

0031

PLATEAU MINING COMPANY

"a subsidiary of getty mineral resources company"

P.O. DRAWER PMC
Price, Utah 84501
Telephone: (801) 637-2875

Comments sent
10-10-80
mgn
file coal
ACT/007/006

September 30, 1980

Mary Ann Wright
Reclamation Biologist
Division of Oil, Gas and Mining
1588 West North Temple
Salt Lake City, UTAH 84116

Dear Mrs. Wright,

In confirmation of a phone call with Joe Helfrich on September 29, 1980, I would like to submit to you for your comment Plateau Mining Company's Outline of Experimental Design for the Test Plot Studies.

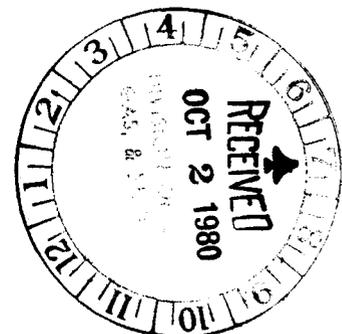
This outline is in response to a directive given by letter by Joe Helfrich of the Division on September 10, 1980. This also is a commitment that Plateau made in a hearing with the Board of Oil, Gas and Mining (order cause No. ACT/007/006 on July 27, 1979).

This outline was prepared for us by Dr. Dennis J. Hansen Manager of Reclamation Services with Native Plants located in Salt Lake City. Dr. Hansen visited our property last week and made an evaluation of our situation. This outline is a result of Dr. Hansens' evaluation.

We are planning to start implementation of this plan on October 6, 1980. Dr. Hansen and his staff will oversee the implementation; with a crew of men from Plateau Mining doing the actual work.

An assessment and evaluation will be done by Dr. Hansen next summer with a report going to your office as well as O.S.M.

Dr. Hansen indicated to me that he would be glad to answer any questions that you may have about the plan.



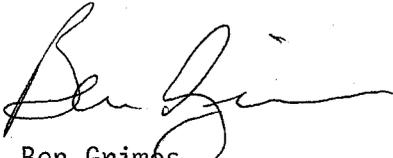
Mary Ann Wright
September 30, 1980
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Dennis J. Hansen Ph.D.
Manager - Reclamation Services
Native Plants
360 Wakara Way
Salt Lake City, UTAH 84108

Thank you for your consideration.

Sincerely,

PLATEAU MINING COMPANY



Ben Grimes
Reclamation Specialist

BG/jh

cc: Joe Helfrich D.O.G.M. - Salt Lake City
Ron Daniels D.O.G.M. - Salt Lake City
Don Crane O.S.M. - Denver
Tom Ehmet O.S.M. - Denver
Floyd Tucker - Plateau Mining Company
Bill Snyder - Plateau Mining Company
Steve Rigby - Plateau Mining Company

Enclosure

I. OUTLINE OF EXPERIMENTAL DESIGN FOR THE TEST PLOT STUDIES

A. Test Plots For The Road Cut Area (see Figure 1).

1. Cultural Treatments

a. Mulch

- 1) Straw
- 2) No straw

b. Fertilizer

- 1) Fertilizer
- 2) No fertilizer

2. Plant Materials

a. Seed (24 to 26 species)

- 1) High grass (85%) - low forb and shrub mixture (15%)
- 2) Low grass (15%) - high forb and shrub mixture (85%)
- 3) No seed

b. Plants (8 to 10 species)

- 1) High density (3 feet on center), 16 plants/plot,
384 total plants
- 2) Low density (6 feet on center), 4 plants/plot,
96 total plants

3. Plot Size and Number

a. Plot size: 12' x 12'

b. Plot number: 24 treatments with 2 replicas Dev. treatment for a total of 48 plots

