

BENTONITE MINING AND SAGE GROUSE IN MONTANA



**A presentation to the
Sage-grouse Habitat Conservation Advisory Council**

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AMCOL**

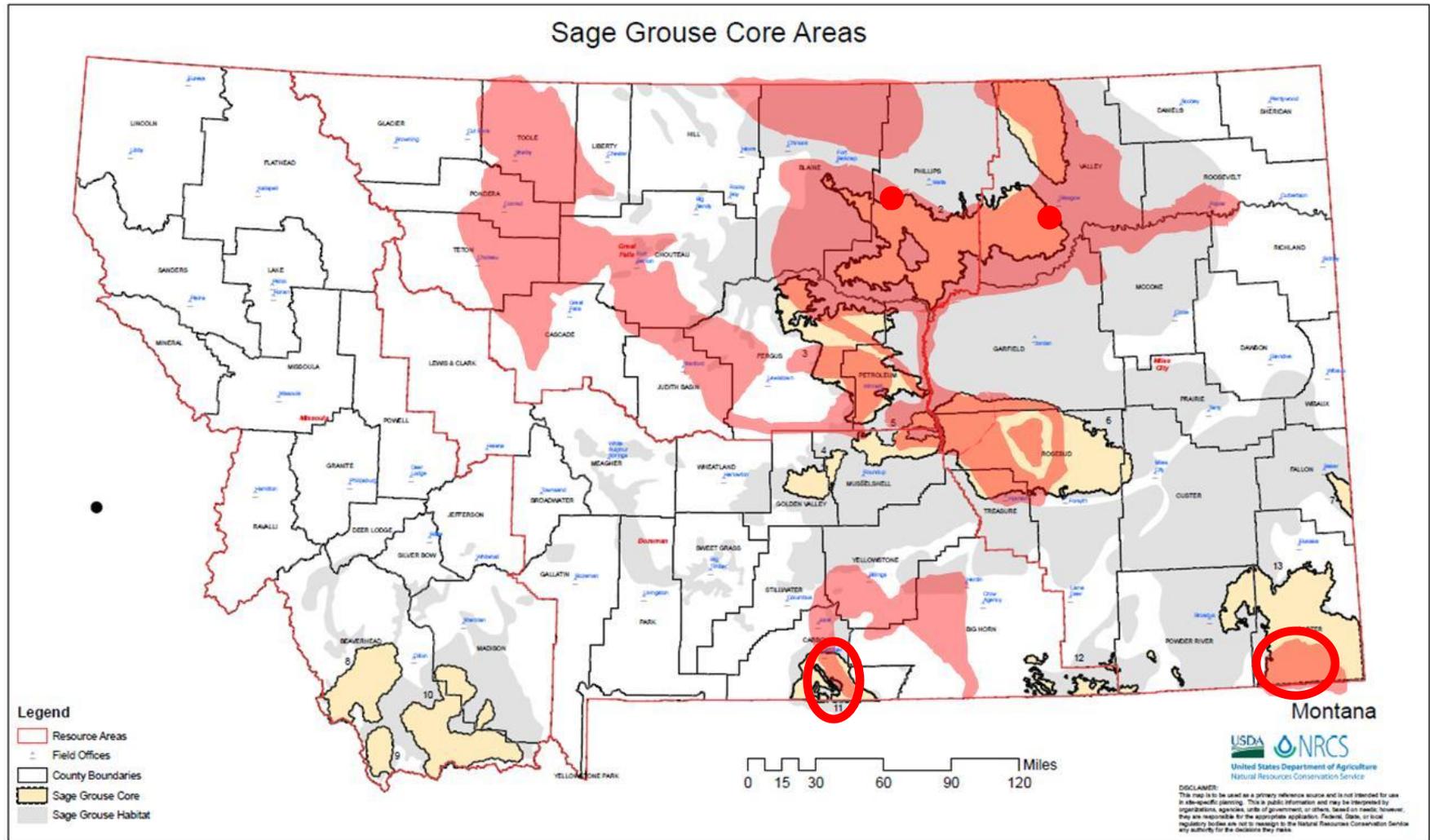
June 25, 2013

The Bentonite Industry

- Five Major US Companies
- All five active in Wyoming
 - Black Hills area
 - Casper area
 - Big Horn Basin
- Three active in Montana
 - Carter County
 - Carbon County
 - Other areas



