Mineral Resource Assessment of Selected Areas in Clark and Nye Counties, Nevada, Edited by Steve Ludington
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Chapter K. Mineral Resource Potential of the Stump Spring Area of Critical Environmental Concern, Clark County, Nevada

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Summary and Conclusions

The Stump Spring Area of Critical Environmental Concern (ACEC) exposes only unconsolidated Quaternary sediments. There are no known mineral deposits in the ACEC and no potential for the occurrence of deposits of locatable or leasable minerals.

Because there is no bedrock outcrop in the ACEC, there is no potential for the occurrence of crushed-stone aggregate deposits. The potential for the occurrence of sand and gravel aggregate deposits is low.

Introduction

This report was prepared for the U.S. Bureau of Land Management (BLM) to provide information for land planning and management, and, specifically, to determine mineral resource potential in accordance with regulations at 43 CFR 2310, which governs the withdrawal of public lands. The Clark County Conservation of Public Land and Natural Resources Act of 2002 temporarily withdraws the lands described herein from mineral entry, pending final approval of an application for permanent withdrawal by the BLM. This report provides information about mineral resource potential on these lands.

The Stump Spring ACEC was studied in the field to confirm descriptions of the geology that were gleaned from the scientific literature.

Definitions of mineral resource potential and certainty levels are given in appendix 1, and are similar to those outlined by Goudarzi (1984).

Lands Involved

The Stump Spring Area of Critical Environmental Concern (ACEC) is located approximately 2 km northeast of the Nevada-California border in the Pahrump Valley. It is about 50 km west of Las Vegas and about 30 km southeast of the town of Pahrump. The ACEC is accessible by unimproved roads from the Old Spanish Trail Highway. A legal description of these lands is included in appendix 2.

Physiographic Description

The Stump Spring ACEC is in Pahrump Valley, which is separated by the Spring Mountains from Las Vegas Valley to the east. The west boundary of the Pahrump Valley is formed by the Nopah and Kingston Ranges. The valley is relatively flat and as much as 25 km wide. The ACEC ranges from about 780 to 850 meters in elevation and contains a small intermittent stream that drains southwest. The ACEC is named for Stump Spring, which was used by early travelers through the area.

Geologic Setting

Pahrump Valley is on the southwest margin of the Basin and Range Physiographic Province. The region has experienced multiple periods of deformation, including Mesozoic compression followed by extension that began in Miocene time. The State Line Fault Zone, a zone of strike-slip faulting that strikes almost parallel to the Nevada-California border in the center of the valley, is within the Walker Lane belt, a major northwest zone of right-lateral faulting caused by late Tertiary to modern extension (Stewart, 1992). Analysis of gravity data indicates that the valley could have formed as a pull-apart, transtensional structure along the State Line Fault Zone (Blakely and others, 1998).

The mountains bordering the Pahrump Valley are mostly composed of Late Proterozoic and Paleozoic carbonate and siliciclastic rocks, which probably also underlie the valley. The subsurface bedrock of Pahrump Valley is deformed and topographically complex (Blakely and others, 1998); it is covered by sedimentary deposits that are Oligocene and younger in age. These include Quaternary playa deposits and large alluvial fans on the northeast side of the valley (Sweetkind and others, 2003).

Geology

The Stump Spring ACEC is located in an area of Quaternary sediments (fig. 1). Channel gravels become finer-grained upward, becoming mudstone near the top of the sequence. The mudstones are overlain by silt and thin gravel beds (Quade, 2000). These deposits, as well as fossils found in the area, record a change from an environment of fluvial and lacustrine conditions during the most recent glacial cycle to the arid conditions found today.

Mining History

There has been no known mining within the study area.

Mineral Deposits

There are no known mineral deposits within the study area. The Beck mine, an iron skarn deposit, is about 10 km southwest of the ACEC in California, and some outlying mines of the Goodsprings polymetallic district are about 20-30 km east-southeast of Stump Spring.

Mineral Exploration and Development

There are no active mining claims in or near the area, and no known mineral exploration activity.

Mineral Resource Potential

Locatable Minerals

On the basis of gravity data, the basin fill beneath the Stump Spring ACEC is about 1,000 m thick (Jachens and others, 1996). There is no known metal-mineralized rock or indication of other locatable mineral deposits, and there is no potential for locatable minerals.

Leasable Minerals

The area is within the region considered by the BLM to be moderately favorable for oil and gas (Smith and Gere, 1983). The closest exploration well, Miskell-Gov't No. 1, was drilled in 1959 along the west flank of the Spring Mountains about 18 km northeast of the ACEC. It was a dry hole, with minor oil shows, drilled entirely in the Permian Bird Spring Formation to a depth of 793 m (Garside and others, 1988).

There is no indication of potential for brine or evaporite deposits of sodium or potassium. The Stump Spring ACEC contains no known deposits of other leasable minerals, and the potential for their occurrence is low.

Salable Minerals

Crushed Stone.—There is no bedrock outcrop in the ACEC, and no potential for crushed-stone aggregate deposits.

Sand and Gravel.—The surface of the ACEC is dominated by small sand dunes stabilized by sparse vegetation. Cobbles of limestone, chert, and sandstone are present, but not in enough quantity to be considered high-quality aggregate. The area has low potential for sand and gravel aggregate deposits, with a high certainty level (fig. 2).

