

**1998 UTAH OIL, GAS AND MINING EARTH DAY AWARDS  
Nomination Form**

**Nominee Information**

Company Name	<u>Western States Minerals Corporation</u>
Address	<u>250 South Rock Blvd., Suite 130</u>
City, State, Zip	<u>Reno, Nevada 89502</u>
Contact Person	<u>E.M. Gerick</u>
Phone	<u>(702) 856-3339</u>
Site Name	<u>J.B. King Mine</u>
Location	<u>Emery County</u>

**Activity and Category (Please check one activity and one category)****Activity**

- Oil and Gas
- Minerals
- Coal

**Category**

- Environmental improvement to an active mine site, drilling or recovery site, or field
- Outstanding results following applications of innovative environmental technology
- Outstanding final reclamation or site restoration
- Other \_\_\_\_\_

**Nominated By**

Name	<u>DOGM- Susan White</u>
Address	<u>1594 West North Temple, Suite 1210</u>
City, State, Zip	<u>Salt Lake City, Utah 84114</u>
Phone	<u>(801) 538-5255</u>

**Nomination Summary (attach additional sheets, photos, etc., as necessary)**


---



---



---

**Return by January 31, 1998 to:** Earth Day Awards, Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801. Salt Lake City, Utah 84180-1203.

Phone (801)538-5327. Fax (801)359-3940.

## J. B. KING

### Nomination

Western States Minerals Corporation is nominated for an Earth Day Award for their use of innovative technology for site stabilization. The in use of biosolids and the importation and application of additional rock to existing soils for reclamation is the first time this technology has been used in the Title V program. Water harvesting techniques have been used for many years in arid land restoration. Trackhoe pocking is a different variation of water harvesting that has been developed by the Utah Coal Industry for reclaiming steep slopes at disturbed sites. These methodologies have also been successfully applied at this reclaimed site.

### Background

The J.B. King Mine is a reclaimed underground coal mine located approximately 10 miles south of Emery, Utah. Coal was mined using room and pillar methods. The mine operated periodically from the 1930's to 1981. All of the surface area disturbance occurred prior to the enactment of the Utah Mine Land Reclamation Act in 1975. Reclamation of the 32 acre J.B. King coal mine was completed by Western States Minerals Corporation in 1985.

The mine area receives about 8 to 10 inches of annual precipitation with intense summer thunderstorms. The site is situated at the bottom of sandstone cliffs on Mancos Shale which underlies the sandstone and contains the coal. Onsite soils used for reclamation contain excess salt and alkali and were derived from shale, some sandstone, and other soil materials left over from coal mining. Surrounding vegetation is classified as a salt desert shrub community.



**Figure 1.** Reclamation in 1985

### Initial Reclamation

Reclamation initiated in 1982 consisted of removing 6 inches to 4 feet of contaminated surface material from the coal stockpile area and the slurry/sedimentation ponds. This material was placed around the toe of the existing coarse refuse area. The refuse area was then graded to a rolling topography with a maximum slope of 4H:1V. Four feet of topsoil and substitute topsoil, located within the disturbed area boundary, was then excavated and placed on the regraded refuse

pile. Contour furrows were constructed, at regular intervals, along the smoothed outslope of the pile. The pile was then seeded, fertilized and mulched.



**Figure 2.** The refuse pile in 1991.

Post-reclamation monitoring concerns have focused on erosion and vegetation success of the refuse pile, specifically the west and southwest facing slopes. In late summer of 1986, the contour furrows became filled with sediment and began to breach after the occurrence of several major storm events. Silt fencing and rock-anchored straw were then placed in the resulting rills and gullies. Reoccurring drought, erosion and southwesterly exposure limited vegetation establishment on the refuse pile. Initial control structures and other erosion control measures

did not limit the erosion process to a reasonable extent. Because of the reclaimed refuse pile's soil type, slope and aspect and the low annual precipitation and high intensity rainfall events in the area it was felt that vegetation cover alone would never be sufficient to decrease erosion to reasonable levels.

### **1994 Reclamation Work**

In 1994 the Operator implemented a plan to resurface the refuse pile in hopes of slowing the erosion process and amending the droughty soils. The plan consisted of the following:

1. Biosolids (sewage sludge) were incorporated into the surface of the soil/rock at the rate of 24 tons per acre (dry weight).



**Figure 3** The refuse pile after surface roughening in 1994.

2. A rock mulch (rock aggregate, 1474 cubic yds.) was applied to the out slope of the refuse pile. This provided a thickness from 12 to 18 inches over the area covered.

3. The surface of the treated soil was deeply pocked and/or roughened; in the process of mixing the existing soils with the rock mulch.

4. The surface was then seeded with a native species seed mixture.

Three years have passed since the above plan was implemented and the site has received numerous rainfall events; particularly in the 1997 El Niño year. The following processes are being observed:



**Figure 4.** Rock mulch in 1994.



**Figure 5.** Rock mulch in 1997.

1. Fines are washing from the rock mulch resulting in a rock pavement surface.
2. Grasses and Shrubs are growing in the bottoms of most the trackhoe created pocks.
3. Some breaching and piping has occurred between the pocks resulting in rills; but overall, rilling and gulying appears to be minimized.

The results to date are considered outstanding for this harsh environment. The rock mulch appears to be stabilizing the soil surface. The use of surface roughening and pocking has created micro climates conducive to plant establishment. While some rilling and gulying is occurring the previously observed erosion appears to be greatly reduced. The site provides excellent winter habitat for migrating elk herds.