Sage Grouse Core Area / Bentonite Occurrence Convergence



Habitat In Bentonite Country



Bentonite Mine Development Process

- Bentonite is a “Locatable” mineral under the 1872 Mining Law
- Mining Claims give legal right to the mineral; Permits required to do anything about it.
- Lengthy process – 10 years or much more
- Detailed
 - Drilling to define resource / Geology / Soils / Hydrology / Vegetation / Wildlife / Paleo resources / Archeology / Social impacts
 - Mine engineering / Reclamation planning
- Require numerous concurrent mine sites to obtain needed quantity / quality of clay for commercial markets
 - Small
 - Widely scattered



Exploration Methods

- Small truck mounted auger drills
 - Short duration
 - Low disturbance
 - Use existing road networks + cross country
- Time frame can be flexible
- Must follow mineral



Mine Design

- Defined by the resource
 - No such thing as “horizontal directional mining”!
- Reclamation plan integral to mine design
- Pits usually small and narrow
- Numerous concurrent pits



Permitting

- State
 - DEQ
- Federal
 - BLM
- Land owner wishes
- Typical end point: wildlife habitat and grazing
- Post reclamation land use defines reclamation plan
- Annual permit reviews

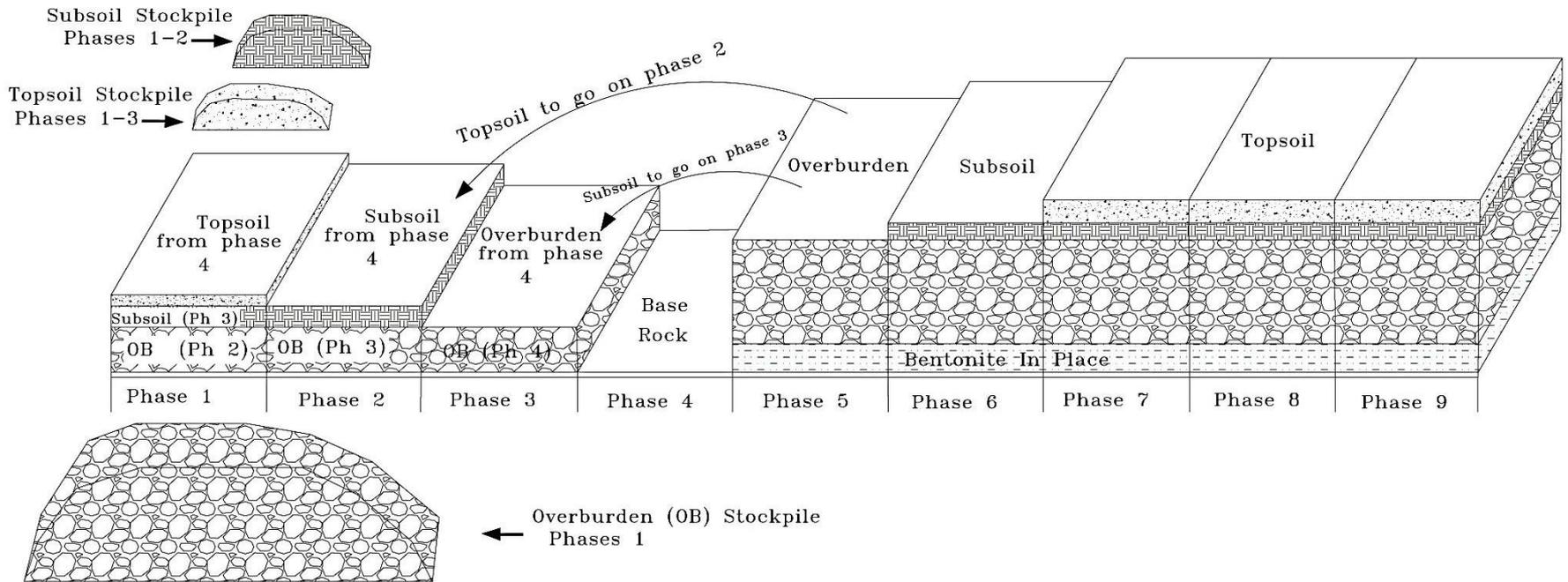


Mining Methods

- Open pit contour mining
 - Typically short duration
 - Small footprint typical (~100-400'wide x 300-400'long)
 - Cast-back mining method



Cast-Back Mining System



Benefits

- Minimizes disturbance area
- Facilitates live topsoiling – All topsoil salvaged and used
- Rapid reclamation – shortened time to restored habitat

