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June 12, 1992

RECEIVED

JUN 15 1992

DIVISION OF
OIL GAS & MINING

Ms. Pamela Grubaugh-Littig
Permit Supervisor
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

**RE: ADDITIONAL RESPONSE TO PERMIT CONDITIONS, DES BEE DOVE TEST
PLOT PLAN, PACIFICORP, DES BEE DOVE MINE, ACT/015/017**

Dear Ms. Grubaugh-Littig:

In response to your letter dated May 5, 1992, the attached Des Bee Dove Test Plots Plan - 1992 is submitted.

Upon approval this plan will be included at the end of Appendix XVI as an amendment.

If there are any questions, please call Guy Davis or me at 653-2312.

Sincerely,

Guy Davis

For Val Payne
Sr. Environmental Engineer

GD/dw
Enclosure

cc: J. Blake Webster
File

DES BEE DOVE TEST PLOT PLAN - 1992

INTRODUCTION

The focus of the 1992 Des Bee Dove Test Plots is primarily the Mancos shale. Specifically, to help develop reclamation procedures, plot treatments/soil admixtures will be tested to aid in the reclamation of the Mancos shale. Results from these 1992 test plots will determine the treatments to be tested on the "future" test plot planned in 3 to 5 years.

LOCATION

The individual plots will be approximately 10' x 14' each located in the raw Mancos material on top of the major fill slope between stations 131+00 to 142+00. The plots are part of the area redisturbed in the fall of 1991 as part of a violation abatement. (See attached Drawing CM-10874-DS.)

The location and size of the total plot area were based on the apparent universal soil and the availability of the test treatments. Each individual treatment will extend from the top of the waterbar slope to the top of the next waterbar slope (see Figure 1). All areas of the treatment, including the waterbars, will be observed and evaluated. The waterbar area is included because they are proposed in the final reclamation plan.

PLOT PREPARATION

All vegetation on the test plot area will be sprayed with two applications of Roundup two weeks prior to planting to kill any existing plant species. Applications will be spaced four (4) days apart.

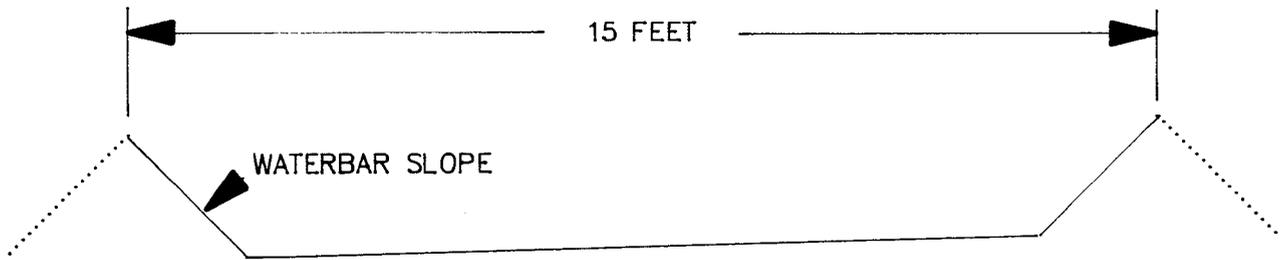
PLOT TREATMENTS/ADMIXTURES

As a result of the May 15, 1992 meeting with Division representatives, the following treatments were agreed upon. All treatments will be done randomly on the plot location in triplication.

- 1. Rocky Soil (Native Soil)**

This soil will be borrowed from near the site and will be placed on top of the Mancos soil. It is anticipated that one cubic yard of rocky soil will be used per individual plot. This will cover the Mancos surface with 2" or greater of soil. The treatment of rocky soil will be similar to the natural surrounding areas, so volume may vary following native soil sample results.

FIGURE 1
DES BEE DOVE TEST PLOTS — 1992
CROSS-SECTION



* NO SCALE

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2. Coal Waste

Refuse waste <2" will be placed on top of the Mancos. On cubic yard of material will be required to cover one plot with 2" of refuse.

3. Live Earth

A soil admixture called "Live Earth" will be applied to the top of the Mancos material at 1200 lbs/acre. Application of this admixture will be done by Keith Littlefield, a supplier of the product. It is anticipated that addition will lower high pH and sulfate concentrations typical of the Mancos. The "Live Earth" will be applied in a dry form.

4. Combination Of Rocky Soil And "Live Earth"

This combination admixture will consist of 1 cubic yard of native rocky soil placed on top of 800 lbs/acre "Live Earth" product. The "Live Earth" may be applied in either the dry or liquid form per supplier preference. "Live Earth" representative will aide in the plot treatments application.

