

**From:** Mann, Ryan  
**To:** [Hernandez, Christina, EMNRD](#); [Larry.Baker@apachecorp.com](mailto:Larry.Baker@apachecorp.com); [Yu, Olivia, EMNRD](#)  
**Subject:** RE: Corrective Action Plan NEDU 613 1RP-4972  
**Date:** Thursday, July 26, 2018 9:32:33 AM  
**Attachments:** All seed mixes.docx

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NMSLO agrees with NMOCD regarding the concerns. Additionally, I have some comments regarding the revegetation plan. No seed mix was given, only to contact the Authorized Officer (I am not sure who this is referring to). I have attached a list of acceptable seed mixes for soil types commonly found in the area. The Shallow (SH) mix is acceptable for this location. Also it states that if revegetation is not successful after a couple of growing season the site will be reseeded. My recommendation would be to monitor the site at least annually and reseed as needed if the efforts prove unsuccessful. Let me know if you have any questions.

Ryan Mann  
Remediation Specialist  
Field Operation Division  
(575) 392-3697  
(505) 699-1989  
New Mexico State Land Office  
2827 N. Dal Paso Suite 117  
Hobbs, NM 88240

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**From:** Hernandez, Christina, EMNRD [mailto:[Christina.Hernandez@state.nm.us](mailto:Christina.Hernandez@state.nm.us)]  
**Sent:** Wednesday, July 25, 2018 1:47 PM  
**To:** [Larry.Baker@apachecorp.com](mailto:Larry.Baker@apachecorp.com); Yu, Olivia, EMNRD <[Olivia.Yu@state.nm.us](mailto:Olivia.Yu@state.nm.us)>; Mann, Ryan <[rmann@slo.state.nm.us](mailto:rmann@slo.state.nm.us)>  
**Subject:** RE: Corrective Action Plan NEDU 613 1RP-4972

All,

The previous email was in reference to 1RP-4972. My apologies.

Thanks,

Christina Hernandez  
EMNRD-OCD  
Environmental Specialist  
1625 N. French Drive  
Hobbs, NM 88240  
575-393-6161 ext. 111  
[Christina.Hernandez@state.nm.us](mailto:Christina.Hernandez@state.nm.us)

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**From:** Hernandez, Christina, EMNRD  
**Sent:** Wednesday, July 25, 2018 12:48 PM  
**To:** 'Larry.Baker@apachecorp.com' <[Larry.Baker@apachecorp.com](mailto:Larry.Baker@apachecorp.com)>; Yu, Olivia, EMNRD <[Olivia.Yu@state.nm.us](mailto:Olivia.Yu@state.nm.us)>; 'rmann@slo.state.nm.us' <[rmann@slo.state.nm.us](mailto:rmann@slo.state.nm.us)>  
**Subject:** RE: Corrective Action Plan NEDU 613 1RP-4972

Dear Mr. Baker,

NMOCD will consider vertical delineation completed for 1RP-4924 but is pending sidewall confirmation samples for horizontal delineation completion. Please address these concerns regarding the proposed remediation plan:

1. The map does not have a scale. Please provide a scaled map with the GPS coordinates of the delineation sample locations marked and the approximate dimensions represented by each of the test trenches.
2. Please properly label sample location names and dates sampled on Lab Results table as it will facilitate interpretation and approval.
3. Please be advised that each proposed differing depths of excavation will require a set of confirmation sidewalls and bottom samples at no greater than 50 ft. apart (except at SP2 and SP6 where liner is used; sidewall samples only) . In other words, the border between the proposed 3 ft. excavation for SP1 area and proposed 4 ft. excavation for SP2 will require a sidewall/edge sample taken.
4. Please provide dated photo documentation of the remedial activities, including the proper emplacement of the liner.
5. Please submit a scaled map with the confirmation sample locations in relation to the delineation sample points.

Thanks,

Christina Hernandez  
EMNRD-OCD  
Environmental Specialist  
1625 N. French Drive  
Hobbs, NM 88240  
575-393-6161 x111  
[Christina.Hernandez@state.nm.us](mailto:Christina.Hernandez@state.nm.us)

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

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**From:** Baker, Larry <[Larry.Baker@apachecorp.com](mailto:Larry.Baker@apachecorp.com)>  
**Sent:** Monday, July 2, 2018 2:03 PM  
**To:** Yu, Olivia, EMNRD <[Olivia.Yu@state.nm.us](mailto:Olivia.Yu@state.nm.us)>; [rmann@slo.state.nm.us](mailto:rmann@slo.state.nm.us)  
**Subject:** Corrective Action Plan NEDU 613 1RP-4972

All,

Attached is the corrective action plan for your review. Please let me know if you have any questions or wish to discuss. Thanks and have a good day.