Access / Haul Roads

- High intensity, short duration use during Mining Phase
- Moderate intensity, short duration use during Hauling Phase
- Reclaimed with the mine pit



Post Mining, Pre-Closure Activities

- Bentonite stockpiling
- Field drying
- Hauling



General Reclamation Methods

- Recontouring to establish topographic variety
 - Drainages
 - Ponds
 - Rock outcrops
 - Rock cairns
- All topsoil salvaged and utilized
- Selective topsoiling where topsoil is limited
- Site / Micro site native species seed mixes
- Wildlife Habitat Reestablishment Focus
- Post reclamation monitoring to point of release



Historic Impacts To Sage Grouse

- Larger disturbance footprint
 - Larger pits
 - On-bank overburden stockpiling
- Longer disturbance
- Revegetation focused on grass reestablishment
- Sage Brush considered a nuisance



Current Sage Grouse Mitigation Efforts

INDUSTRY DESIGNED AND LED

- Topographic variety
- Vegetative variety to fit topography and soils
 - Increased forbs
 - Increased shrubs
 - “Striped” or “island” revegetation
- Sagebrush
 - Broadcast seeding
 - Pitting
 - Dozer basins
 - Drainages
 - Creative germination / growth strategies



Sagebrush From Untreated Seed



Sagebrush From Zeba Treated Seed



Irrigated Sagebrush Tubelings



Sagebrush From Gel Pacs



Sage Grouse Mitigation Efforts

- Active invasive weed control (esp. Cheat Grass)
 - Lack of similar efforts by land management agencies and private land owners
- Watering sources



Ponds



Guzzler Installation



Guzzler Results



Recognition of Success

- 1991

Excellence in Environmental Performance in Mining Operations – Wyoming DEQ / LQD

- 1999

Wildlife Habitat Reclamation and Stewardship Award – Wyoming Game & Fish Department

- 2000

Excellence in Surface Mining Award - Wyoming DEQ / LQD

- 2010

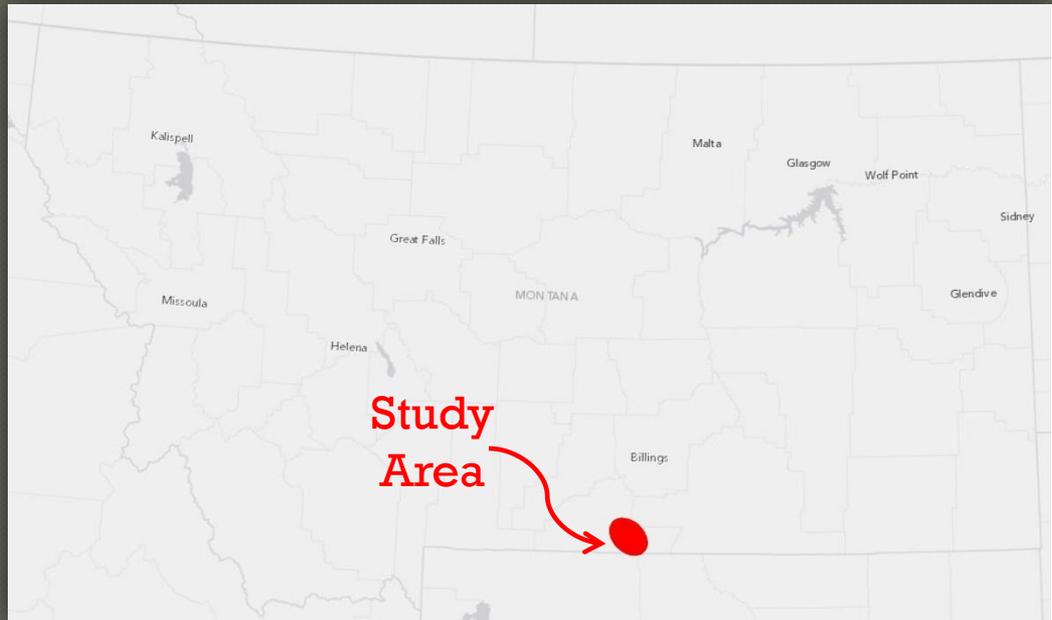
National Hardrock Mineral Reclamation and Sustainable Development Award – DOI/BLM