5. Combination Of Refuse Waste And "Live Earth"

This combination admixture will consist of 1 cubic yard/plot of less than 2" waste coal material placed on top of 800 lbs/acre "Live Earth" product. The "Live Earth" may be applied in either the dry or liquid form per the representative's preference. "Live Earth" representative will aide in the plot treatments application.

6. Sewage Treatment Plant Sludge

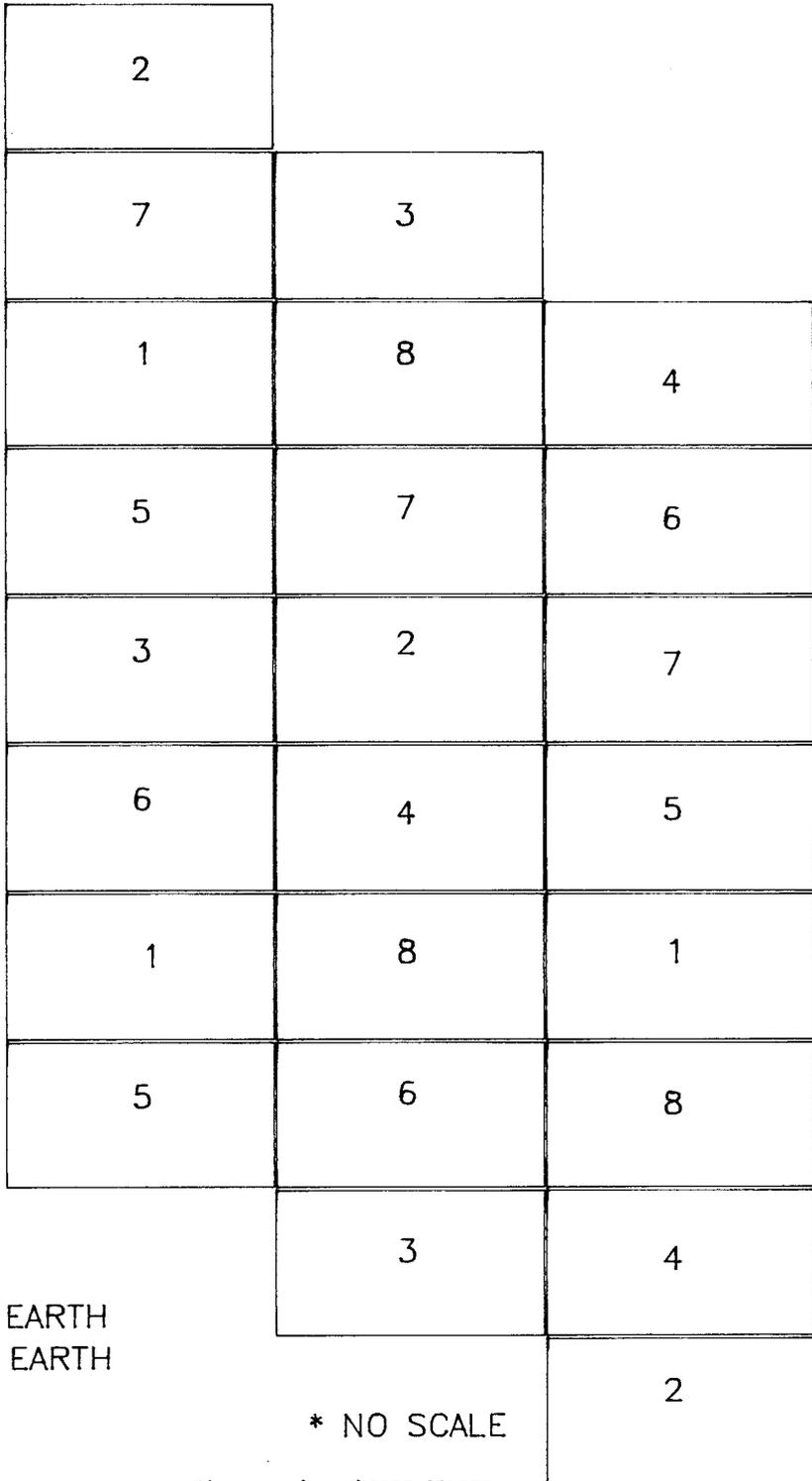
Sewage Treatment Plant sludge will be used as a treatment only if approved by the State Division of Water Pollution and Solid and Hazardous Waste. This approval will be obtained by Division personnel. Treatment volume will be determined after approval is received.

7. Native Seed

Native seed from the adjacent area will be collected and applied to 3 test plots. The seed mixture will be tested for viability prior to seeding. The quantity and variety of seed will be determined by availability at time of collection (see Figure 2).

