

Evaluation of FGD Gypsum on Sodic Soils of Northwestern New Mexico

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A stylized silhouette of a mountain range in shades of teal, located at the bottom right of the slide.

Northwestern New Mexico Coal-Fired Power Plants

Four Corners Power Plant



San Juan Generating Station



Four Corners Region and Colorado Plateau



Farmington Area showing location of San Juan Generating Station (SJGS), Four Corners Power Plant (FCPP), and Proposed Application Site



San Juan Generating Station

- ◆ Four coal-fired pressurized units.
- ◆ Generate about 1,800 megawatts of electricity.
- ◆ 7th largest coal-fired generating station in the west.
- ◆ State-of-the-art limestone forced-oxidation system used for flue gas desulfurization.

Soils in San Juan County

- ◆ Hundreds of acres of saline, sodic, and saline-sodic soils in basin.
 - ESP: 5 to 50
 - EC: 10 to 40 mmhos/cm
 - SAR: 5 to 90
- ◆ Includes agricultural soils and minesoils.
- ◆ Result: Poor water infiltration due to soil particle dispersion and surface crusting.
- ◆ Gypsum can potentially help remediate these soils by increasing water infiltration and plant available water in root zone.

Concentration of Selected Elements Commercial Gypsum vs. FGD Gypsum

Element	Commercial	FGD
Ca (%)	23	20
S (%)	15	19
Al ($\mu\text{g/g}$)	9426	2116
B ($\mu\text{g/g}$)	39	42
Na ($\mu\text{g/g}$)	2733	577
As ($\mu\text{g/g}$)	4.8	3.4
Cd ($\mu\text{g/g}$)	5.5	1.2
Pb ($\mu\text{g/g}$)	2.3	2.1
Se ($\mu\text{g/g}$)	5.5	18.8

Summary

- ◆ The permeability of agricultural and mine spoil sodic soils in San Juan County, NM can potentially be improved by the addition of FGD gypsum.
- ◆ This study is designed to:
 - Determine the impact of FGD gypsum on soil physical and chemical properties, plant yields, biomass and forage quality.