4. Assessment and Evaluation

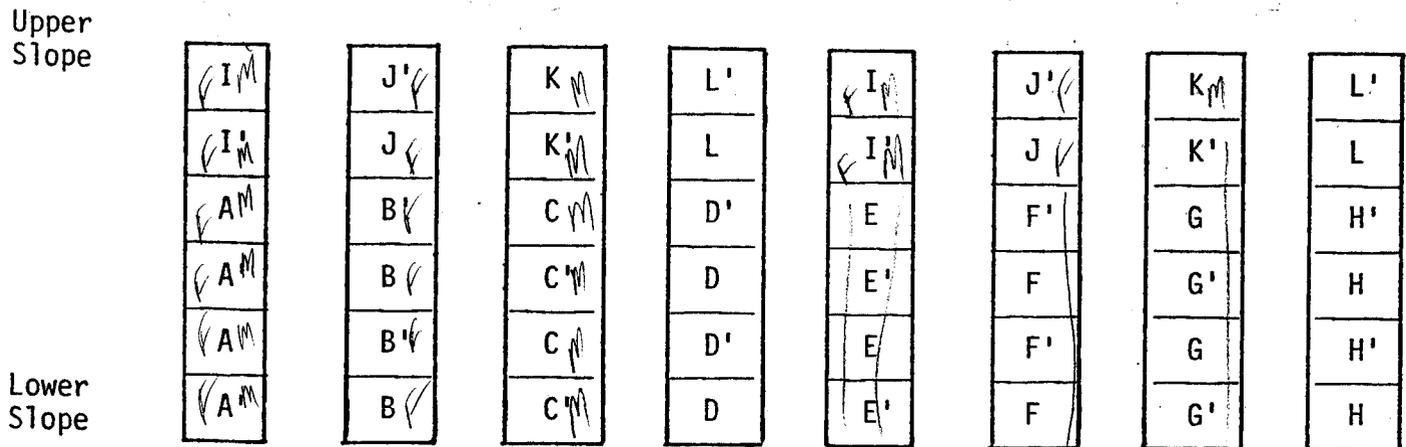
a. Qualitative - vigor, phenology, and general appearance

b. Quantitative - percent cover, height, and density

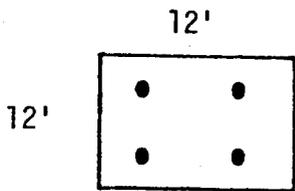
Figure 1. Example of test plot experimental design and composition for the road cut area.*

RELATIVE POSITIONING OF TREATMENT STRIPS

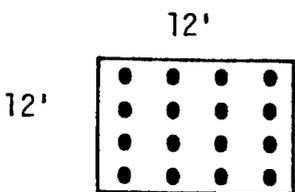
(Letters refer to treatments described on the following page.)



RELATIVE POSITIONING OF TUBELINGS



Low tubeling density = 1,210 plants/acre (4 plants/plot)
(spaced 6' on center) Total plants needed = 96



High tubeling density = 4,840 plants/acre (16 plants/plot)
(spaced 3' on center) Total plants needed = 384

*Each experimental design will be accompanied by a narrative that explains how to implement and monitor the Design Plan.

Figure 1. Continued.

TREATMENTS FOR PLOTS IN THE ROAD CUT AREA
(24 Treatments; 2 Replicas per Treatment)

A. Mulch Fertilizer High Grass-Low Forb Seed Mix High Tubeling Density	A! Mulch Fertilizer High Grass-Low Forb Seed Mix Low Tubeling Density	I. Mulch Fertilizer No Seed High Tubeling Density	I! Mulch Fertilizer No Seed Low Tubeling Dens
B. No Mulch Fertilizer High Grass-Low Forb Seed Mix High Tubeling Density	B! No Mulch Fertilizer High Grass-Low Forb Seed Mix Low Tubeling Density	J. No Mulch Fertilizer No Seed High Tubeling Density	J! No Mulch Fertilizer No Seed Low Tubeling Dens
c. Mulch No Fertilizer High Grass-Low Forb Seed Mix High Tubeling Density	C! Mulch No Fertilizer High Grass-Low Forb Seed Mix Low Tubeling Density	K. Mulch No Fertilizer No Seed High Tubeling Density	K! Mulch No Fertilizer No Seed Low Tubeling Dens
D. No Mulch No Fertilizer High Grass-Low Forb Seed Mix High Tubeling Density	D! No Mulch No Fertilizer High Grass-Low Forb Seed Mix Low Tubeling Density	L. No Mulch No Fertilizer No Seed High Tubeling Density	L! No Mulch No Fertilizer No Seed Low Tubeling Dens
E. Mulch Fertilizer Low Grass-High Forb Seed Mix High Tubeling Density	E! Mulch Fertilizer Low Grass-High Forb Seed Mix Low Tubeling Density		
F. No Mulch Fertilizer Low Grass-High Forb Seed Mix High Tubeling Density	F! No Mulch Fertilizer Low Grass-High Forb Seed Mix Low Tubeling Density		
G. Mulch No Fertilizer Low Grass-High Forb Seed Mix High Tubeling Density	G! Mulch No Fertilizer Low Grass-High Forb Seed Mix Low Tubeling Density		
H. No Mulch No Fertilizer Low Grass-High Forb Seed Mix High Tubeling Density	H! No Mulch No Fertilizer Low Grass-High Forb Seed Mix Low Tubeling Density		

B. Test Plots For The Borrow Area And Conveyor Line

1. Cultural Treatments

- a. Seed bed preparation
 - 1) Rake in (or mulch)
 - 2) No rake in (or mulch)
- b. Fertilizer
 - 1) Fertilizer
 - 2) No fertilizer

