

Prior to sampling for final bond release, a plan for evaluating reclamation success will be submitted and mutually agreed upon by Bentonite Performance Minerals, LLC and LQD.

Section 2.11.10.1 Full Bond Release Application Content

The permittee will submit each full bond release application separate from other permitting actions such as Annual Reports, amendments, Chapter 13 Updates, etc. The permittee will endeavor to submit each application at a time during the year which allows some LQD staff review time and which allows the field inspection to be conducted between late May and mid-September.

Prior to submitting an application for final bond release, a plan for evaluating application content will be submitted and mutually agreed upon by Bentonite Performance Minerals, LLC and LQD.

The permittee will submit the following information in each full bond release application.

- Tabulate the lands by legal description and acreage and reference these lands to accompanying maps. The maps must clearly identify the potential release units.
- Clearly state the premining and postmining land uses. The land use categories should be only those listed in W.S. § 35-11-103(e) (xxvi) and (xxvii).
- Outline the specific seed mix applied and date of seeding for each potential release unit. Note any remedial actions or husbandry practices applied after original seeding.
- Include a signed Landowner Statement of Satisfactory Reclamation from each surface owner for each release unit. A suitable form is available from LQD.
- Include approved State Engineer Office Permits for all postmining impoundments constructed on each potential release unit.
- Include quality photographs which are representative and illustrative of the characteristics of the release units. These photographs are not required, but very useful.
- Identify any formally designated Reference Area or Comparison Area which occurs in the close proximity to a potential release unit.
- Specifically note the status (active, reclaimed, etc.) of any haul access roads which served the potential release unit or which traverse the units.

The LQD Staff will review the application for complete and accurate information and arrange a suitable date for a field inspection.

Section 2.11.10.2 Office And Field Inspection Procedures

Chapter 13 of the LQD Noncoal Rules & Regulations establishes this category. As far in advance of submitting a bond release application, the permittee will endeavor to have an LQD staff member view the reclaimed lands to aid in development of a suitable bond release plan and give the preliminary opinion that the lands appear suitable for full bond release. The permittee and the LQD will also use this field exercise to establish Comparison Areas (as necessary) or confirm the use of established Extended Reference Areas. The native lands may be inside or outside the permit area boundary as long as management histories are comparable.

According the Guideline 2 it is agreed upon during field inspection that prior to initiating any field sampling program for final bond release the permittee will secure written agreement with the LQD District III concerning the specific formulation of the Null and Alternative Hypotheses and statistical test of means.

The LQD field inspection will evaluate the permittee's attainment of the performance standards of LQD Noncoal R&R Chapter 3, Sections 2.(a), 2.(d)(vi) and 2.(d)(ix).

- The total vegetation cover on the reclaimed lands must be at least equal to the total vegetation cover of nearby native lands, or to nearby designated Reference or Comparison Areas. This assessment of cover will be based upon desirable, non-weedy species.
- The reclaimed lands must be relatively free of designated noxious weeds or other troublesome, undesirable weedy species. No weedy species should dominate the reclaimed vegetation community.
- The permanent species must be evident and persistent in the postmining community. There should be clear evidence of species self-renewal.

Inspection Report and Bond Release Decision

The final decision will detail the lands granted final bond release and record the process as a numbered change to Permit No. 267C.

2U RANCH LLC

426 Lonesome County Road
Alzada, MT 59311
Phone (307) 878-4494
ericsson@childselect.com

November 13, 2017

SENT CERTIFIED MAIL
WITH RETURN

Joel Severin
Bentonite Performance Minerals, LLC
554 US Hwy 212
Belle Fourche, SD 57717

RE: WSL 42804, Permit 267C amendment - tree restoration

Dear Mr. Severin:

This letter shall serve as written notice that the surface owners of 2U Ranch LLC want all trees disturbed by WSL 42804, Permit 267C amendment mining to be replanted.

These trees have been as identified in 2.8 Vegetation, WSL 42804, Permit 267C, DEQ as follows:

- Disturbance of 86.23 ac of woodlands
- Density of 126.83 trees/ac
- The composition of the woodlands is 72.5% ponderosa pines, 22.5% bur oak, and 5% juniper
- Total of 10,936.55 trees (7,928.99 ponderosa pines, 2,460.72 bur oak, and 546.82 junipers)
- Pre-mining tree heights need to be quantified prior to disturbance.

We want the same acreage, density, composition, size, number, age and height of the trees that are removed to be replanted.