Bentonite Company Sage Grouse Studies

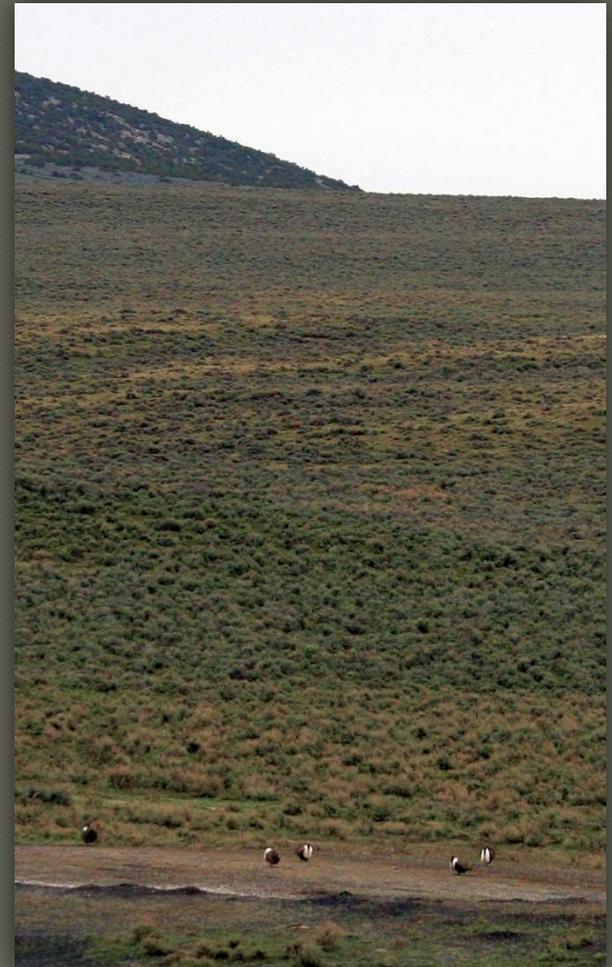
Montana Sage-grouse Study

- “Mini” Manderson project
- Cooperative project:
-ACC/Wyo-Ben/BLM
- Carbon County
- SE corner of MT Core Area 11
- Started Spring 2013
- 25 hens from 7 leks
 - 15 VHF
 - 10 GPS



Project Objectives

- Seasonal space-use patterns of study population
- Habitat preferences (nesting, brood-rearing, winter) of study population