It is anticipated that the following seed could be available at undetermined quantities:

FIGURE 2
DES BEE DOVE TEST PLOTS – 1992
PLOT TREATMENTS/ADMIXTURES



LEGEND

- 1. ROCKY SOIL
- 2. COAL WASTE
- 3. LIVE EARTH
- 4. ROCKY SOIL AND LIVE EARTH
- 5. COAL WASTE AND LIVE EARTH
- 6. SEWAGE SLUDGE
- 7. NATIVE SEED
- 8. NURSERY SEED

* NO SCALE

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>COLLECTION</u>
Fourwing Saltbush	<u>Atriplex canescens</u>	Mid Oct.- Nov.
Shadscale	<u>A. confertifolia</u>	Mid Oct. - Nov.
Cuneate Saltbush	<u>A. cuneata</u>	Mid July - Aug.
Greasewood	<u>Sarcobatus vermiculatus</u>	October
Fat-hen Saltbush	<u>Atriplex patula</u>	June
Corymbed Eriogonum	<u>Eriogonum corymbosum</u>	Mid Aug. - Sept.
Rock Goldenrod	<u>Petradoria ^upamila</u>	June
Salina Wildrye	<u>Elymus salinus</u>	Mid June
Squirreltail	<u>Sitanion hystrix</u>	June
Indian Ricegrass	<u>Oryzopsis hymenoides</u>	Late June
Mormon Tea	<u>Ephedra viridis</u>	Mid July
Prince's Plume	<u>Stanleya pinnat^ae</u>	Mid June
Rabbit brush	<u>Chrysothamnus nauseosus</u>	Mid Oct. - Nov.

8. Nursery Seed

Nursery seed will be planted in 3 plots for comparison to the native seed plots. Nursery seed will also be seed source for all other treatments/admixtures. The seed mixture and planting amounts will be the approved final seedmix of the permit.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>LBS/ACRE PLS</u>
Thickspike wheatgrass	<u>Agropyron dasystachyum</u>	3
Western wheatgrass	<u>A. smithii</u>	4
Indian ricegrass	<u>Oryzopsis hymenoides</u>	3
Basin wildrye	<u>Elymus cinereus</u>	4
Alkali sakatoon	<u>Sporobolus airoides</u>	.25
Yellow sweetclover	<u>Melilotus officinalis</u>	2
Lewis flax	<u>Linum lewisii</u>	1
Globemallow	<u>Sphaeralcea grossularifolia</u>	.5
Fourwing Saltbush	<u>Atriplex canescens</u>	2
Mat Saltbush	<u>A. corrugata</u>	2
Shadscale	<u>A. confertifolia</u>	1

Winterfat	<u>Ceratoides lanata</u>	2
Prostrate Kochia	<u>Kochia prostrata</u>	.5
TOTAL		25.25

Random treatment locations are shown on Figure 2. Each treatment will be staked and identified by a surveyor stake at each corner.

SOIL TESTING

Initially, the general test plot area will be sampled for the following parameters at 3 random locations. The sampling locations will be marked by a roofbolt for future identification.

Texture (% sand, silt clay)
SAR (meq/l)
pH (standard units)
Electrical Conductivity (mmhos/cm)
Saturation (%)
Organic Carbon (%)
Total N (%)
Available Phosphorus (mg/kg)
Available Potassium (mg/kg)
Water Extractable Boron (mg/kg)
Water Extractable Selenium (mg/kg)
Acid Base Potential
Available Water (%)
1/3 and 15 atmospheres
Soluble Ca, Mg, Na (meq/l)

At the end of the test plot observation period (3 to 5 years) soil samples from each of the individual plots will be taken and analyzed for the same parameters. Three of these locations, will be the same locations as the initial soil sample locations.

SURFACE POCKING

The entire test plot area will be pocked by mechanical device or hand tools after the admixtures have been applied but prior to any seeding. The pocking will be randomly spaced over the entire area of each plot including the waterbar slopes.

SEEDING

All seeding will take place in the late fall, after the native seed collecting is complete. All plots will be seeded by hand broadcasting after the surface has been poked. The seed will be lightly covered by dragging a chain between two workers.

MULCHING

All treatments/admixtures will be covered with curlex blanket. The blanket will be anchored as recommended by the manufacturer.

FERTILIZER

No fertilizer will be added initially because of the inherent high salt content of the Mancos. Fertilizer application may be considered in subsequent years.

MONITORING

Plots will be monitored annually by visual observation and photos. Vegetative monitoring for density, cover and diversity will be done during the 3rd growing season. Vegetative productivity will be monitored at the end of the test plot schedule.

Soil testing will be done at the commencement and end of the plots observation period. (See Soil Testing.)