Sincerely,

Ronald J. Ericsson, PhD
Manager

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Sent To Joel Severin
Street and Apt. No., or PO Box No. 554 HWY 212
City, State, ZIP+4® Belle Fourche, S.D 57717

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

References

NRCS. 2011. Plant Materials Technical Note No. MT-73.

Ponderosa Pine. 2019a. http://www.westernexplorers.us/PonderosaPine.pdf.

Ponderosa Pine. 2019b. https://www.srs.fs.usda.gov/pubs/misc/ag_654/volume_1/pinus/ponderosa.htm.

Shepperd, W. D.; Battaglia, M. A. 2002. Ecology, Silviculture, and Management of Black Hills Ponderosa Pine. USDA Forest Service General Technical Report RMRS-GTR-97.

Uresk, D. W.; Yamamoto, T. 1986. Rocky Mountain juniper is poorly adapted to bentonite spoil and has low survival in amended bentonite spoils even under greenhouse conditions. Journal of Range Management 39(2).

Section 2.5.4 Overburden Data for Amendment Lands

Section 2.5.4 outlines the permittee's commitment to handling and backfilling overburden in a 'tiered' system. Based upon the permittee's commitment to extend this commitment to its mining operations on all Amendment lands, the LQD District III has agreed that no overburden sampling or characterization will be provided in any Amendment application as long as the permittee continues mining in the Newcastle Fm. (A-Bed) and/or the Mowry Fm. (C-bed).

However, if the permittee mines other bentonite beds in other formations, the permittee will achieve agreement with the LQD District III office concerning procedures for overburden characterization prior to conducting the field sampling regime.

Section 2.5.4.1 Amendment 3 Lands that include the F-Bed

Amendment 3 lands include proposed mining of the F-Bed that is a component of the Belle Fourche shale Fm. Page 2.5.4-3 is a geologic stratigraphic section that shows the geology of the Belle Fourche shale. Overburden samples were taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.1-1; samples highlighted are for Amendment 3. The shale tested with a lower pH, 3.9 at the 10-15 feet range. Using the permittee's tiered backfill system the lower pH spoil will be backfilled below the subsoil and topsoil thereby preventing acid spoil from contacting the vegetation rooting zone.

Section 2.5.4.2 Amendment 4 Overburden Data

Mining within the Amendment 4 area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3

Section 2.5.4.3 Amendment 5 Overburden Data

Mining in the Amendment 5 Areas (Wolff/Larson and S-14) will focus on the C-Bed (bentonite layer). As a result, the overburden in this Amendment will consist of 20-40 feet above the C-Bed (see page 2.5.4-3). The overburden will be backfilled into pits according to the permittee's tiered system outlined in Section 2.5.3.

There will be three out-of-pit spoil (overburden) piles associated with Amendment 5. These piles will also consist of the 20-40 feet of overburden above the C-Bed. The overburden will have slopes of greater than 4:1 and will be contoured and covered with subsoil (where available) and topsoil. Historical observations of similar out-of-pit overburden placement have shown that this material will not cause adverse impacts to surface water quality and revegetation efforts. Consequently no overburden sampling was performed for Amendment 5. This is consistent with the agreement with DEQ outlined in Section 2.5.4.

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Section 2.5.4.4 Amendment 6 Overburden Data

Mining within the Amendment 6 area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.5 Wolff Larson Amendment Overburden Data

Mining within the Wolff Larson Amendment area will remain in the C-Bed. The permittee will stockpile the overburden near the pit and replace it once the clay is salvaged, as described in 2.10.35-1 *Wolff Larson 3*.

Section 2.5.4.6 Scoggins Busenitz Amendment Overburden Data

Mining within the Scoggins Busenitz Amendment area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.7 Ridinger Amendment Overburden Data

Mining within the Ridinger Amendment area will remain in the C-Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.8 Maurer Lease 20 (NW) Amendment Overburden Data

Mining within the Maurer Lease 20 (NW) area will remain in the Newcastle Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner discussed in Section 2.5.3.

Section 2.5.4.9 State 14 2013 Amendment Overburden Data

Mining within the State 14 2013 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be one permanent overburden pile on the Amendment area. The overburden will be have approximately 5:1 slopes and be contoured, covered with soil and seeded during reclamation.

Section 2.5.4.10 FAB 5 FAB 6 Joy Bell 3 Amendment Overburden Data

Mining within the FAB 5 FAB 6 Joy Bell 3 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be no permanent overburden piles on the Amendment area.