## BRUCE BAKER

ENVIRONMENTAL TECHNICIAN SR

*direct* 575-393-7106 ext 1523 | *Cell* 432-631-6982

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## 1 REVEGETATION PLANS

The following Revegetation Plans were developed for revegetation of sites in southeastern New Mexico. To determine which revegetation plan is appropriate follow procedures in the section titled Determining the Revegetation Plan.

Revegetation Plans contain seed mixtures, as well as seed bed preparation and planting requirements. The detailed instructions for seedbed preparation and planting can be found in the section Revegetation Techniques.

**Table 3 - Revegetation Plans, Codes, and Soil Types for Southeastern New Mexico**

REVEGETATION PLANS	CODE	SOIL TEXTURES
Clay	C	Clay, Silty Clay, Stony Silty Clay, Clay Loam, Silty Clay Loam (including saline and sodic Clay soils)
Loam	L	Silty Loam, Cobbly Silt Loam, Stony Silt Loam, Silt, Loam, Sandy, Clay Loam
Sandy Loam	SL	Very Fine Sandy Loam, Fine Sandy Loam, Cobbly Fine Sandy Loam, Sandy Loam, Cobbly Sandy Loam, Gravelly Fine Sandy Loam, Very Gravelly Fine Sand Loam, Stony Fine Sandy Loam, Stony Sandy Loam
Shallow	SH	Rocky Loam, Cobbly Loam
Course	CS	Gravelly Loam, very Gravelly Loam, Gravelly Sandy Loam, Very Gravelly Sandy Loam, Stony Loam, Stony Sandy Loam
Sandy	S	Loamy Fine Sand, Loam Sand, Very Gravelly Loamy Fine Sand
Blow Sand	BS	Fine Sand, Sand, Coarse Sand
Mountain Meadow	MM	Clay, Loam
Mountain Upland	MU	Clay Loam, Loam



## CLAY (C) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Vine mesquite	VNS, Southern	2.5	S
Alkali sacaton	VNS, Southern	2.0	S
Tobosa grass	VNS	2.0	F
Blue grama	Hachita, Lovington	1.0	D
<b>Forbs:</b>			
Prairie coneflower	VNS, Southern	1.0	D
Blue flax	Appar	1.0	D
Scarlet globemallow	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing saltbush	VNS, Southern	2.0	D
Douglas rabbitbrush	VNS, Southern	1.5	F
<b>Total PLS/acre</b>		<b>14.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.

- Double above seed rates for broadcast or hydroseeding.
- If vine mesquite is not available, substitute Alamo switchgrass or galleta.
- If a species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.



## LOAMY (L) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Black grama	VNS, Southern	1.0	D
Blue grama	Lovington	1.0	D
Sideoats grama	Vaughn, El Reno	4.0	F
Sand dropseed	VNS, Southern	2.0	S
Alkali sacaton	VNS, Southern	1.0	
Little bluestem	Cimarron, Pastura	1.5	F
<b>Forbs:</b>			
Firewheel ( <i>Gaillardia</i> )	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing saltbush	Marana, Santa Rita	1.0	D
Common winterfat	VNS, Southern	0.5	F
<b>Total PLS/acre</b>		<b>18.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.



# NMSLO Seed Mix

# Sandy Loam (SL)

## SANDY LOAM (SL) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Galleta grass	Viva, VNS, So.	2.5	F
Little bluestem	Cimmaron, Pastura	2.5	F
Blue grama	Hachita, Lovington	2.0	D
Sideoats grama	Vaughn, El Reno	2.0	F
Sand dropseed	VNS, Southern	1.0	S
<b>Forbs:</b>			
Indian blanketflower	VNS, Southern	1.0	D
Parry penstemon	VNS, Southern	1.0	D
Blue flax	Appar	1.0	D
Desert globemallow	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing saltbush	VNS, Southern	2.0	D
Common winterfat	VNS, Southern	1.0	F
Apache plume	VNS, Southern	0.75	F
Total PLS/acre		17.75	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

- VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.
- Double above seed rates for broadcast or hydroseeding.
- If Parry penstemon is not available, substitute firecracker penstemon.
- If desert globemallow is not available, substitute scarlet globemallow or Nelson globemallow.
- If a species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.



## LIME – GYPSUM (LG) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
Black grama	VNS, Southern	1.0	D
Blue grama	Lovington	1.0	D
Sideoats grama	Vaughn, El Reno	4.0	F
Plains bristlegrass	VNS, Southern	2.0	D
Sand dropseed	VNS, Southern	2.0	S
<b>Forbs:</b>			
Firewheel ( <i>Gaillardia</i> )	VNS, Southern	1.0	D
Annual Sunflower	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing saltbush	VNS, Southern	1.0	F
<b>Total PLS/acre</b>		<b>13.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.