Trapping Sage-grouse



Transmitters

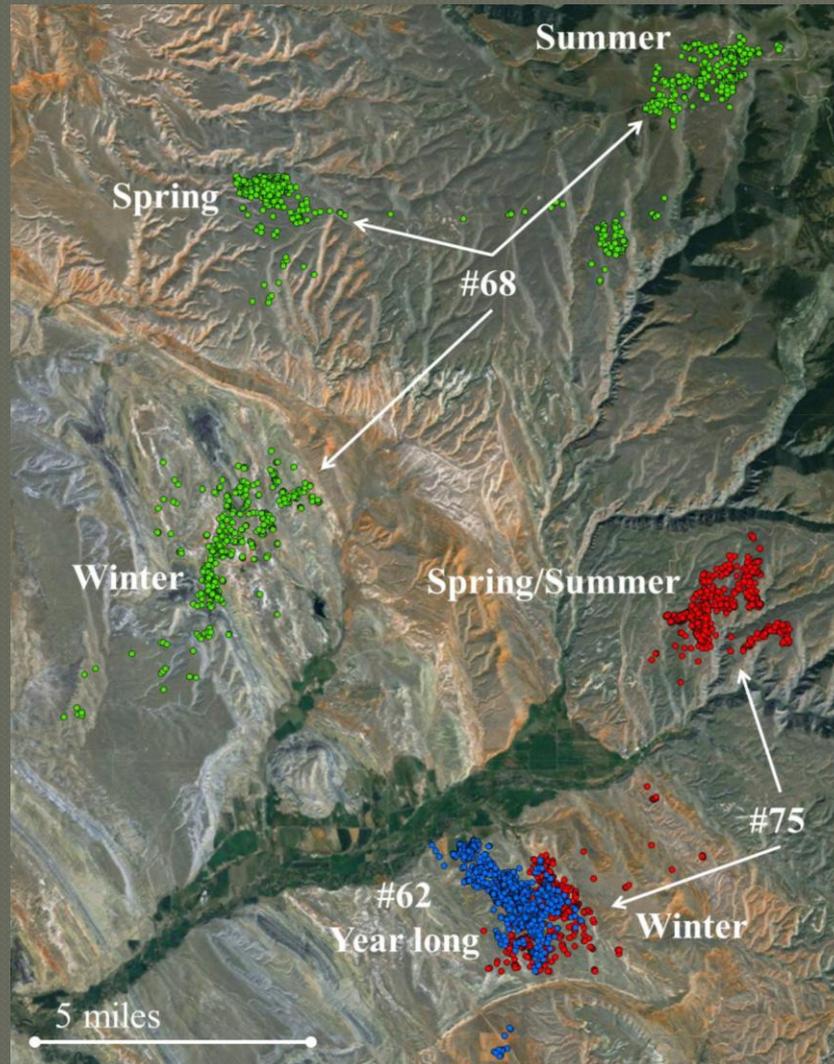


VHF

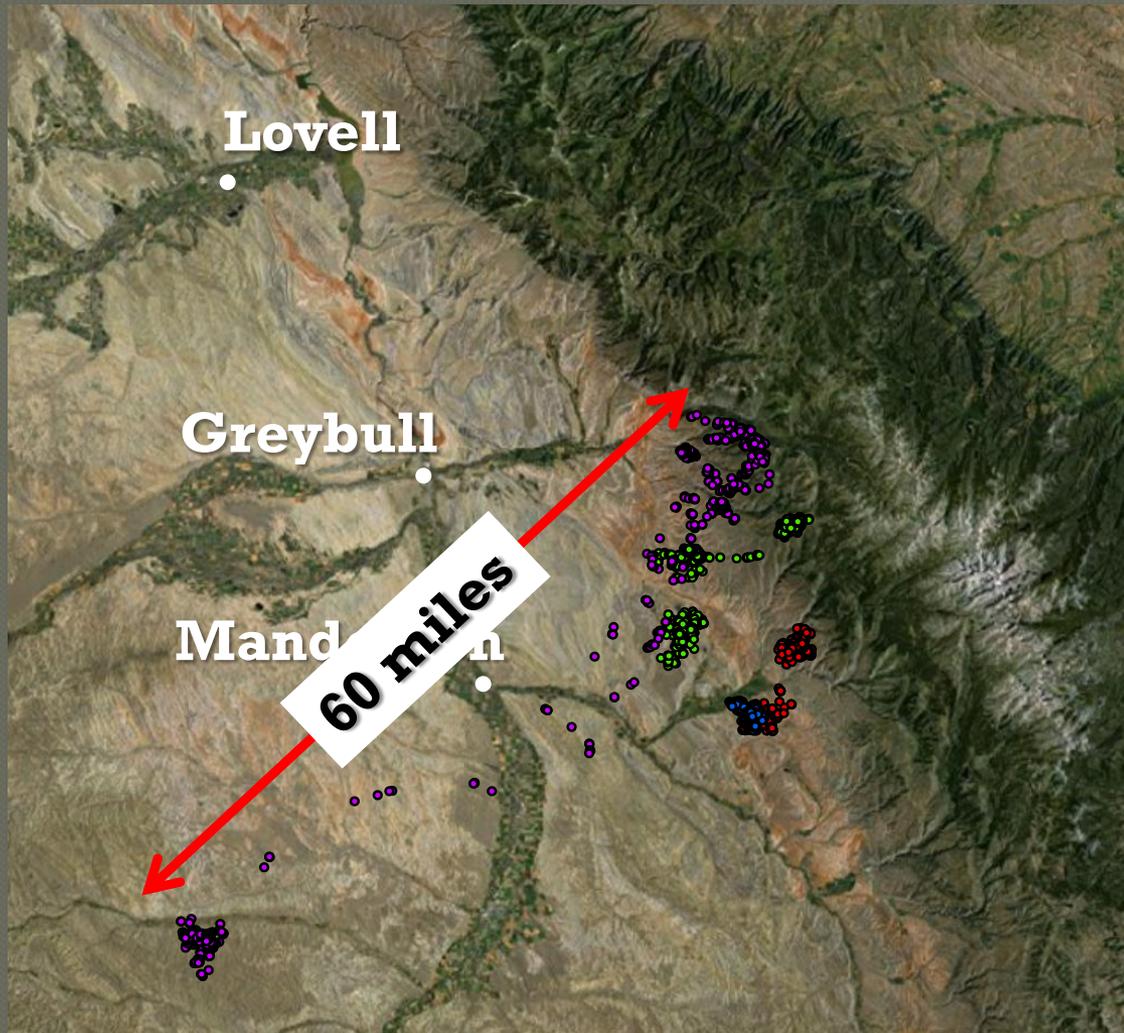


GPS

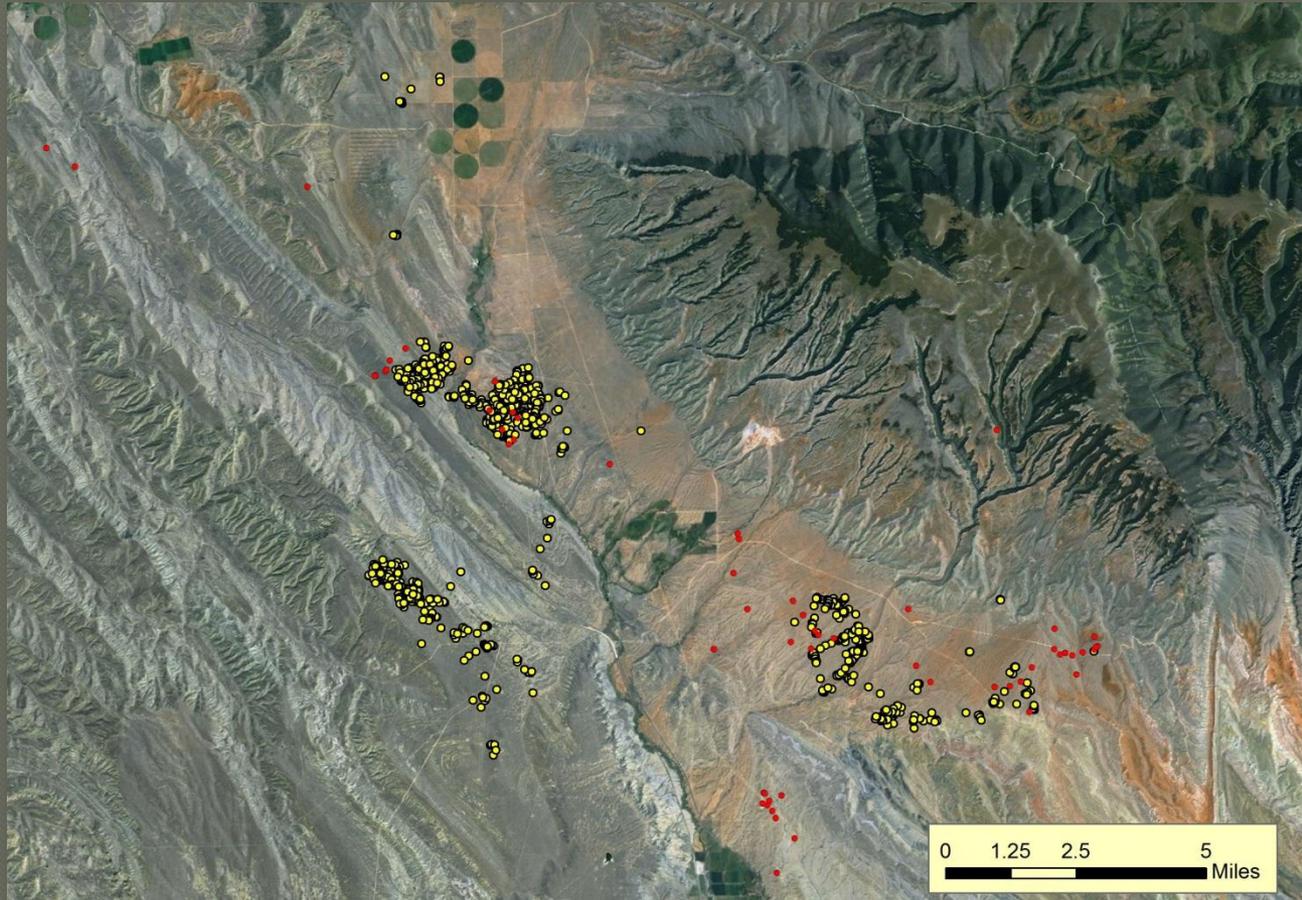
Manderson, WY Project



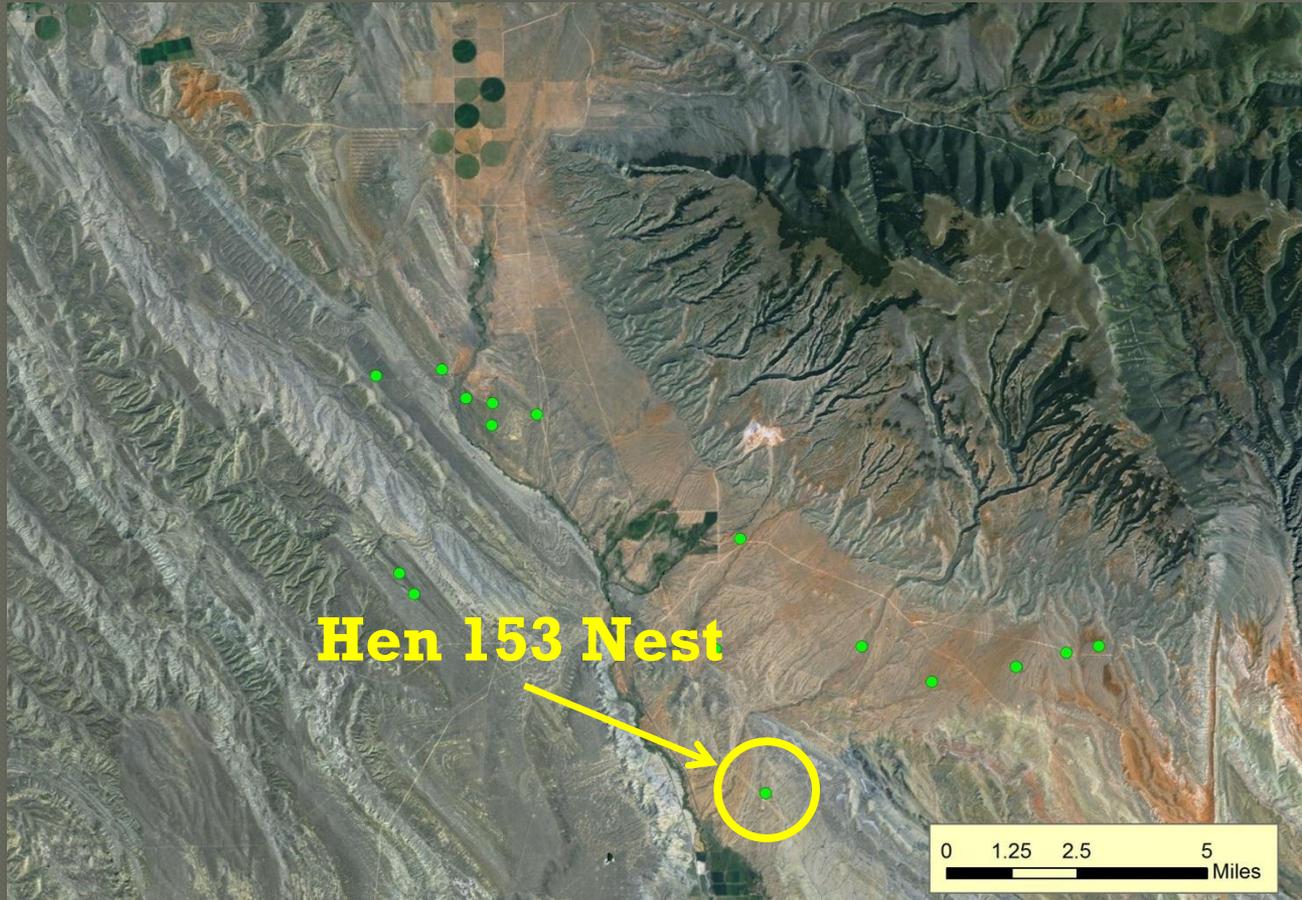
Manderson, WY Project



MT Locations: 3/31/13 to 6/9/13



MT Nest Locations



Hen 153 Nest



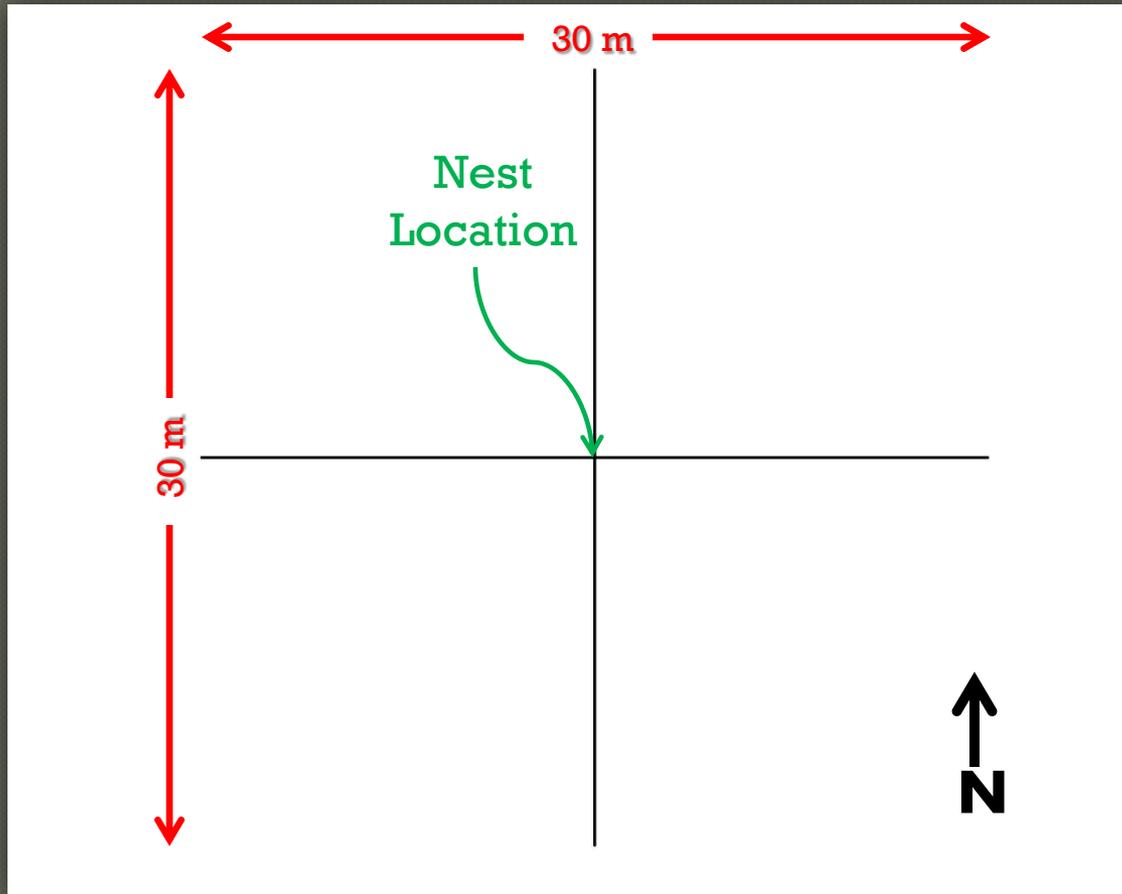
Hen 153 Nest



Microhabitat Plot



Microhabitat Plot



Hen 153 Nest Plot



Hen 153 Paired Random Plot



Microhabitat Plots

- Measurements of nest location
- Line-intercept – shrub profiles
- Belt transect – shrub density
- Daubenmire quadrats – ground cover
- Grass heights