6/1/17

Section 2.5.4.11 Joy Bell 12 & Joy Bell 13 Amendment Overburden Data

Mining within the Joy Bell 12 & Joy Bell 13 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be one permanent overburden pile on the Amendment area, in the southeast corner of the Joy Bell 13 claim. The overburden will be have approximately 5:1 slopes and be contoured, covered with soil and seeded during reclamation.

Section 2.5.4.12 Link & Maurer Lease Amendment Overburden Data

Mining within the Link & Maurer Lease area will remain in the Newcastle Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3.

Section 2.5.4.13 McDonald Amendment Overburden Data

Mining with the McDonald are will include the F-Bed and G-Bed formations. Overburden analysis of Belle Fourche shale formation was completed on the McDonald property. Overburden samples were originally taken as part of Amendment 4 and were taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Two samples were taken above the G-Bed formation and 3 samples were taken above the F-Bed formation, sample locations can be found on page 2.5.5-6. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.1-16. The table below identifies sample results that are marginal or unsuitable with Department of Environmental Quality LQD's standards. Special handling of the material described below will be discussed in further detail in Section 2.10-56.1, in combination with the permittee's tiered backfill system, discussed in Section 2.5.3, in order to have adequate subsoil and topsoil in the reclamation to prevent spoil from contacting the vegetation rooting zone.

Sample	Depth (Ft)	Parameter	Characteristic	Sample	Depth (Ft)	Parameter	Characteristic
S1	0-5	pH	marginal	S3	10-25	EC	marginal
S1	5-10	pH	unsuitable	S3	0-55	SAR	unsuitable
S1	0-55	SAR	unsuitable	S3	0-35	ABP/1000	unsuitable
S1	0-20	EC	unsuitable	S3	0-10	Boron	unsuitable
S1	20-45	EC	marginal	S4	10-35	pH	unsuitable
S1	0-55	ABP/1000	unsuitable	S4	30-40	SAR	unsuitable
S1	0-5,10-15,25-50	Boron	unsuitable	S4	0-40	ABP/1000	unsuitable
S2	0-5	pH	unsuitable	S4	35-40	Boron	unsuitable
S2	10-50	SAR	unsuitable	S5	0-10,20-30	pH	unsuitable
S2	0-10,25-50	ABP/1000	unsuitable	S5	10-30	SAR	unsuitable
S2	5-10,20-25,30-35	Boron	unsuitable	S5	0-15	ABP/1000	unsuitable
S3	0-10	EC	unsuitable	S5	5-15	Boron	unsuitable

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Section 2.5.4.14 State Lease 15 2015 Amendment Overburden Data

Mining within the State 15 area will remain in the C- Bed. The permittee will continue to follow the backfilling and handling of overburden in the 'tiered' system manner as discussed in Section 2.5.3. There will be no permanent overburden piles on the Amendment area.

Overburden sampling was conducted on March 17, 2016 as outlined in WYDEQ/LQD Guideline 1 Section II. Overburden samples were originally taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.14-1. An illustration of the sample locations can be found on page 2.5.5-8.

Section 2.5.4.15 Wyoming State Lease 42804 Amendment Overburden Data

Mining within the WY State Lease 42804 area will remain in the Newcastle Bed. The permittee will adjust the "general backfilling and handling of overburden in the 'tiered' system" manner as discussed in Section 2.5.3 in order to ensure that the most suitable overburden material (tier's 20-30') lies next to the topsoil, due to the suitability of the overburden samples acquired.

Overburden sampling was conducted on December 16, 2013 as outlined in WYDEQ/LQD Guideline 1 Section II. Overburden samples were originally taken with a 4-inch auger drill mounted on a 4X4 1-ton truck. Every 5 feet the drill augers were pulled out of the hole and a composite sample was collected from the auger. Sample results are included starting on page 2.5.4.15-1. An illustration of the sample locations can be found on page 2.5.5-7. The laboratory overburden analysis for Wyoming State Lease 42804 indicate unsuitably acidic overburden in each of the tiers of sampling except for S1A 0-5' and 20-25' and S2A tier 25-30'.

