The US Bureau of Land Management (BLM) is a Federal Land Management Agency with a Multiple Use Mission.
Public Lands, Onshore Federal and Indian Minerals
BLM Responsibilities

700 million acres
sub-surface minerals =

30% of land in US!

- 261 million acres of BLM-managed surface and minerals.
- 380 million acres of mineral estate where the surface lands are managed by other federal agencies. (56 million subsurface Indian Mineral Estate)
- 58 million acres of split estate, which is Non-Federal Surface ownership overlying Federal Minerals.
The BLM manages about 100,000 wells.
Oil and Gas is a temporary use of the land.
Interim Reclamation

Tear-drop Truck Pull around for Tanker Trucks
If the oil or gas is PIPED out, & there are NO tanks, & NO tanker truck needed, then EVEN MORE can be reclaimed.
Improvements in Interim Reclamation

- On plats
- Developing I & E certification program & hold Construction Reclamation Class
- Long-term vs Short-term % in our NEPA documents, which is applied to the APD or COAs.
Minimizing Disturbance

Directional Drilling:
- Many wells on a pad.
- A mile or two is common, depends on geology
Soil Management

• Proper management of topsoil – windrow instead of steep piles
• Recountering
• Soil Amendments
Natives

- Use a mixture of seeds that are native and adapted to the local climate and soil type.

Grouse Habitat → Not Grouse Habitat → Crested wheatgrass
When to Seed

• Late fall planting,
• Seed after the first frost, and before Spring rains (October – April) for best germination and survival. (For the Rocky Mtn. Region) *(Exception: prior to monsoon seasons)*

• Do not broadcast on soil that has crusted over (hardened).
### Weed-free – Seed Tag

**Kind:** BBM-UPLAND-SHRUB-PITS 4, 8 &10  
**Lot:** 57327

<table>
<thead>
<tr>
<th>Kind &amp; Variety</th>
<th>Pure%</th>
<th>Germ%</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>GARDNER SALTBRUSH</td>
<td>19.89</td>
<td>60</td>
<td>UT</td>
</tr>
<tr>
<td>WINTER SALTBRUSH</td>
<td>18.92</td>
<td>52</td>
<td>NM</td>
</tr>
<tr>
<td>CANE SALTBRUSH</td>
<td>14.47</td>
<td>66</td>
<td>NM</td>
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<tr>
<td>SHADSCALE SALTBRUSH</td>
<td>7.57</td>
<td>65</td>
<td>UT</td>
</tr>
<tr>
<td>BLACK GREASEWOOD</td>
<td>7.46</td>
<td>66</td>
<td>UT</td>
</tr>
<tr>
<td>RUBBER RABBITBRUSH</td>
<td>5.88</td>
<td>67</td>
<td>UT</td>
</tr>
<tr>
<td>BIG SAGEBRUSH</td>
<td>2.46</td>
<td>80</td>
<td>UT</td>
</tr>
</tbody>
</table>

**Crop:** .04  
**Inert:** 23.48%  
**Weed:** .03%  
**Net Wt:** 30.48# = (13.80PLS#)

**Noxious Weed:** None Found  
**Test Date:** 04/05

**BLACK BUTTE COAL CO**  
**5 ACRES**
Calculating Pure Live Seed (PLS)

**PLS** = %Purity x Germination x lbs. Bulk Seed

- % Purity = 90%
- % Germination = 95%
- Bulk Seed = 100 lbs.

\[
\text{PLS} = 0.90 \times 0.95 \times 100 = 85 \text{ lbs. PLS}
\]
Broadcast vs. Drill Seeding

**Drill seeding**
- Plant seed $\frac{1}{4}''$ to $\frac{1}{2}''$ deep (or less)
- On the contour
- 12-15 pls or 30-50 seeds per sq ft

**Broadcast**
- Double the amount:
- 20-30 pls or 50-75 seeds per sq ft
- Use 1/2 rates if inter-seeding shrubs

*Seed to soil contact.*
But do not drill too deep.
Use a broadcast Seeder
Drill Seeding is for Semi-Flat Areas
Drill Seeding is Not for Steep Slopes, and Certainly Not To Be Done Up and Down the Slope

Should have been done **ACROSS** the contour
Drill Seeding – Mixed Results
Why Drill Seeding Often Fails
Why Drill Seeding Often Fails
Imprinting
Drill Seeding vs. Imprinting

2007 2010
If at First You Don’t Succeed Try, Try Again

• If your seeding is not successful in 3 or more growing seasons, you may need to begin the process again.

But do it differently this time.
Caution with Hydromulching with seed in Dry Climates
Hoof-action Creating A Rough Site to Trap Seed and Water
Match the Species to the Site
Precipitation? Saline/Sodic?

Match to the reference site
It typically will take **3 or more years** to obtain a successful stand of grass. Patience.
Proper Management of Topsoil Enables Natives to Recolonize
Restoring Native Vegetation
Habitat and Forage

← This.

Not This. →

Crested wheatgrass
Special Mixes

Beneficial Seed Matrix for Sage Grouse, Mule Deer, Antelope and Associated Sage Steppe Species

Published by: BLM, NRCS, Wyoming Dept. of Game & Fish, The Upper Green River Basin Local Sage Grouse Working Group
Shrubs for Habitat
• Small-seeded shrubs, such as sagebrush, should be sown separately on the surface (on top of snow) in low or sheltered areas that collect snow and have little wind.
NonNative Seed Mixes
An Option for Private Surface
AFMSS2
From Paper to Increased Big Data

New!

Rolling Out Now!

• Reclamation Plan Criteria in individual fields
• Existing vegetation condition
• Recountering
• Drainage/ Erosion Control
• Stockpile/ soil management
• Surface disturbances
• Backfill regs
• Pit/Sump Closures
• Redistribution of topsoil
• Soil treatments
• Seedling
• Weed Control- PUP &/or Weed Mgmt Plan
• Seed Mix Bed Prep
• **HOW** reclamation is conducted will be in our AFMSS2 database!

**In development:**

• Our Sundry process (subsequent actions of wells), ie, changes to the Reclamation Plan, Notice of Interim and Final Abandonment Notices.
• Monitoring Data
SDARTT: Surface Disturbance Analysis & Reclamation Tracking Tool

SDARTT will define **WHERE** reclamation was conducted geospatial.

- Track disturbance and density caps
- Track polygons overtime.
- Produce Reclamation Acres and % for any Analysis Area.
New!

Greater Sage-grouse LUP Implementation

- Focused on Restoration of Seasonal Habitat
- Minimize development and leasing in habitat
- Increased landscape monitoring and tracking

$$ for GRSG efforts ~$41 million
Compensatory Mitigation

- Off-site projects
- A tool to address Residual Impacts
- Mitigation Handbook coming soon
- Unsure durability