- Visual obscurity – Robel measurements



Montana Project Acknowledgements

- American Colloid Company/AMCOL International
- Wyo-Ben, Inc.
- Bureau of Land Management – Billings Field Office
- University of Wyoming
- Montana Fish, Wildlife, and Parks
- Private landowners

Setting the Standard

- **The bentonite industry strives to be a leader in sage-grouse conservation**
- ***The bentonite industry might be growing more sage-grouse than anybody in the world right now...They have done some amazing things that I hope we can continue to repeat around this state.***

Bob Budd, Executive Director
Wyoming Wildlife and Natural Resource Trust
American Society of Mining and Reclamation
Annual Meeting, June 3, 2013



State Management Policy Issues

- Avoid, Minimize, Mitigate

- We can't move the mineral

*“The management of wildlife resources and habitat outside of special designations would seldom prevent locatable mineral development, but in order to avoid significant impact to wildlife, special conditions and **possible relocation of exploration or mining development could occur**. This relocation, as well as any additional mitigation, would create time delays and further expenses for locatable mineral development if not closing the area to mineral entry through withdrawal.” (Draft Hiline RMP Chapter 4, page 591)*

- We already work to minimize impact
 - Economically & environmentally sound
 - Focus is on Mitigation efforts
- Flexibility in timing and scope to meet local conditions
- Flexibility in revegetation objectives
- Recognition of mitigation affect of topographic buffers



State Management Policy Issues

- Affect of wildfire on permitting and mining
- Need for certainty
- Establishment of Local Work Groups to fine tune plan for geographic regions within the State.
- Ability of State management plans to influence USFWS listing decision
 - 2011 policy change defining “significant portion of range”
 - Lack of time to demonstrate results before listing deadline
- Congressional engagement