6/1/17

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Date: 1/9/2015

CLIENT: Bentonite Performance Minerals, LLC
Project: WY State Lease 04
Lab Order: S1412312

CASE NARRATIVE

Report ID: S1412312001

Samples S1A, and S2A were received on December 19, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

6/197

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Bentonite Performance Minerals, LLC

554 U.S. HWY 212
Belle Fourche, SD 57717

Report ID: S1412312001

Project: WY State Lease 04
Date Received: 12/19/2014

Date Reported: 1/9/2015
Work Order: S1412312

Lab ID	Sample ID	Depths	pH	Saturation	Electrical Conductivity	PE Calcium	PE Magnesium	PE Sodium	SAR
		Feet	s.u.	%	dS/m	meq/L	meq/L	meq/L	
S1412312-001	S1A	0-5	6.6	106	4.81	24.1	37.8	21.1	3.80
S1412312-002	S1A	5-10	3.9	68.1	4.68	23.0	28.1	17.7	3.51
S1412312-003	S1A	10-15	3.8	43.2	1.92	9.81	5.70	4.09	1.47
S1412312-004	S1A	15-20	4.4	55.6	2.70	16.0	9.74	9.70	2.70
S1412312-005	S1A	20-25	7.5	86.4	2.36	12.0	6.41	8.56	2.83
S1412312-006	S2A	0-5	4.0	57.9	0.53	2.49	1.14	0.70	0.52
S1412312-007	S2A	5-10	4.4	64.6	0.36	1.18	0.60	0.91	0.96
S1412312-008	S2A	10-15	4.0	41.4	1.39	6.02	1.97	4.40	2.20
S1412312-009	S2A	15-20	3.8	79.1	3.80	19.0	7.98	19.0	5.17
S1412312-010	S2A	20-25	3.9	81.4	3.46	12.5	5.54	14.7	4.88
S1412312-011	S2A	25-30	6.0	173	1.58	4.87	2.54	7.96	4.13

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Bentonite Performance Minerals, LLC

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Date Received: 12/19/2014

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Lab ID	Sample ID	Depths Feet	Sand %	Silt %	Clay %	Texture	Arsenic ppm	Nitrate(as N) ppm	Molybdenum ppm	Selenium ppm
S1412312-001	S1A	0-5	8.0	4.0	88.0	Clay	0.13	0.7	0.3	<0.02
S1412312-002	S1A	5-10	32.0	15.0	53.0	Clay	1.23	0.1	0.14	<0.02
S1412312-003	S1A	10-15	18.0	62.0	20.0	Silty Loam	0.39	0.2	0.18	<0.02
S1412312-004	S1A	15-20	18.0	50.0	32.0	Silty Clay Loam	0.55	0.2	0.27	<0.02
S1412312-005	S1A	20-25	7.0	51.0	42.0	Silty Clay	0.10	0.2	0.15	<0.02
S1412312-006	S2A	0-5	26.0	32.0	42.0	Clay	0.42	0.2	0.14	<0.02
S1412312-007	S2A	5-10	16.0	36.0	48.0	Clay	0.26	0.1	0.16	<0.02
S1412312-008	S2A	10-15	20.0	57.0	23.0	Silty Loam	0.22	0.1	<0.05	<0.02
S1412312-009	S2A	15-20	10.0	66.0	24.0	Silty Loam	0.74	0.1	0.09	<0.02
S1412312-010	S2A	20-25	10.0	45.0	45.0	Silty Clay	0.70	0.1	0.10	<0.02
S1412312-011	S2A	25-30	16.0	32.0	52.0	Clay	0.75	5.7	0.3	<0.02

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

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Date Reported: 1/9/2015
Work Order: S1412312

Lab ID	Sample ID	Depths Feet	Total Carbon %	TOC %	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Pyr+Org Sulfur %	Pyr+Org AB t/1000t	Pyr+Org ABP t/1000t
S1412312-001	S1A	0-5	0.4	0.2	1.86	58.2	16.8	-41.4	0.60	18.8	-1.99
S1412312-002	S1A	5-10	0.2	0.1	0.47	14.7	5.58	-9.11	0.11	3.53	2.05
S1412312-003	S1A	10-15	0.8	0.8	0.35	10.8	4.11	-6.67	0.26	8.14	-4.03
S1412312-004	S1A	15-20	5.1	5.0	0.42	13.2	3.04	-10.2	0.35	11.0	-7.95
S1412312-005	S1A	20-25	0.9	0.7	0.23	7.19	14.1	6.92			
S1412312-006	S2A	0-5	1.2	1.2	0.24	7.43	4.76	-2.67			
S1412312-007	S2A	5-10	0.9	0.8	0.18	5.66	11.1	5.44			
S1412312-008	S2A	10-15	0.3	0.3	0.09	2.85	2.13	-0.72			
S1412312-009	S2A	15-20	0.3	0.2	0.11	3.28	5.19	1.91			
S1412312-010	S2A	20-25	0.4	0.3	0.09	2.75	9.49	6.74			
S1412312-011	S2A	25-30	0.3	0.1	0.08	2.35	16.7	14.4			

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

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