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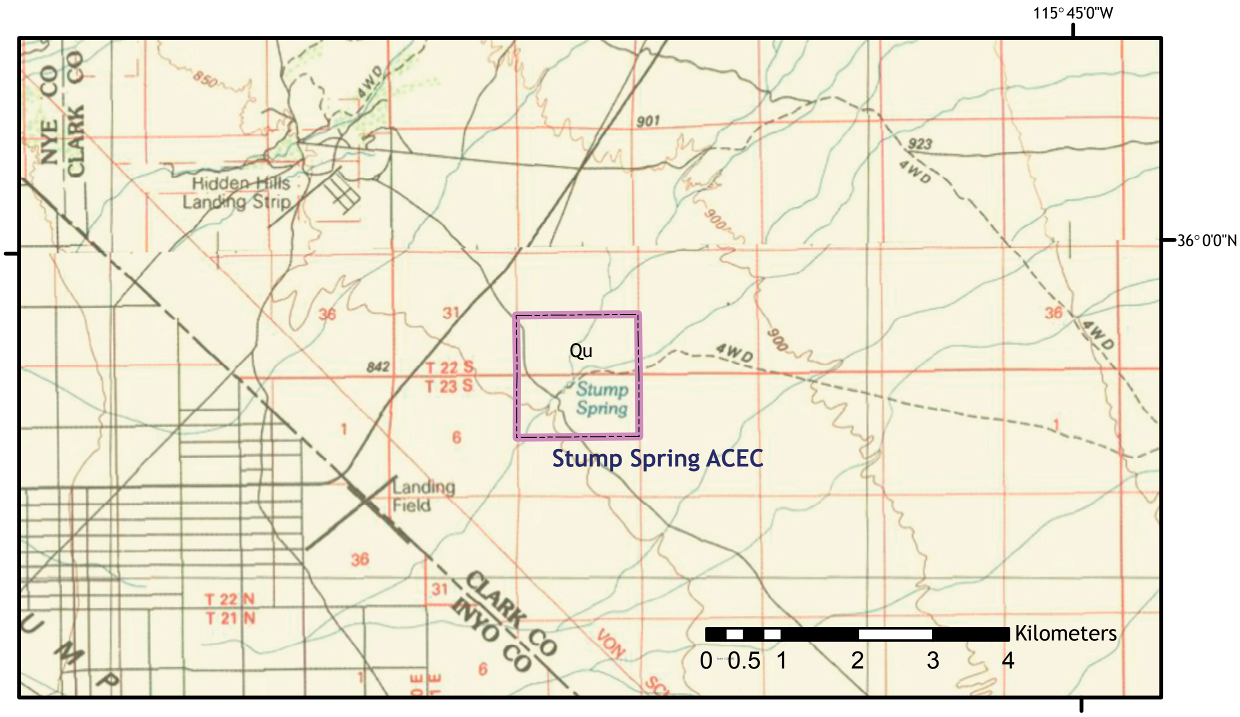

Figure 1. Generalized geology of the Stump Spring Area of Critical Environmental Concern. All materials are unconsolidated Quaternary deposits, including alluvium, colluvium, and playa deposits.

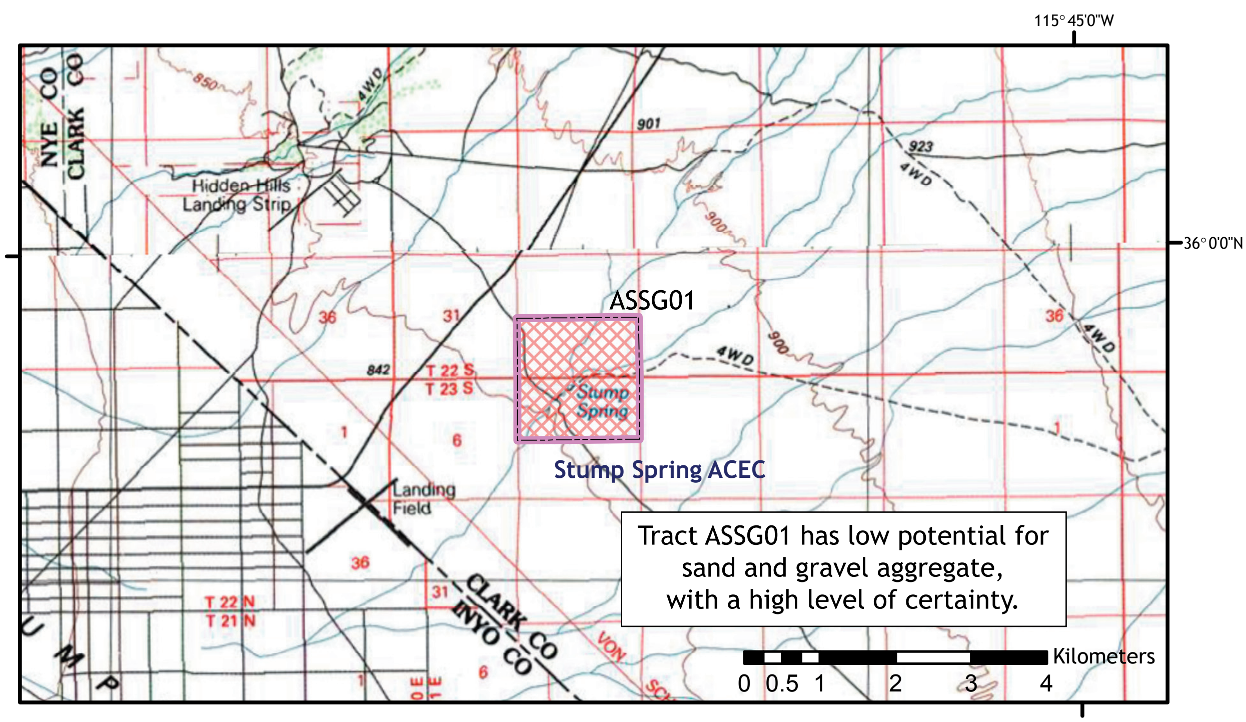

Figure 2. Mineral resource potential tracts for sand and gravel aggregate deposits in the Stump Spring Area of Critical Environmental Concern (ACEC; outlined in pink).