

**Mifflin & Associates, Inc.**

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**HYDROGEOLOGIC AND GROUNDWATER MODELING ANALYSES  
for the  
MOAPA PAIUTE ENERGY CENTER**

A Calpine Company Project  
In Cooperation with the Moapa Band of Paiute Indians



**CALPINE**

**Moapa Indian Reservation  
Clark County, Nevada**

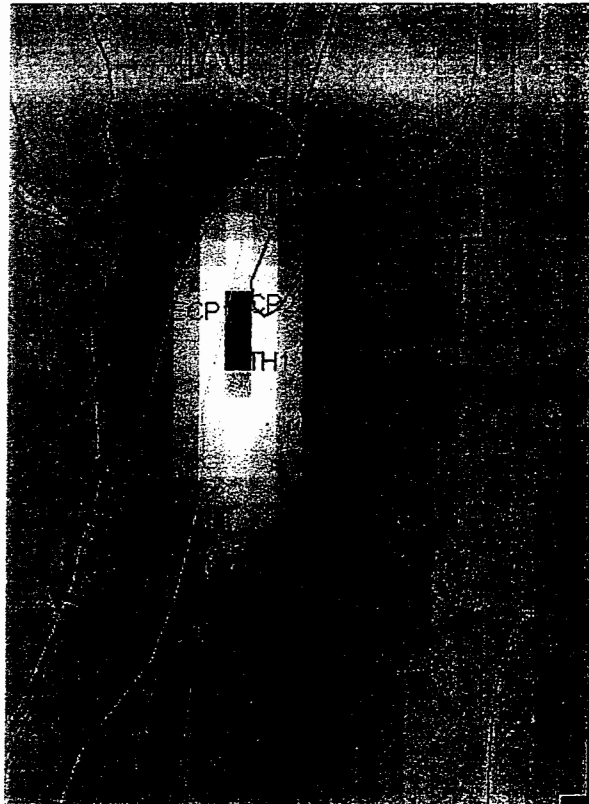


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**Prepared by  
Mifflin and Associates, Inc.**

**Cady Johnson  
Marty Mifflin  
R.J. Johnson  
Henk Haitjema**

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## Appendices

- A. ECP-1 Aquifer Tests - Summary report
- B. Geochemical and Isotopic Data for the Arrow Canyon Cell and Surrounding Areas
- C. Horizontal and Vertical Elevation Control and Water Levels for Carbonate Rock and Associated Wells Located in the Apex, California Wash, Hidden Valley, Coyote Spring and Moapa Areas
- D. Nevada State Engineer Hydrographic Basin Abstracts of Active Water Rights Status, Current Through 8/17/00
- E. Monitoring Plan, Moapa Band of Paiutes
- F. Supplemental Analyses of Outyears and Heavy Development Scenarios

## **1.0 Executive Summary**

The Moapa Band of Paiute Indians have proposed a leasing agreement with the Calpine Company to provide water for the construction, operation, and maintenance of a nominal 760-megawatt natural gas fired combined cycle power plant (Moapa Paiute Energy Center) on Moapa River Indian Reservation (Reservation) lands, approximately 25 miles northeast of Las Vegas, Nevada. The project site is within the California Wash hydrographic basin #218 and the Arrow Canyon Range Cell, an approximate 40- by 30-mile region dominated by carbonate-rock terrain where groundwater fluid potentials are almost uniform.

The project would require up to 7,000 acre-feet per year (afy) of groundwater to support the operation and maintenance of the power plant for 20 years, with the potential for renewal up to 45 years beginning in 2003. The objectives of the modeling analyses were to evaluate the available groundwater resources and predict regionally propagated impacts resulting from the groundwater use of the power plant.

This report concludes that the Reservation will support a well field in the Carbonate Aquifer producing 7,000 afy for the project life. The report also concludes that long-range impacts from proposed pumping are minimal or non-existent.

This report summarizes and interprets regional databases and establishes modeling analyses for the proposed groundwater usage. The purpose of this report is described in greater detail in Section 2. Section 3 presents the regional databases used in the model, including geology, fluid potentials, geochemistry and isotope hydrology, and the hydrogeology of the Muddy River Springs area. The modeling analyses and forecasts based on the modeling conducted are described in Section 4. The conclusions of this report are discussed in detail in Section 5 and are summarized in Section 6. Acknowledgements and references are provided in Sections 7 and 8, respectively.

A set of appendices provides background information used in the generation of this report, and the proposed monitoring plan is provided as Appendix E.