2. Plant Materials

- a. Seed (24 to 26 species)
 - 1) High grass - low forb and shrub mixture
 - 2) Low grass - high forb and shrub mixture
 - 3) No seed
- b. Plants (6 to 8 species)
 - 1) High density - (3 feet on center)
12 plants/plot, 288 plants total
 - 2) Low density - (6 feet on center)
3 plants/plot, 72 plants total

3. Plot Size and Number

- a. Plot size: 10' x 10'
- b. Plot number: 24 treatments with 2 replicas per treatment for a total of 48 plots

4. Assessment and Evaluation

- a. Qualitative - vigor, phenology, and general appearance
- b. Quantitative - percent cover, height, and density

C. Test Plots For The Coal Refuse Pile

1. Cultural Treatments

a. Mulch

- 1) Straw
- 2) No straw

b. Fertilizer

- 1) Fertilizer
- 2) No fertilizer

2. Plant Materials

a. Seed (24 to 26 species)

- 1) High grass - low forb and shrub mixture
- 2) Low grass - high forb and shrub mixture
- 3) No grass

b. Plants (6 to 8 species)

- 1) High density (3 feet on center)
12 plants/plot, 288 plants total
- 2) Low density (6 feet on center)
3 plants/plot, 72 plants total

3. Plot Size and Number

a. Plot size: 10' x 10'

b. Plot number: 24 treatments with 2 replicas per treatment for a total of 48 plots

4. Assessment and Evaluation

a. Qualitative - vigor, phenology and general appearance

b. Quantitative - percent cover, height, and density

D. Vegetative Stabilization of Topsoil Storage Area

1. Cultural Treatments

- a. Seed with seed mix already available
- b. Rake in seed on entire pile
- c. Fertilize entire pile — *not going*
- d. Provide supplemental water as needed until established

2. Assessment and Evaluation

- a. Qualitative - vigor, phenology and general appearance
- b. Quantitative - percent cover, height, and density

E. Weed Control on North-Facing Road Cuts

1. Cultural Treatments

a. Herbicide treatments (with windspeeds <5 mph)

- 1) "Roundup" - After Russian Thistle has germinated and is growing 1-2 inches tall. Followup by seeding available. Seed mix 2 weeks later, provide supplemental water as needed.
- 2) Seed available seed mix in the spring. Apply 2, 4-D amine 2-3 months after seedling emergence to kill Russian Thistle - (note this will also eliminate forbs in the mix). Apply forb seed the following fall.
- 3) Reseed road cuts but apply no herbicide. (This treatment is the control.)

b. Fertilizer treatments - apply fertilizer 1-2 weeks after seedling emergence

c. Supplemental water - apply supplemental water as needed during the 1st growing season

d. Mulch treatments - (optional)

2. Seed Mixture

a. Use existing seed mixture which was purchased earlier

b. Rate of application for the seed mixture broadcast on such steep slopes is approximately 40 lbs/acre or a little less than 0.26 lb per plot measuring 12' x 24' (288 sq. feet)

3. Plot Size and Number

a. Plot size: 12' x 24'

b. Plot number: 3 treatments (2 herbicide and 1 with no herbicide) with 3 replicas per treatment for a total of 9 plots

4. Evaluation and Assessment - (Qualitative only)

F. Water Harvesting/Tubeling Test Plots

1. Cultural Treatments

- a. Plastic-lined condensation traps
- b. Kraft paper-lined condensation traps
- c. Catchment basins
- d. Catchment basins and mulch
- e. Normal soil planting

2. Plant Materials (8 species, 400 plants total)

- a. Rubber rabbitbrush
- b. Utah serviceberry
- c. Big sagebrush
- d. Gambels oak
- e. Fourwing saltbrush
- f. True mountain mahogany
- g. Utah juniper
- h. Curl leaf mountain mahogany

3. Plot Areas, Spacing, and Number

a. Areas

- 
- 1) Coal refuse pile (200 plants)
 - 2) Conveyor line (200 plants)

b. Spacing (6' centers)

c. Number of replicas = 5

4. Assessment and Evaluation

- a. Qualitative - vigor, phenology and general appearance
- b. Quantitative - percent cover, height

PMC LABOR ESTIMATES*

<u>Tasks</u>	<u>Person Days</u>	
1. Mark off test plot areas	4-5	2 MAN TEAM
2. Seeding, fertilizing, and mulching of test plots	6-8	
3. Planting tubelings	6	NEXT SPRING
4. Herbicide treatment	1½	" "
5. Seeding and raking of topsoil plot	<u>1½</u>	
	Subtotal	
	19-22	
6. Maintenance - watering, etc., depending on weather	2-6	

*Assumes no site preparation will be required and that all equipment will be available when needed. If minor site preparation is required it would entail some weed or debris removal with a minimal amount of raking and some surface work on the coal refuse pile. Estimates for such work should not exceed four person days.