# NMSLO Seed Mix

# Sandy with Tall Grass (ST)

## SANDY with TALL GRASS (ST) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sand bluestem	Elida, VNS, So.	2.0	F
Sideoats grama	Vaughn, El Reno	4.0	F
Little bluestem	Pastura, Cimmaron	6.0	F
Plains bristlegrass	VNS, Southern	1.0	D
Sand dropseed	VNS, Southern	2.0	S
<b>Forbs:</b>			
Indian blanketflower	VNS, Southern	1.0	D
Plains coreopsis	VNS, Southern	1.0	S
<b>Total PLS/acre</b>		<b>17.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.



## SHALLOW (SH) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sideoats grama	Vaughn, El Reno	4.0	F
Blue grama	Lovington, Hachita	3.0	D
Little bluestem	Pastura, Cimmaron	1.5	F
Green sprangletop	VNS, Southern	1.0	D
Plains bristlegrass	VNS, Southern	1.0	D
<b>Forbs:</b>			
Firewheel ( <i>Gaillardia</i> )	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing saltbush	Marana, Santa Rita	1.0	D
Common winterfat	VNS, Southern	0.5	F
<b>Total PLS/acre</b>		<b>13.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.



# NMSLO Seed Mix

# Coarse (CS)

## COARSE (CS) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sand bluestem	VNS, Southern	2.0	F
Sideoats grama	Vaughn, El Reno	2.0	F
Blue grama	Hachita, Lovington	1.5	D
Little bluestem	Cimmaron, Pastura	1.5	F
Sand dropseed	VNS, Southern	1.0	S
Plains bristlegrass	VNS, Southern	0.75	D
<b>Forbs:</b>			
Parry penstemon	VNS, Southern	1.0	D
Desert globemallow	VNS, Southern	1.0	D
White prairieclover	Kaneb, VNS	0.5	D
Sulfur buckwheat	VNS, Southern	0.5	D
<b>Shrubs:</b>			
Fourwing saltbush	VNS, Southern	1.0	D
Skunkbush sumac	VNS, Southern	1.0	D
Common winterfat	VNS, Southern	1.0	F
Fringed sagewort	VNS, Southern	0.5	F
Total PLS/acre		18.25	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

- VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.
- Double above seed rates for broadcast or hydroseeding.
- If Parry is not available, substitute firecracker penstemon.
- If desert globemallow is not available, substitute scarlet globemallow.
- If one species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.



## SANDY (S) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sand bluestem	Elida, VNS, So.	2.0	F
Little bluestem	Cimarron, Pastura	3.0	F
Black grama	VNS, Southern	1.0	D
Sand dropseed	VNS, Southern	4.0	S
Plains bristlegrass	VNS, Southern	2.0	D
<b>Forbs:</b>			
Firewheel (Gaillardia)	VNS, Southern	1.0	D
Annual Sunflower	VNS, Southern	1.0	D
<b>Shrubs:</b>			
Fourwing Saltbush	VNS, Southern	1.0	F
<b>Total PLS/acre</b>		<b>16.0</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.



## ***1.1 BLOW SAND SITES REVEGETATION PLAN (BS)***

**Use this Revegetation Plan with the following ESD's:**

**CP2** – Sandy Plains, Sandhills, Deep Sand, Shallow Plains

**HP3** – Loamy Sand, Sandy Plains, Sandhills, Deep Sand

**SD3** – Loamy Sand, Deep Sand, Sandhills, Salt Meadow

**Soil Texture:** Fine Sand, Sand, Course Sand

### **Revegetation Procedures:**

#### **I. For flat or gently sloping areas with slopes less than or equal to 3H:1V:**

1. **Soil Amendments:** Apply composted manure or similar at the rate of 30.0 air dry tons/acre.
2. **Fertilize:** Type 2
3. **Mulch** – Grass Hay mulch applied at 2.0 tons/acre
4. **Prepare the seedbed and incorporate mulch, fertilizer, and soil amendments:**
  - a. Scarify
  - b. Disc (thoroughly mix mulch, fertilizer, and soil amendments in top 6-8 inches of soil before proceeding).
5. **Drill Seed** – use rangeland drill and apply Drill box seed to 0.5-0.75 inch depth, apply small seed to surface and lightly cover with drag chains or packer wheels or equal.
6. **Mulch** – Grass Hay mulch applied at 2.0 tons/acre
7. **Crimp**
8. **Tackify** – tackify to minimize risk of mulch blowing and to hold soil and mulch in place until vegetation begins to establish.
9. **Wind Fence** – Install wind fence.



## DEEP SAND (DS) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sand bluestem	Elida, VNS, So.	4.0	F
Sideoats grama	Vaughn, El Reno	4.0	F
Little bluestem	Cimarron, Pastura	3.0	F
Plains bristlegrass	VNS, Southern	1.0	D
Sand dropseed	VNS, Southern	2.0	S
Blue grama	Lovington	1.0	D
<b>Forbs:</b>			
Firewheel (Gaillardia)	VNS, Southern	1.0	D
Annual Sunflower	VNS, Southern	0.5	D
Prairie Conflower	VNS, Southern	0.5	D
Total PLS/acre		17	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box  
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at <http://plants.usda.gov>.



